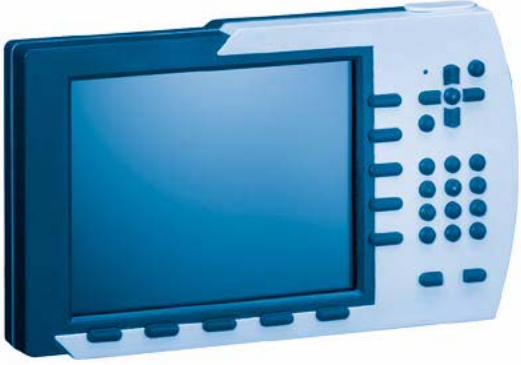
Agilent Instant Pilot

G4208A



User's Guide

Agilent Technologies

Notices

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A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

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For Research Use Only

In This Guide...

This book describes how to operate the Agilent 1100/1200/1290 Series modules and systems for HPLC using the handheld control module Agilent Instant Pilot G4208A.

Figure 1 The Agilent Instant Pilot

The Instant Pilot provides complete local control and monitoring of a single module or an entire Agilent 1100/1200 and 1290 Series HPLC system. There is no data evaluation in the Instant Pilot. The Instant Pilot allows you to do a variety of HPLC tasks including automated sample preparation and injection, isocratic, gradient and multiple method analyses and basic diagnostics and maintenance.

NOTE

If additional details are required on a specific topic/function/parameter not mentioned in this document, please use the Instant Pilot's Online Information System (i), see "The i (info) key - Online Information System" on page 36.

Chapter Overview

Part 1 Using the Agilent Instant Pilot

This part describes the Agilent Instant Pilot, its features and its functionality.

1 Start-up Information

This chapter provides general information around the Agilent Instant Pilot.

2 Working with the Instant Pilot

This chapter describes the operation of the Instant Pilot.

Part 2 Using the Agilent Series LC System With Control Module

This part describes how to run isocratic and multiple-vial analyses using a single method or more than one method.

3 Running an Isocratic Analysis

This chapter describes how to analyze the Agilent Technologies isocratic standard sample using a single injection analysis.

4 Running Multiple-Vial Analyses

This chapter describes how to setup multiple vial analyses using the same method and different methods.

Part 3 Support of the Instant Pilot

5 Maintenance and Repair

This chapter describes how to perform firmware updates, troubleshooting and replacements.

6 Appendix

This chapter provides safety and other general information.

Contents

1 Start-up Information

This chapter provides general information around the Agilent Instant Pilot.

Instant Pilot Features

Figure 2 The Agilent Instant Pilot

The Agilent Instant Pilot provides complete local control and monitoring of a single module or an entire Agilent 1100/1200/1290 Series HPLC system. You have easy access to every supported function, you can easily control all parameters and settings and you can configure various communication channels with other devices, in order to comfortably analyze the generated data.

- Color TFT display, size 13.1 x 9.9 cm (5.0 x 3.8 inch), 640 x 480 dots
- Processor: 400 MHz, 64 MB RAM (32bit)
- Install any desired configuration of Agilent 1100/1200/1290 Series HPLC modules. The Instant Pilot software will reflect which modules are present in the LC system and adjust the screens accordingly.
- Enter parameter settings for every module, perform on/off functions as well as calibration and configuration settings in a self-explanatory and intuitive way.
- Define automated analyses including methods, timetables, method sequences and automated calibration settings using the Instant Pilot.

- Use the configurable status screen to monitor various activities on a single screen.
- Easy configuration of the system and/or modules.
- Protect your method from any inadvertent keyboard changes by setting method file protection.
- Use USB Flash Drive to store and transfer methods and sequences between Agilent systems.
- Monitor all operations and error events using the self-updating logbooks.
- Use the context-sensitive online information system to get further information on all topics.
- To help comply with Good Laboratory Practice (GLP) regulations, select a variety of module tests that will check the performance of the LC system.
- Use the early maintenance feedback (EMF) limits for scheduling maintenance work.
- Display data graphically using the Plot screen, where as many as four different signals can be monitored at the same time.
- Printing to an USB Flash Drive.
- Version A.05.13 is compatible with 1100/1200 modules that run on firmware A.05.11/13 and A.05.09/10 (introduced November 2006).

NOTE

With the introduction of firmware revision B.02.08 (August 2009), the following is not implemented/supported:

- Automation Interface G2254A and
- Well Plate Handler G2255A.

Features and Benefits

Table 1 Features and Benefits

Feature	Benefit
• Large size, color TFT display with background light, high resolution and contrast	Better readability and usability.
• USB port / USB Flash Drive	Faster and more flexible method and sequence transfer to other Agilent systems. Handling for unsupported formats / formatting
• State of the art electronic	Faster application, large number of Agilent modules connectable, all detector signals available in plot.
• System visualization with status display in start screen	Fast overview of configuration and state of system
• Flat dialog structure; easy to understand icons	Much faster confidence and usability, less training required
• Automatic, context sensitive help in status line ("Tool Tip")	Easier parameter input through given ranges
• Diagnosis with passed/failed	No user interpretation necessary, clear result
• Setup wizards	Easier system configuration and sequence setup
• Dynamic adjustment to changed system configuration	No restart necessary when system configuration changes, e.g. different detector
• Method on- and offline editable	Methods can be changed during runs
• New sequence: wizard, table view, priority sample, insert method, parameter, ...	Simpler and more flexible, better overall view
• Printing to USB Flash Drive	The files can be opened using Microsoft Internet Explorer and printed from there.

Requirements for the Instant Pilot

The Agilent Instant Pilot can be attached to a modular Agilent HPLC system or a single Agilent HPLC module. Depending on the system, the following firmware requirements must be fulfilled.

Table 2 Pre-requisites / Compatibility vs. Modules

Agilent HPLC Modules	Instant Pilot Firmware Revision A.05.13	Instant Pilot Firmware Revision B.01.02/03/04	Instant Pilot Firmware Revision B.02.01 and above
Series 1200 standard modules (includes all modules not mentioned below)	A.05.09/10 A.05.11/12/13	A.06.02 or above	A.06.02 or above
Series 1100 standard modules (includes all modules not mentioned below)	A.05.09/10 A.05.11/12/13	A.06.02 or above	A.06.02 or above
Newer Series 1100/1200 modules that required special versions of Instant Pilot			
• G1315C DAD-SL	not compatible	B.01.02 or above	B.01.02 or above
• G1365C MWD-SL	not compatible	B.01.02 or above	B.01.02 or above
• G1315D DAD	not compatible	not compatible	B.02.01 or above
• G1365D MWD	not compatible	not compatible	B.02.01 or above
• G1314D VWD	not compatible	not compatible	B.02.07 or above
• G1314E VWD SL Plus	not compatible	not compatible	B.02.07 or above
• G1367D ALS SL Plus)	not compatible	not compatible	B.02.07 or above
1290 Infinity System • G4212A DAD • G4220A Binary Pump • G4226A Autosampler • G1316C TCC	not compatible	not compatible	B.02.08 or above

NOTE Since USB Flash Drives may vary from vendor to vendor or from type to type, incompatibilities can occur. In general, USB Flash Drives from Sandisk and Kingston should work. The USB Flash Drive must be FAT-16 formatted and without encryption. See "USB Flash Drive Kit" on page 168.

CAUTION The operator of this instrument is advised that if the equipment is used in a manner not specified in this manual, the protection provided by the equipment may be impaired.

NOTE The Instant Pilot may be used only with the Agilent instruments.

NOTE The Instant Pilot is designed to operate in a typical electromagnetic environment (EN61326-1) where RF transmitters, such as mobile phones, should not be used in close proximity.

Physical Specifications

Table 3 Physical Specifications

Type	Specification	Comments
Weight	0.8 kg (1.76 lbs)	
Dimensions (width × depth × height)	130 × 225 × 35 mm (5.1 × 8.9 × 1.4 inches)	
Line voltage	22 VDC, ± 10 %	via CAN
Power consumption	6 W / 20.5 BTU/hour	Maximum
Ambient operating temperature	0 – 55 °C (32 – 131 °F)	.
Ambient non-operating temperature	-40 – 70 °C (-40 – 158 °F)	
Humidity	< 95%, at 25 – 40 °C (77 – 104 °F)	Non-condensing
Operating altitude	Up to 2000 m (6562 ft)	
Non-operating altitude	Up to 4600 m (15092 ft)	For storing
Safety standards: IEC, CSA, UL, EN	Installation category II, pollution degree 2. For indoor use only. Research Use Only. Not for use in Diagnostic Procedures.	

NOTE

This product contains an TFT LCD assembly which is backlit by a mercury fluorescent lamp which contains mercury, and must be managed, recycled, and/or disposed in accordance with all applicable laws, ordinances, and regulations. For information on how to recycle or dispose of the mercury lamp contained in this product, or if you have additional questions on the mercury contained within this product, contact Agilent customer service.

Cleaning

The module case should be kept clean. Cleaning should be done with a soft cloth slightly dampened with water or a solution of water and mild detergent. Do not use an excessively damp cloth allowing liquid to drip into the module.

WARNING **Do not let liquid drip into the module. It could cause shock hazard and it could damage the module.**

Holder Versions for the Instant Pilot

Mid of 2007, the holder of the Instant Pilot will be introduced with a revised design.

Features of new holder are

- easy to use
- safe placement of the Instant Pilot
- stable mechanism
- easy upgrade of all Instant Pilot's with old holder version possible (see "Parts Identification" on page 168).

Figure 3 shows both holder versions. In principle, the Instant Pilot is hanging in the new holder and standing in the old holder.

Figure 3 New (left) versus Old (right) Holder

For new holder information refer to "Adding the Instant Pilot to an Agilent System" on page 20.

For old holder information refer to "Adding the Instant Pilot to an Agilent System" on page 26.

New Holder Design

Adding the Instant Pilot to an Agilent System

CAUTION **The CAN connectors are similar to LAN adapter connectors. Do not insert LAN connectors into the CAN or vice versa, since the CAN uses 24 V and might damage the LAN card.**

NOTE Preferred orientation of the Instant Pilot is hanging at the HPLC modules.

To attach the Instant Pilot to an Agilent HPLC system, the provided adapter plate is required.

1 Slide the adapter plate (delivered with the Instant Pilot) from the front onto the top cover of the lower Agilent HPLC module.

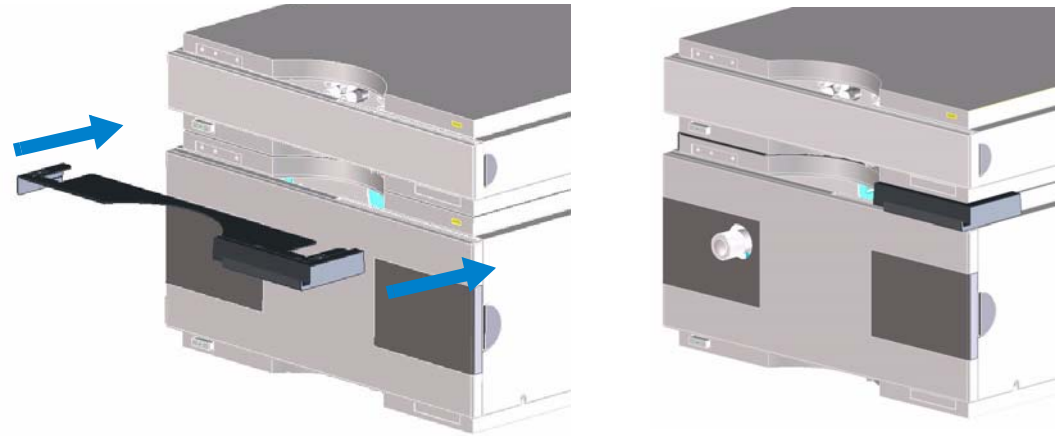


Figure 4 Adding the Holder to the System

2 While slightly angled, fit the Instant Pilot onto the holder.

Figure 5 Adding the Agilent Instant Pilot to the Holder

3 Connect the CAN (controller area network) connector of the Instant Pilot cable to a free CAN connector on one of the Agilent Series modules.

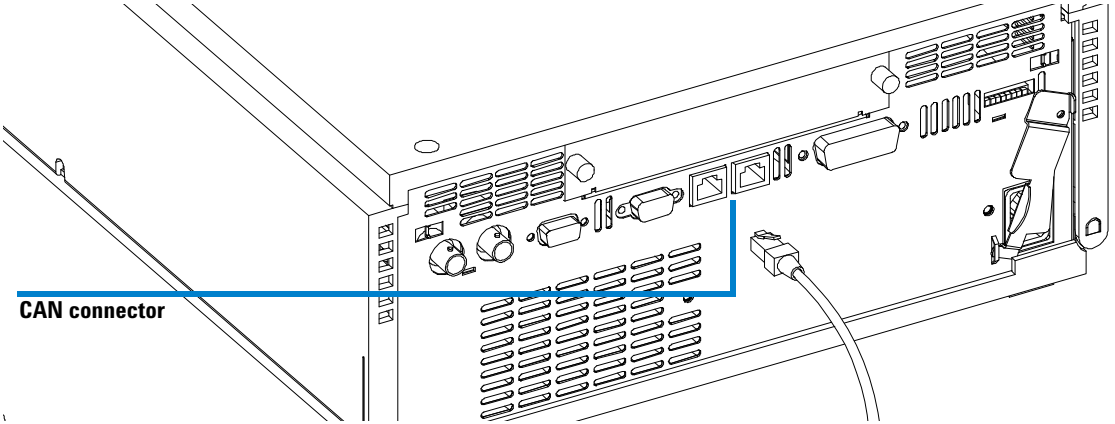


Figure 6 Connecting the CAN cable

For removing the Instant Pilot from its holder see "Removing the Instant Pilot" on page 33.

Adding the Instant Pilot to a Single Agilent Module

CAUTION **The CAN connectors are similar to LAN adapter connectors. Do not insert LAN connectors into the CAN or vice versa, since the CAN uses 24 V and might damage the LAN card.**

NOTE Preferred orientation of the Instant Pilot is hanging at the HPLC modules.

To attach the Instant Pilot to a single Agilent HPLC module, the provided adapter plate is required.

1 Slide the adapter plate (delivered with the Instant Pilot) from the front onto the top cover of the Agilent HPLC module.

2 Assure that it is fixed by pressing onto the adapter plate.

NOTE When inserting the adapter to an Agilent Wellplate Autosampler or Fraction Collector, the Instant Pilot must be removed first. Otherwise the Autosampler door cannot be opened.

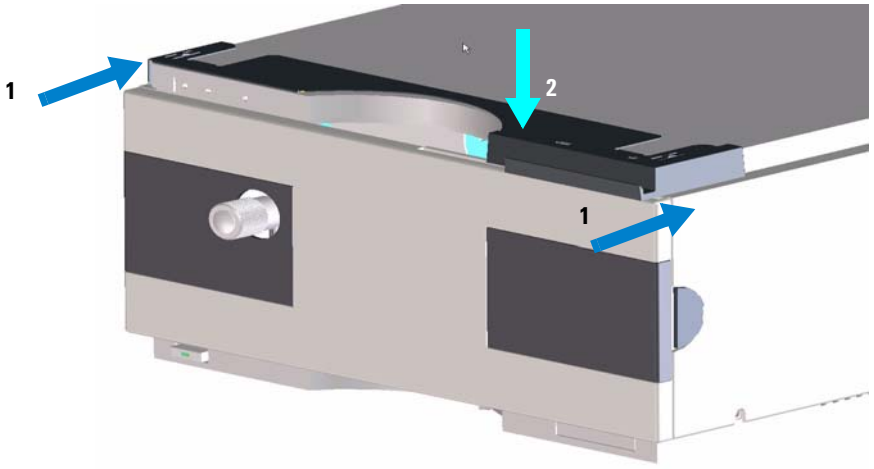


Figure 7 Adding the Holder to a Single Module

3 While slightly angled, fit the Instant Pilot into the holder (see also Figure 5 on page 21).

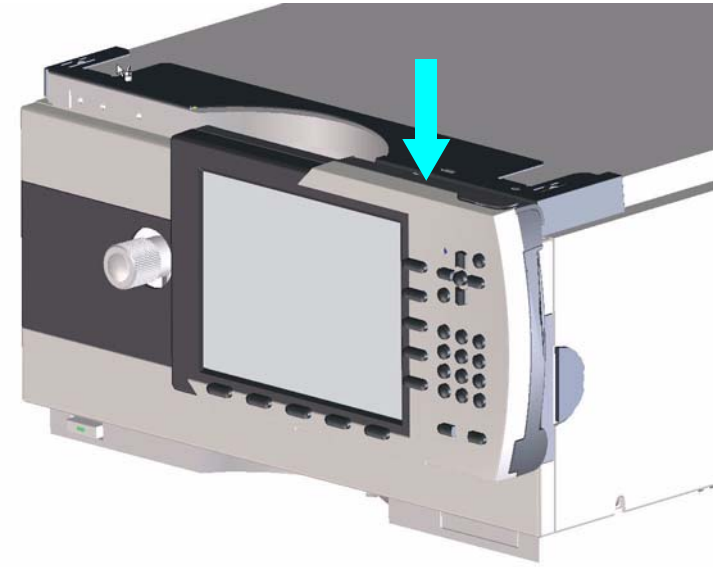


Figure 8 Adding the Agilent Instant Pilot to a Holder

4 Connect the CAN (controller area network) connector of the Instant Pilot cable to a free CAN connector on one of the Agilent Series modules.

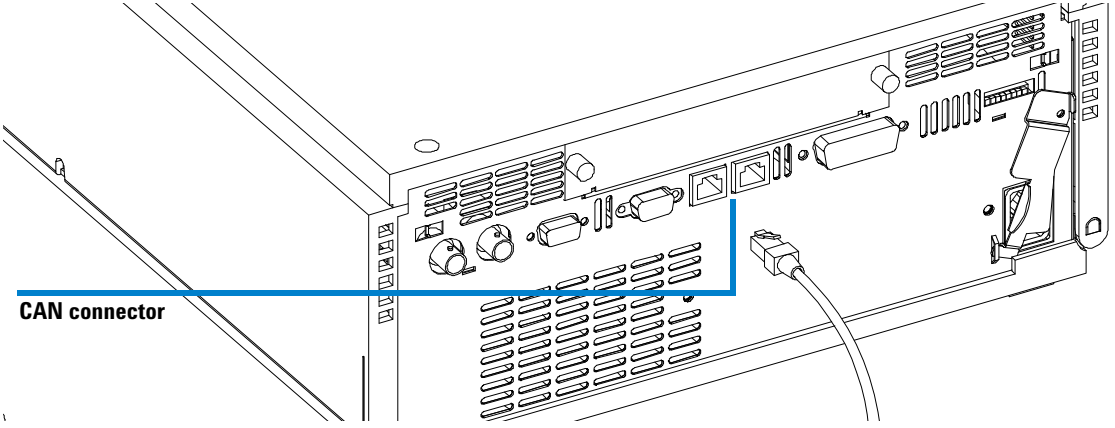


Figure 9 Connecting the CAN cable

Removing the Instant Pilot

To remove the Instant Pilot, slightly angle the Instant Pilot and then lift it from the holder.

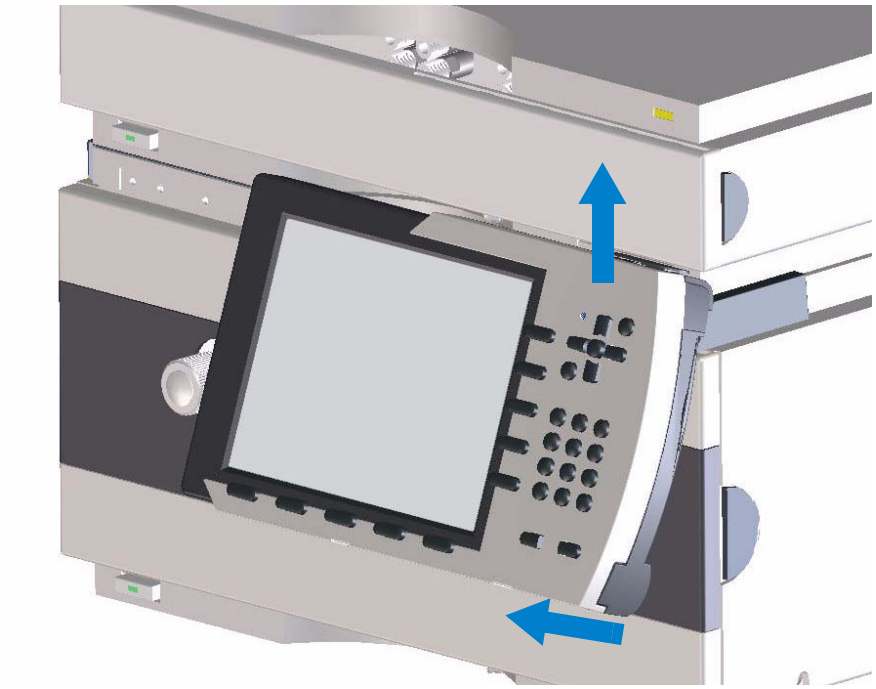


Figure 10 Removing the Instant Pilot

Old Holder Design

Adding the Instant Pilot to an Agilent System

CAUTION **The CAN connectors are similar to LAN adapter connectors. Do not insert LAN connectors into the CAN or vice versa, since the CAN uses 24 V and might damage the LAN card.**

NOTE Preferred orientation of the Instant Pilot is hanging at the HPLC modules.

To attach the Instant Pilot to an Agilent HPLC system, the provided adapter plate is required.

1 Slide the adapter plate (delivered with the Instant Pilot) from the front onto the top cover of the lower Agilent HPLC module.

NOTE Do not insert the adapter plate below an Agilent Wellplate Autosampler and Fraction Collector, otherwise the Autosampler door cannot be opened.

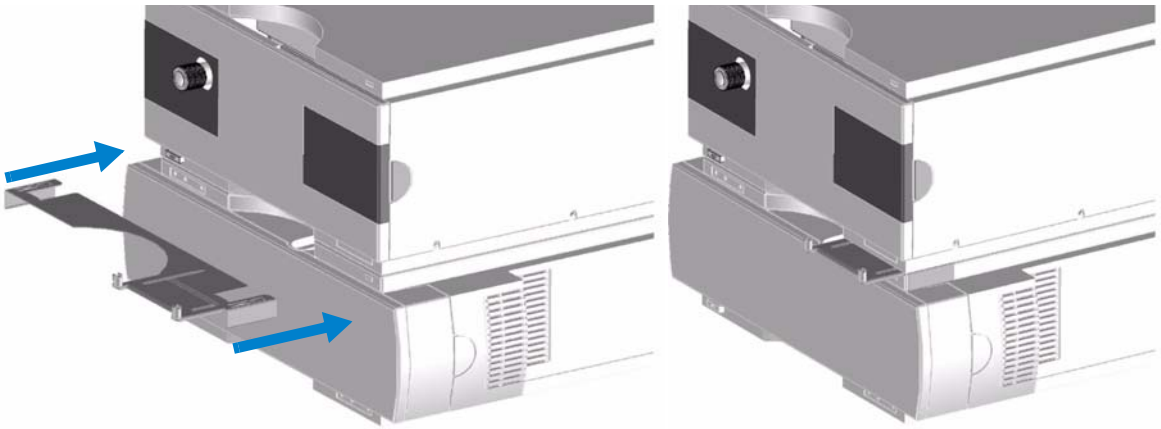


Figure 11 Adding the Holder to the System

2 While **pressing** the release button, clip the Instant Pilot into the adapter.

NOTE Adding or removing the Instant Pilot from the Adapter without pressing the release button may damage the breaks or the adapter plate.

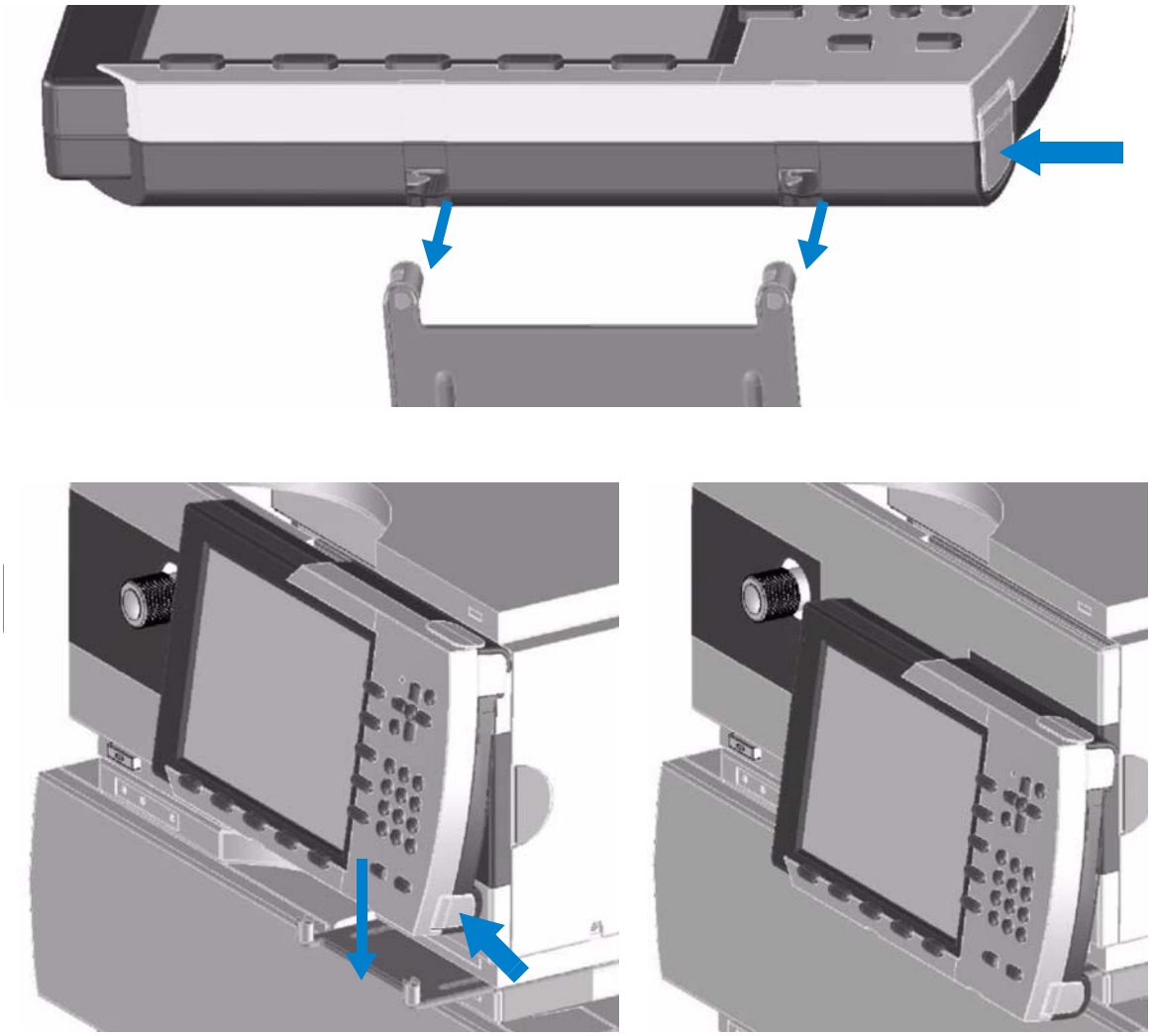


Figure 12 Adding the Agilent Instant Pilot to the System

3 Connect the CAN (controller area network) connector of the Instant Pilot cable to a free CAN connector on one of the Agilent Series modules.

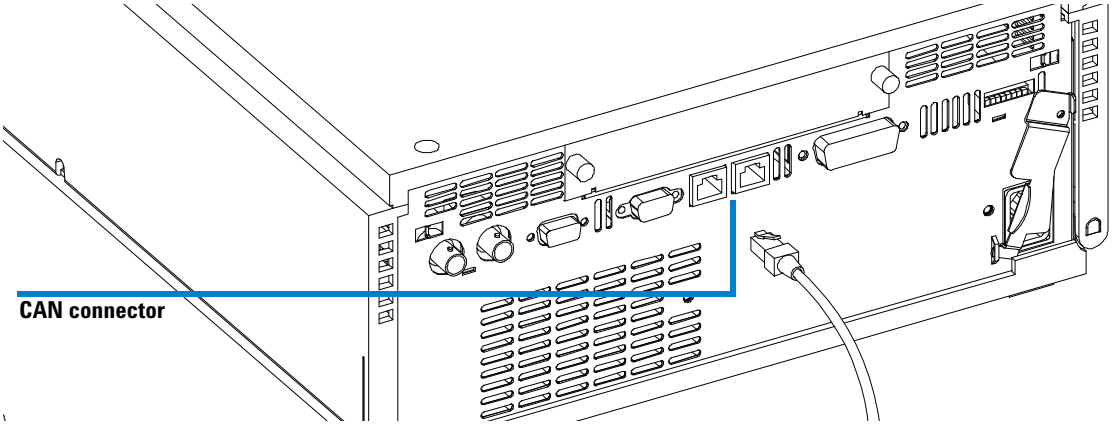


Figure 13 Connecting the CAN cable

For removing the Instant Pilot from its holder see “Removing the Instant Pilot” on page 33.

Adding the Instant Pilot to a Single Agilent Module

CAUTION **The CAN connectors are similar to LAN adapter connectors. Do not insert LAN connectors into the CAN or vice versa, since the CAN uses 24 V and might damage the LAN card.**

NOTE Preferred orientation of the Instant Pilot is hanging at the HPLC modules.

To attach the Instant Pilot to a single Agilent HPLC module, the provided adapter plate is required.

1 Slide the adapter plate (delivered with the Instant Pilot) from the front onto the top cover of the Agilent HPLC module.

2 Assure that it is fixed by pressing onto the adapter plate.

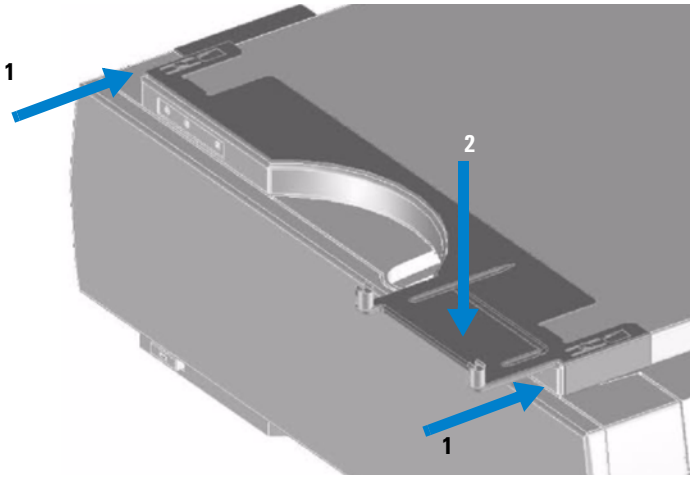


Figure 14 Adding the Holder to a Module

3 While **pressing** the release button, clip the Instant Pilot into the adapter.

NOTE Adding or removing the Instant Pilot from the Adapter without pressing the release button may damage the breaks or the adapter plate.

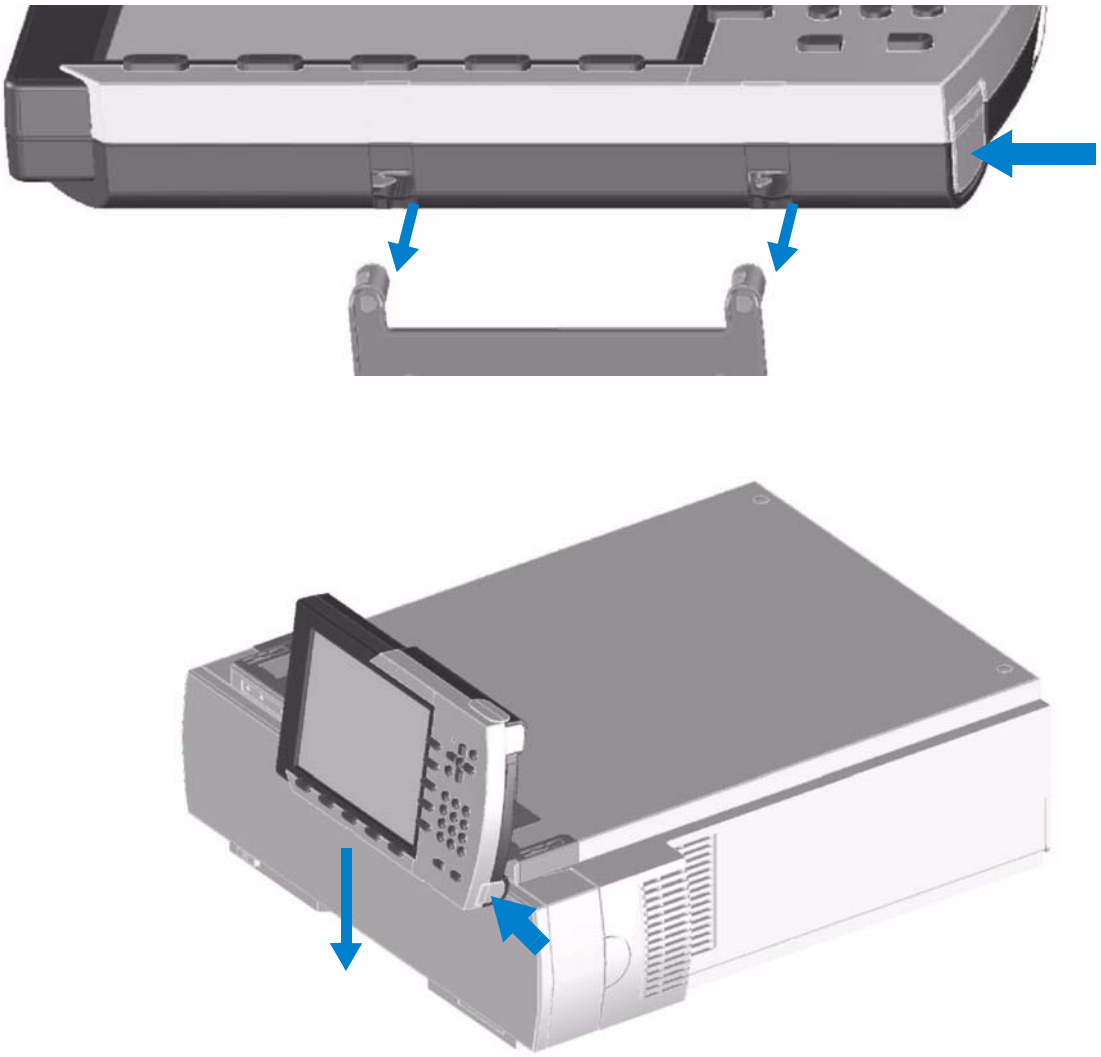


Figure 15 Adding the Agilent Instant Pilot to a Module

4 Connect the CAN (controller area network) connector of the Instant Pilot cable to a free CAN connector on one of the Agilent Series modules.

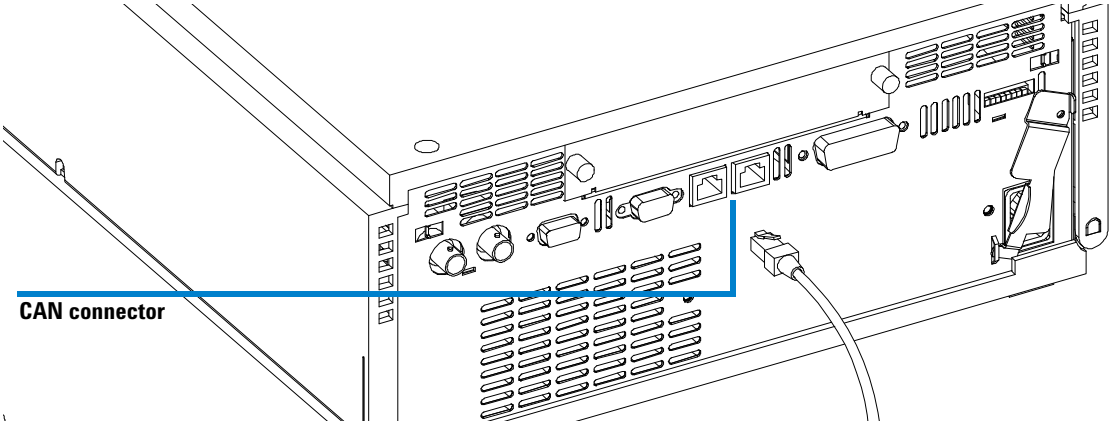


Figure 16 Connecting the CAN cable

For removing the Instant Pilot from its holder see “Removing the Instant Pilot” on page 33.

Removing the Instant Pilot

To remove the Instant Pilot, **press the release button** on the right side to unlock and then lift the Instant Pilot.

NOTE Adding or removing the Instant Pilot from the Adapter without pressing the release button may damage the breaks or the adapter plate.

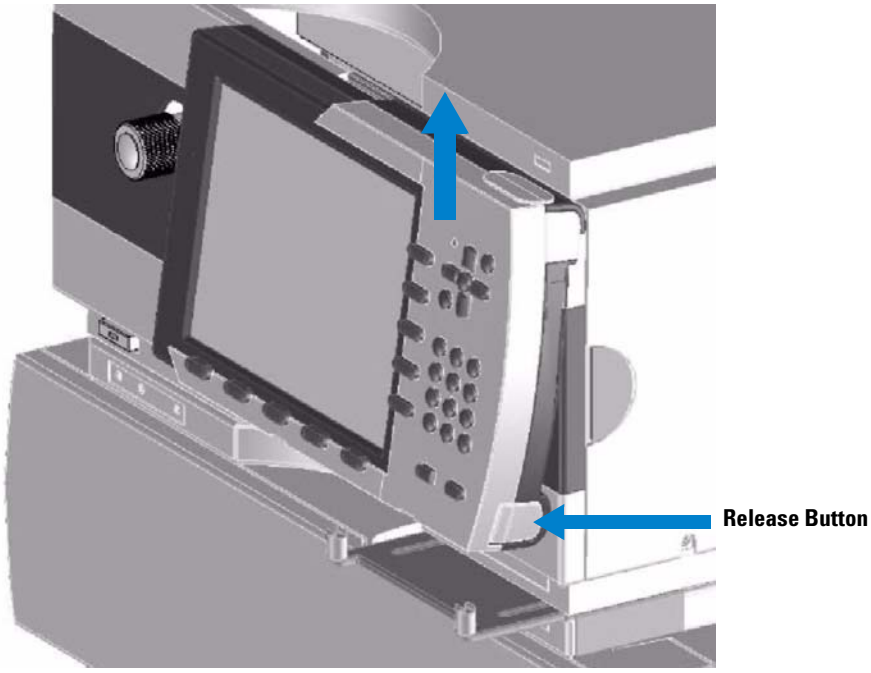


Figure 17 Unlocking and Removing the Instant Pilot

Instant Pilot Display and Keyboard Layout

Figure 18 shows the layout of the display and the keys. All has been arranged in functional groups around the display.

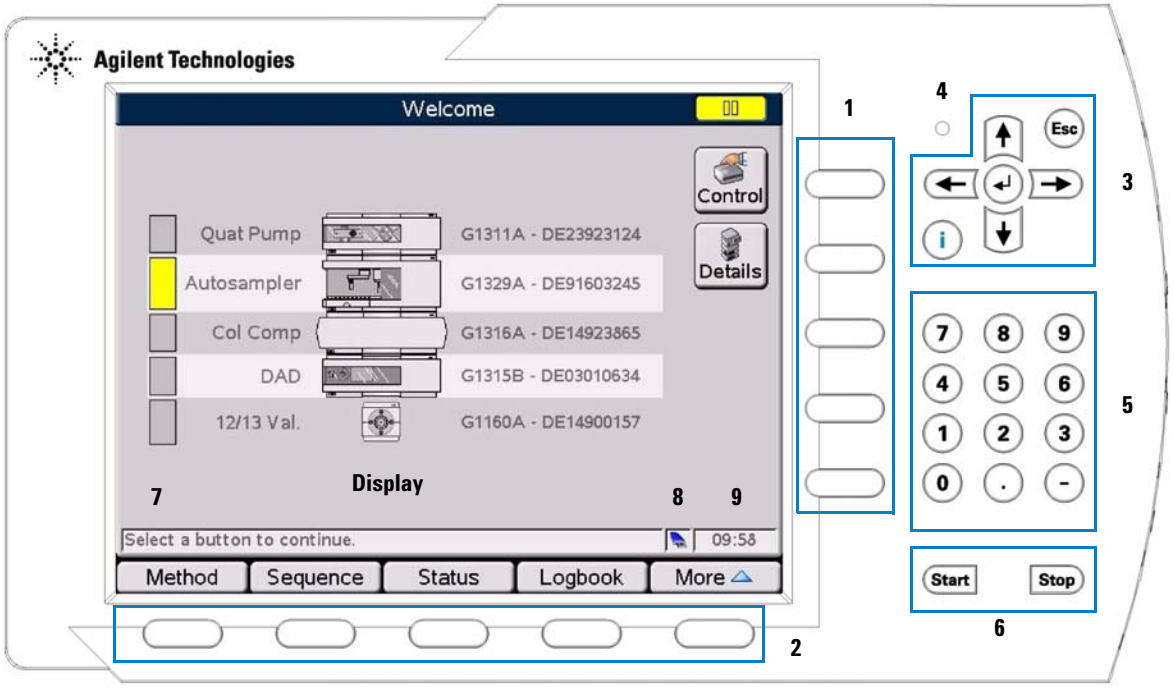


Figure 18 The Agilent Series Instant Pilot - Layout

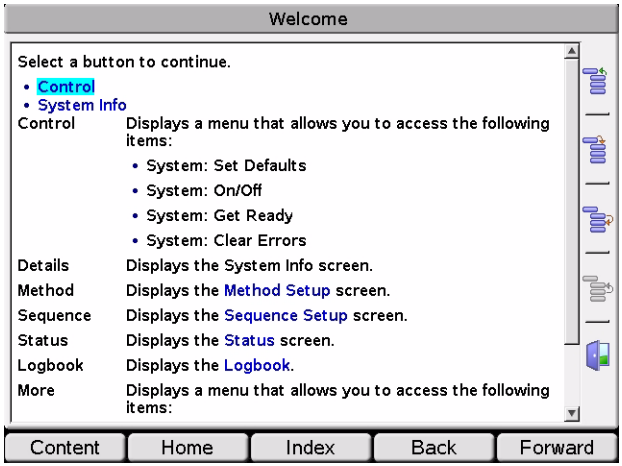
Table 4 Instant Pilot Display and Keyboard Layout

Item	Key Group	Description
1	Action keys	trigger a variety of functions. The available functions depend on the screen you are working with.
2	Navigation keys	allow you to switch between the dialogs. Within these dialogs, the relevant parameters can be set, and certain functions can be accessed. The Navigation keys always correspond to a button displayed above them on the screen. The dialogs accessed via the buttons vary according to the screen you are working with. In some cases, pressing a button causes a popup menu to appear. From there, you must make a choice in order to proceed.
3	Direction keys ← → ↑ ↓	you can move back (left arrow) and forward (right arrow) between the entry fields and up and down and scroll in lists.
	Esc key	allows you to exit the current window or screen and leads you back to the last window or screen you were working with. In an edit field, the previous value can be restored by pressing the Esc key.
	OK key or ↵	you accept a current entry or action. When entering a parameter into a certain field, the OK key leads you on to the next accessible entry field. In this case it has the same function as the right Direction key.
	i (info) key	provides context-specific information for current item selected.
4	LED	status LED (green if Instant Pilot is connected via CAN and has booted)
5	Numeric keys	enter numbers 0 to 9.
	Alphanumeric keys	allow you to enter numeric values in parameter entry fields. In certain fields where alphabetical characters may be entered, you can use the Numeric/Alphanumeric keys to do so. Pressing them several times in sequence changes the current value (e.g. 1 A B C, 2 D E F, 3 G H I,...).
6	Start / Stop keys	starts or stops running applications.
7	On-line information	gives addition information about the topic that is selected.
8	USB icon	shows whether the USB Flash Drive is inserted and active. Not present - grey, present - blue, active - yellow with red dot (do not unplug!).
9	Time	displays the current time.

The i (info) key - Online Information System

The online information system provides a quick and convenient way to look up information about a task you are doing or a feature or screen you would like to know more about. The online information system is context-sensitive and provides information related to the current topic.

You can access the online information system by using the **i** (info) key on the Instant Pilot's keyboard.



closes the selected topic, one step up in hierarchy

opens the selected topic

next sub topic, one step down in hierarchy

navigates to the previous sub topic

exits the online help

Figure 19 Online Information System - Entry Screen

On the following screen, different views are shown within the Online Information System.

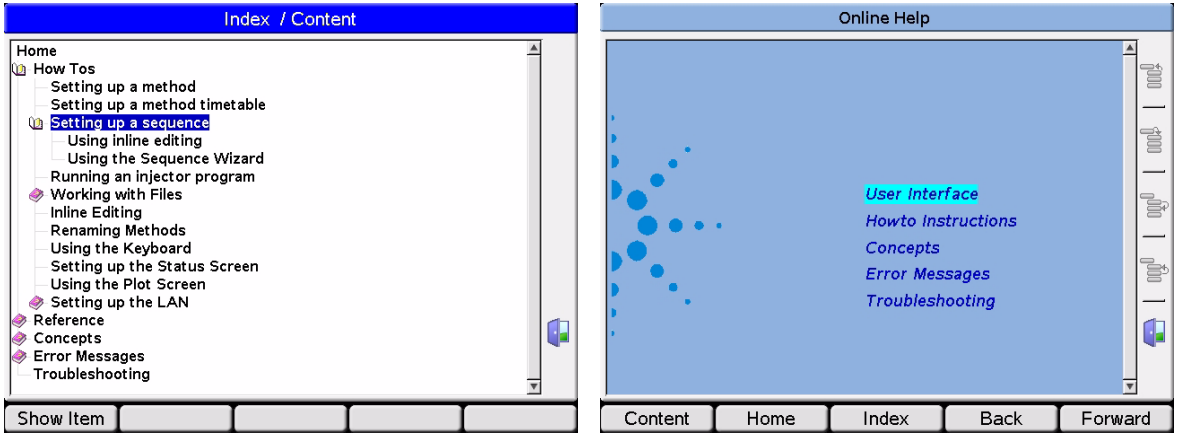


Figure 20 Online Information System - Content (left) / Home (right)

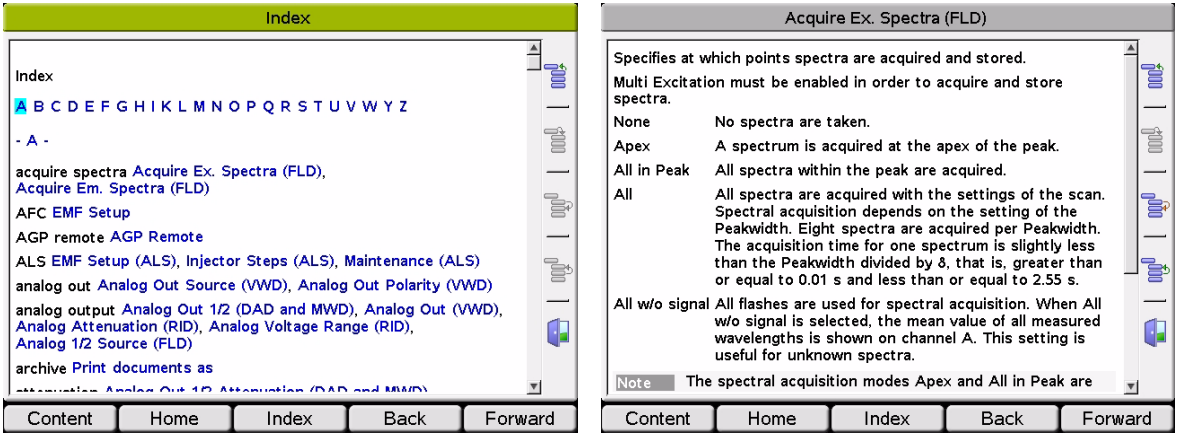


Figure 21 Online Information System - Index (left) / Details (right)

Table 5 Online Help - Functions of Keys

Button	Description
OK key or ↵	navigates to the selected (focussed) link
Esc	exits the online help
← or→	moves the curser to previous or next link
↑ or ↓	moves the curser up or down to a link
Content	shows the content as book structure (How Tos, Reference, Concepts, Error Messages/Troubleshooting)
Home	start page of the online information system
Index	opens the alphabetical index
Back	goes to previous screen (toggle back)
Forward	goes to next screen (toggle forward)

Basic Operational Concept of the Instant Pilot

Below are is the new operation concept of the Instant Pilot described.

Configuration

These parameters allow setup of the instrument configuration. Typically, these configurations are linked to properties of the instrument (e.g. module names, flow path volumes, analog output configuration, LAN address) that are set up only at installation or after modification of the instrument setup.

Method & Timetable

All parameters that have an influence on the analysis result. Chemists change these parameters to set up optimal conditions for a certain analysis.

Control Button

All control menu items directly trigger a day-to-day action on the instrument outside an analysis. The control menu can be opened in major screens via the Control button. Typical functions are detector balancing, or getting the instrument in a “ready for analysis” state.

Diagnosis

Diagnosis tests allow the checking of proper operation. They only report the state of a module with a passed / failed result and do not modify anything on the instrument.

Maintenance

Maintenance shows the logs for maintenance-relevant events, allows access to EMF (early maintenance) settings and functions needed for maintenance tasks (e.g. calibration routines, parts information).

Getting Started

NOTE If additional details are required on a specific topic/function/parameter not mentioned in this document, please use the Instant Pilot's Online Information System (i), see "The i (info) key - Online Information System" on page 36.

Starting the Instant Pilot the first time displays the Setup Wizard shown in Figure 22.

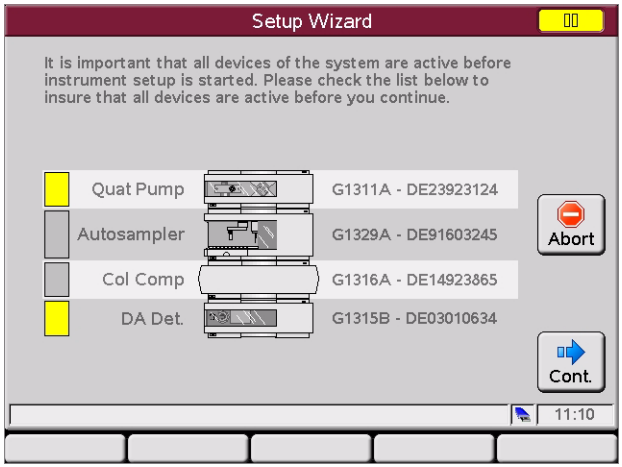


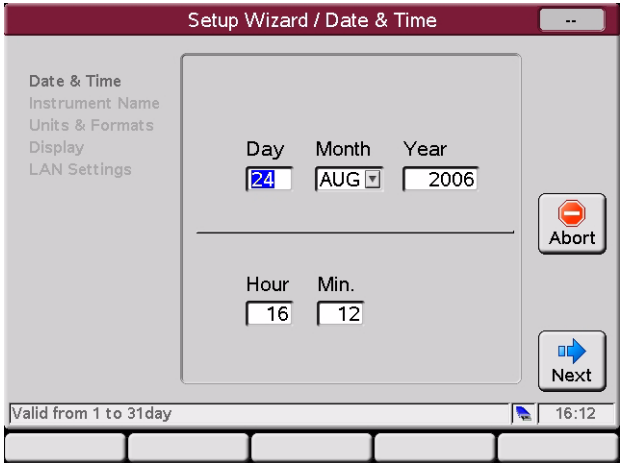
Figure 22 Getting Started - Setup Wizard

The display shows the actual connected (and powered up) Agilent modules. The color gives the current STATUS (yellow = not ready, gray = ready, green = run, red = error).

In the bottom right, the current time and the USB Flash Drive icon is shown. If a USB Flash Drive is connected, the icon is shown as active (blue).

Select **Continue** to continue the setup or **Abort** to close the Setup Wizard.

The next setup screens allow you to change the Date & Time, Units & Formats and the Display. Use the Direction keys for moving to the fields and **Edit** or **OK** to open the selection fields.

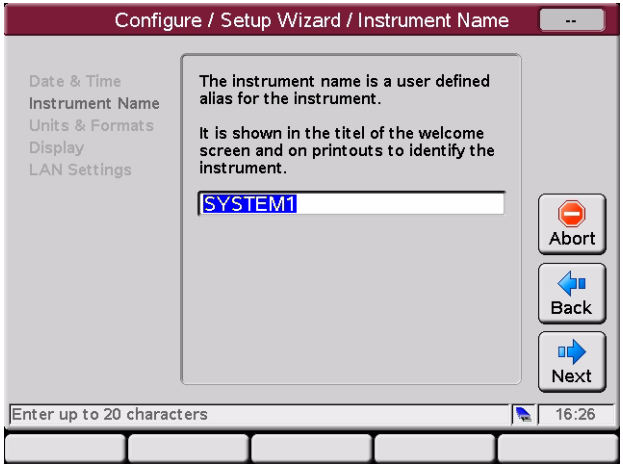


date

time

Figure 23 Getting Started - Setup Wizard - Date & Time

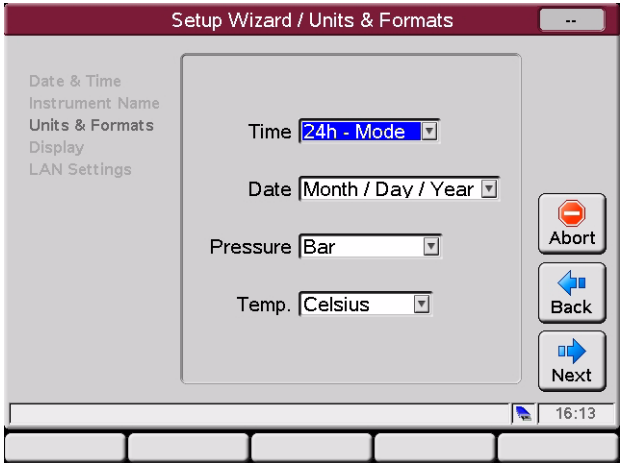
NOTE Upon startup, the modules synchronize their internal clocks. The clocks can also be synchronized by an external chromatographic data system, like the Agilent ChemStation.



System name can be entered

Figure 24 Getting Started - Setting a System Name

A system name will be displayed on screens and printouts as identifier.



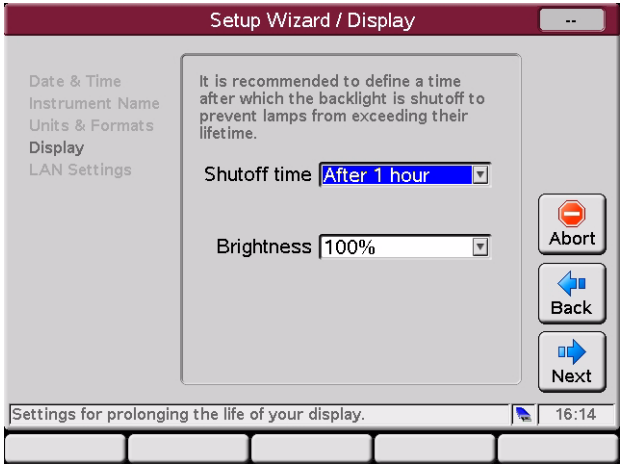
24/12 h

Month/Day/Year
Day.Month.Year

Bar / PSI / kPa

Celsius / Fahrenheit / Kelvin

Figure 25 Getting Started - Setup Wizard - Units & Formats

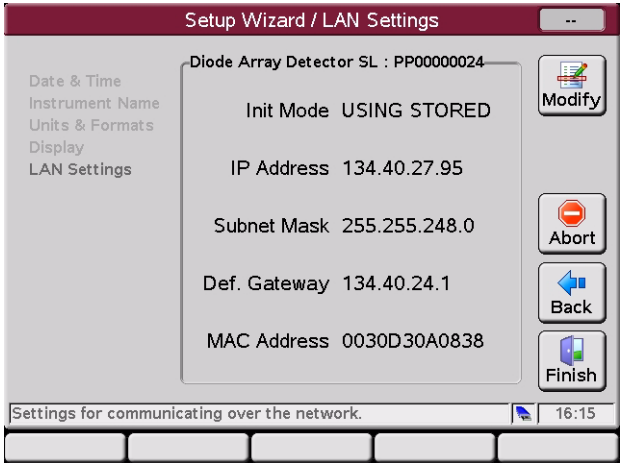


After 1 / 10 / 30 / 60 minutes / No shutoff

10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100%

Figure 26 Getting Started - Setup Wizard - Display

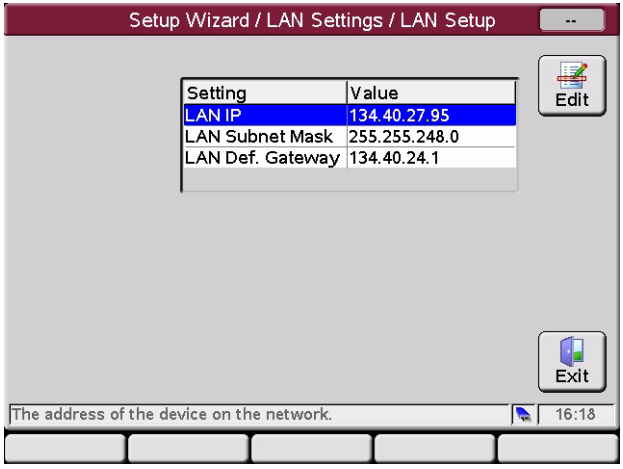
The next screen shows the LAN settings of an additional MIO card that has been identified in the system (may not been connected to LAN).



allows modifications of the settings. For parameters, refer to the installed LAN card's documentation.

Figure 27 Getting Started - Setup Wizard - LAN settings

The next screen shows the actual LAN settings used for communication with the system/module.



to change the settings move to the line and press OK to edit the settings. Then press Done to write down the new values.

closes the setup

Figure 28 Getting Started - Setup Wizard - LAN setup

Finally, the Welcome or the Configuration screen is displayed.

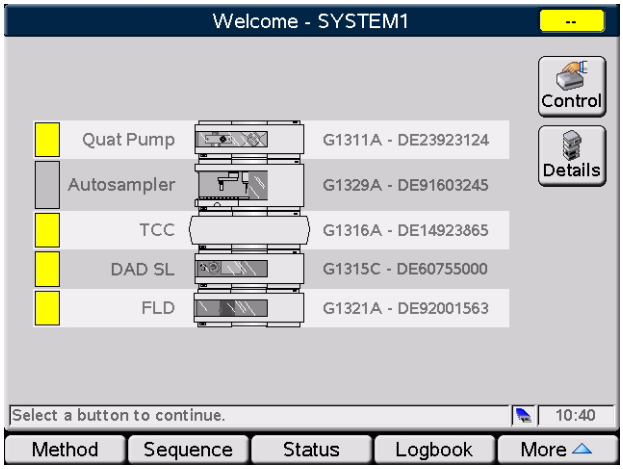
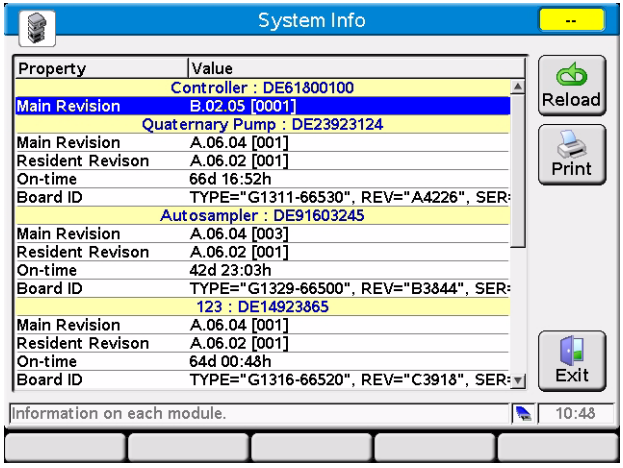


Figure 29 Getting Started - Welcome Screen

The next time the Instant Pilot is started, it will start with the Welcome screen. To activate the setup wizard again, select **More**, **1 - Configure**, **System**, **Setup** to open the Setup Wizard or use System or Controller or a module to change the parameters.

System Information

To gather information about the Instant Pilot and the Agilent modules, press the **Details** button from the Welcome screen.



updates the displayed information

prints the displayed information to the USB Flash Drive

leaves the screen

Figure 30 Getting Started - System Infuse

The screen contains information about serial numbers and firmware revisions, On-time and Board ID) of the modules. Some modules may show additional information (e.g. the G1316A Column Compartment shows an installed column switching valve or a module with installed LAN interface card shows the LAN address).

Depending on the number of modules, you may have to scroll through the display.

Using the **Print** button, all displayed information is saved to the USB Flash Drive into folder \PRINTOUT as SYSINFO.MHT.

Method Information

To view/edit the method information, press the **Method** button from the Welcome screen.

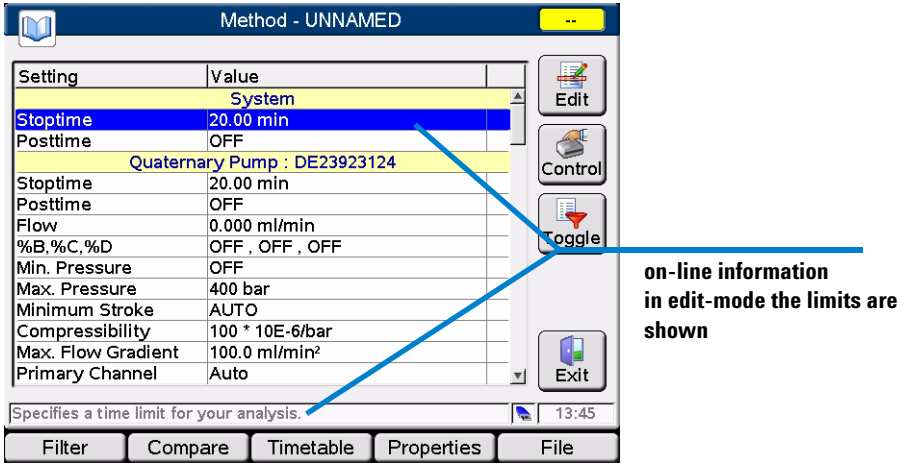


Figure 31 Method Screen

The screen displays complete or filtered information about module settings and parameters of all modules.

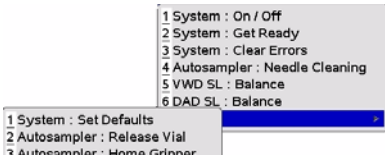
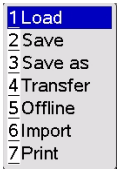
Depending on the number of modules, you may have to scroll through the display.

To change a parameter, scroll down to the field and press **Edit** or **OK**.

Using the **Toggle** button switches between filtered and unfiltered view.

The **Properties** button opens the history / protection of the current method, see "Method File Protection" on page 91.

Table 6 Method - Functions of Keys

Button	Description
Edit or OK	lets you edit a parameter field
Control	opens a menu to control certain module/system activities (depends on the connected modules). 
Toggle	switches between filtered and unfiltered view.
Exit or Esc	exits the method screen
Filter	used to create and edit filters. Filters are stored together with the method. When a filter is selected, only the parameters that were selected in this filter are shown on the method screen.
Compare	a tool that allows you to compare two methods. The differences are shown in a list by displaying the values from both methods. Using the same color for method names and method parameters does the mapping between them. You can copy parameters between the two selected methods using the Copy buttons.
Time Table	used in the currently shown method. The timetable can be edited in the timetable screen and is stored together with the method. You can edit lines, copy / paste lines, delete lines and insert new lines. You can choose if the list should be ordered by module (default) or time.
Properties	The properties of a method can be reviewed in the Properties screen. You can view changes and the reasons for them and change also the protection of the current method.
File	Method parameter sets can be accessed in the internal flash disc or on a USB Flash Drive using the file dialog. Method definitions from a G1323 Control Module can be imported. They will be transferred to internal flash disc instead.  Another feature is the ability to edit methods offline. It is possible to edit methods that were not actually loaded onto the modules. You can select the method you want to edit in the Files dialog and load it into editor by pressing **Load**. You can move files between storage locations by using Copy and Paste buttons. **Print** saves all displayed information to the USB Flash Drive into folder \PRINTOUT as METHOD.MHT.
↑ ↓	moves the curser up or down in a content list.
OK key or ↵	starts the editing of the selected parameter.

Sequence Information

To view/edit the sequence information, press **Sequence** from the **Welcome** screen.

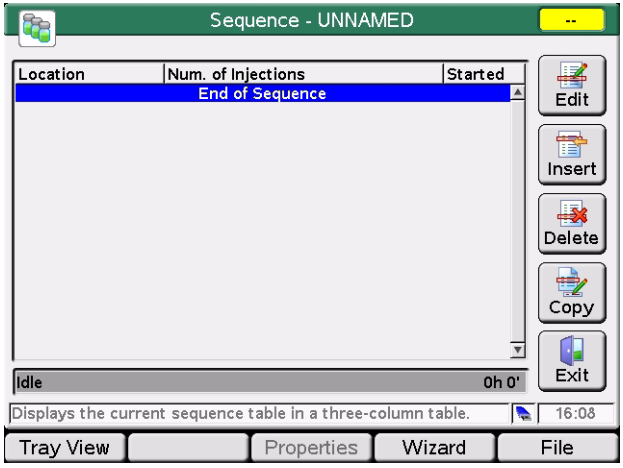


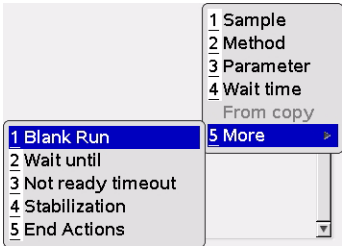
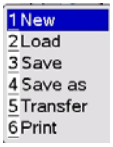
Figure 32 Sequence Screen (normal view)

A sequence consists of a list of items that should be processed from top to bottom. The items are inserted in the list using the **Insert** button or in case of samples and calibration samples by using the **Wizard**. The Sequence can be edited using the **Edit**, **Delete** or **Copy** buttons.

The **Tray View** button shows the current sequence's status graphically.

The **Properties** button opens the history / protection of the current sequence, see "Sequence - File Protection" on page 108.

Table 7 Sequence - Functions of Keys

Button	Description
Edit	
Insert	inserts a new line with an actions from a menu (for details refer to Instant Pilot's Info System). 
Delete	deletes a selected sequence line
Copy	copies a selected sequence line
Exit or Esc	exits the screen
Tray View	shows the current sequence's status graphically.
Properties	The properties of a sequence can be reviewed in the Properties screen. You can view changes and the reasons for them and change also the protection of he current sequence. See also "Sequence - File Protection" on page 108.
Wizard	The wizard allows easy definition of sample ranges and calibration processing. It starts with the input of the location.
File	Sequence parameter sets can be accessed in the internal flash disc or on a USB Flash Drive using the file dialog. 
↑ ↓	moves the curser up or down in a content list.
OK key or ↵	opens the selected parameter.

Status Information

To view/edit the Status information, press **Status** from the **Welcome** screen.

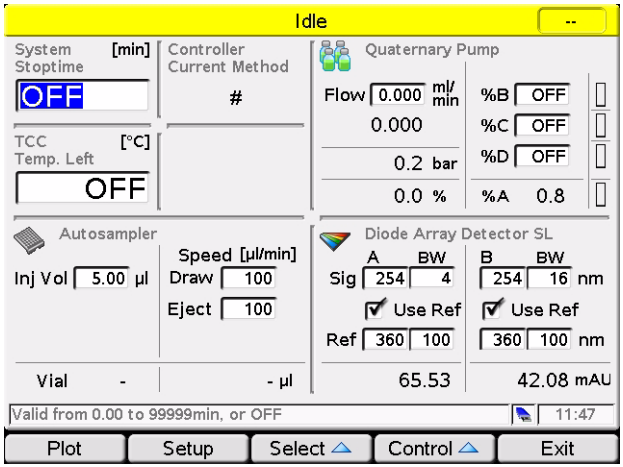


Figure 33 Status Screen (Default/Defined)

The **Status** screen is a configurable overview of the instrument status. You can view actual values/states and edit parameters.

The screen is divided into four tiles. Each tile itself can also hold up to four smaller tiles. The Instant Pilot automatically chooses the size of the tiles based on the selection.

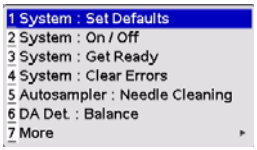
The display shows the actual connected (and powered up) Agilent modules. The title color gives the current STATUS (yellow = not ready, gray = ready, green = run, red = error).

The dialog title shows the instrument status in color and with text.

NOTE

When this screen has not been setup before, it will show from each module in the system one or more signals/parameters. For optimization of the view use "Setup of a Status Information Screen" on page 52.

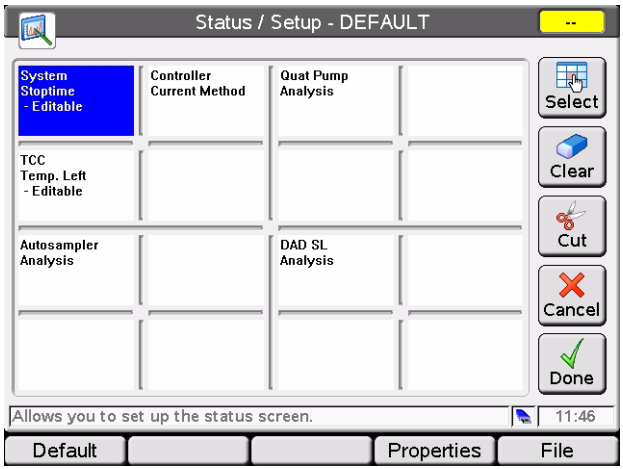
Table 8 Status - Functions of Keys

Button	Description
Plot	shows different signals of the connected modules over time. The signals are user-selectable, can automatically be rescaled for best on-screen fitting.
Setup	lets you set up the views.
Select	one of the last 4 setups can be loaded.
Control	opens a menu to control certain system activities (for details refer to Instant Pilot's Info System). 
Exit or Esc	exits the Status screen
← →	moves the curser up or down to an editable field
↑ ↓	moves the curser up or down in a content list
OK key or ↵	edits the selected parameter

Setup of a Status Information Screen

When the Status Information screen has not been setup before, it will show from each module in the system one or more signals/parameters (default).

Press the **Setup** button.



allows the selection of a signal/parameter.

clears a selected field.

cuts a selected field to be pasted to another position.

leaves this screen without changes.

leaves this screen with all changes.

File: load/save a setup.

Default: default setup based on system

Properties: history and protection

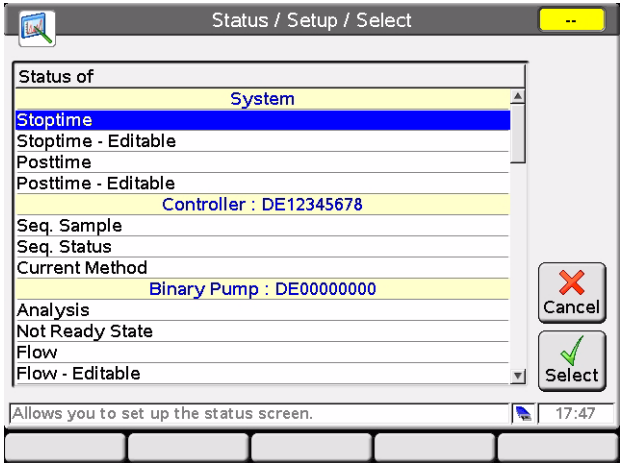
Figure 34 Status Screen (Setup)

The status view setup shows tile types as "... - editable" and "Analysis" (see Figure 35). Entering the setup select dialog now focuses the currently selected tile's entry in the list or - if it is an empty tile - the last selected entry.

In the selection list the tile types have the same naming as in the setup dialog. "... - editable" to have a large or small tile editable and "Analysis" for the large analysis tiles.

In the setup dialog it is checked on "Done" that an analysis tile is alone in a large quadrant.

Move to a field and press **Select**.



leaves this screen without changes.

select a signal/parameter.

Figure 35 Status Screen (Select)

From this list select a signal/parameter and press **Select**. The selection will be taken for the selected window.

Figure 36 shows the relation of the windows in the **Setup** screen versus displayed windows.

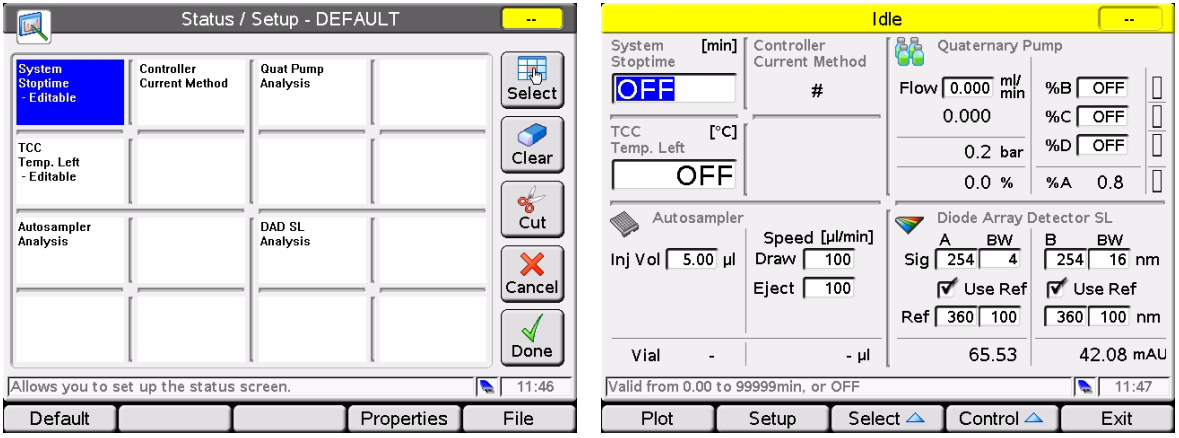
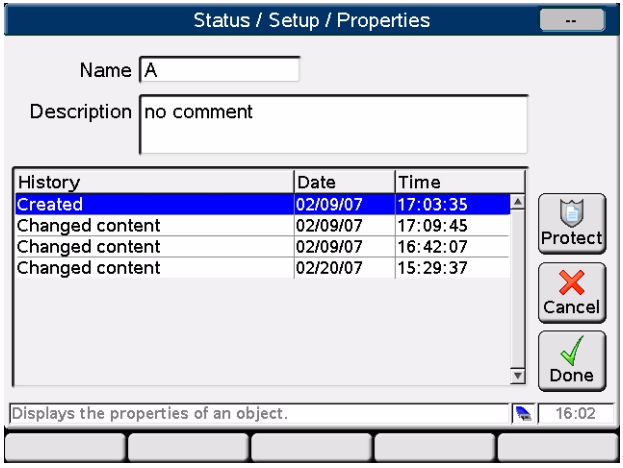


Figure 36 Status Screen (Selection vs. Displayed)

Press **Properties** on the **Setup** screen to access the history of the current status view changes and the protection of the status view.

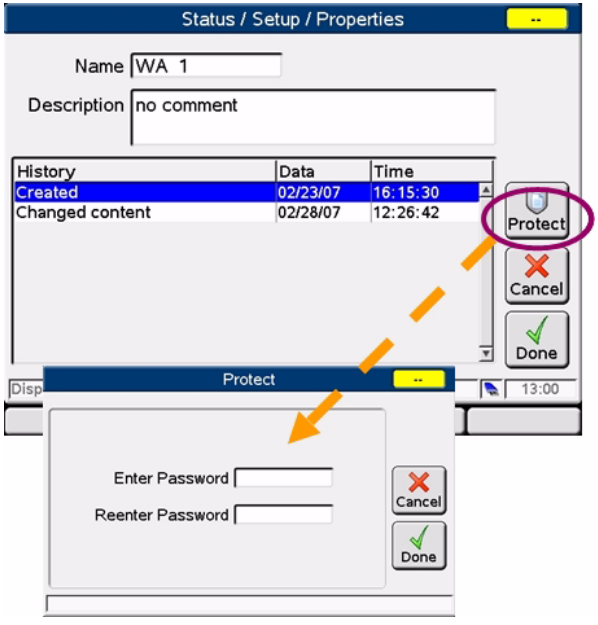


protect /unprotect a status view with a password.

leaves this screen without changes.

select a signal/parameter.

Figure 37 Status Screen (Properties / History)



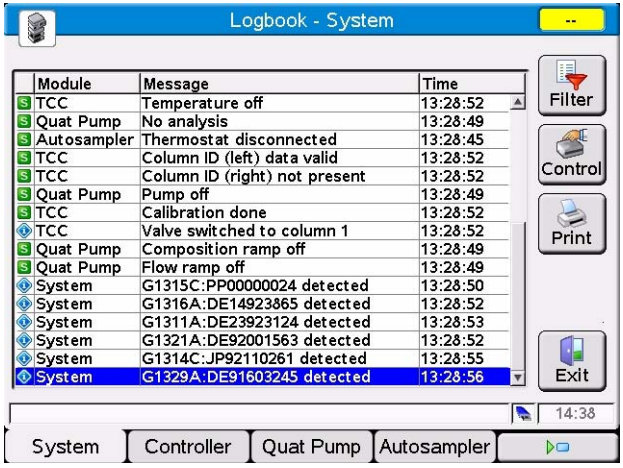
protect / unprotect a status view.

enter a password

Figure 38 Status Screen (Protection)

Logbook Information

To view/change the Logbook information, press **Logbook** from the **Welcome** screen.



to define what is displayed.

opens a menu to control certain system activities.

prints the logbook to a file on the USB Flash Drive

leaves this screen.

system or module specific information

Figure 39 Logbook Screen

The **Logbook** screen is a configurable overview of the information, internal sequences, error, maintenance, system and Early Maintenance Feedback (EMF) messages.

To configure the view, press **Filter**.

Control opens a menu to control certain system setting/activities.

To leave the screen, press **Exit** or **Esc**.

Press **Print**. The logbook is saved to a connected USB Flash Drive. The text is written and saved into folder \PRINTOUT as LOGBOOK.MHT or LOGBOOK.HTM (see Figure 40 on page 56), defined in the Configuration settings (see “Printing To USB Flash Drive” on page 78). Printing can then be performed by opening the file with a PC.

Table 9 on page 56 shows the possible icons/events.

Table 9 Legend of Logbook Icons/Entries

	status change event
	Info event
	error event
	EMF (Early Maintenance Feedback) event
	sequence event

Agilent Technologies SYSTEM1 04/13/07 13:07

Instrument Logbook

Class	Date	Time	Module	Message
S	04/13/07	12:51:07	DAD SL	Lamp off
S	04/13/07	12:51:07	DAD SL	VIS lamp off
S	04/13/07	12:51:18	TCC	Temperature off
S	04/13/07	12:51:18	TCC	Column ID (left) data valid
S	04/13/07	12:51:18	TCC	Column ID (right) data valid
S	04/13/07	12:51:14	Quat Pump	Prerun
S	04/13/07	12:51:14	Quat Pump	No analysis
S	04/13/07	12:51:18	TCC	Calibration done
S	04/13/07	12:51:14	Quat Pump	Pump off
I	04/13/07	12:51:18	TCC	Valve switched to column 2
S	04/13/07	12:51:14	Quat Pump	Composition ramp off
S	04/13/07	12:51:14	Quat Pump	Flow ramp off
S	04/13/07	12:51:04	Autosampler	No service mode
S	04/13/07	12:51:18	FLD	Lamp off
S	04/13/07	12:51:18	FLD	Reference on
S	04/13/07	12:51:18	FLD	Calibration done
S	04/13/07	12:51:04	Autosampler	Initialization done
S	04/13/07	12:51:18	FLD	Economy mode disabled
I	04/13/07	12:51:18	FLD	Cell type 1 detected
S	04/13/07	12:51:04	Autosampler	Thermostat disconnected
I	04/13/07	12:51:10	System	G1315C:PP00000024 detected
I	04/13/07	12:51:11	System	G1311A:DE23923124 detected
I	04/13/07	12:51:18	System	G1316A:DE14923865 detected
I	04/13/07	12:51:19	System	G1321A:DE92001563 detected
I	04/13/07	12:51:21	System	G1329A:DE91603245 detected
--- End of Logbook ---				

Figure 40 Logbook Screen - saved to USB Flash Drive

Configuration

To view/change the configuration, press **More** from the Welcome screen and select **Configuration** from the menu.

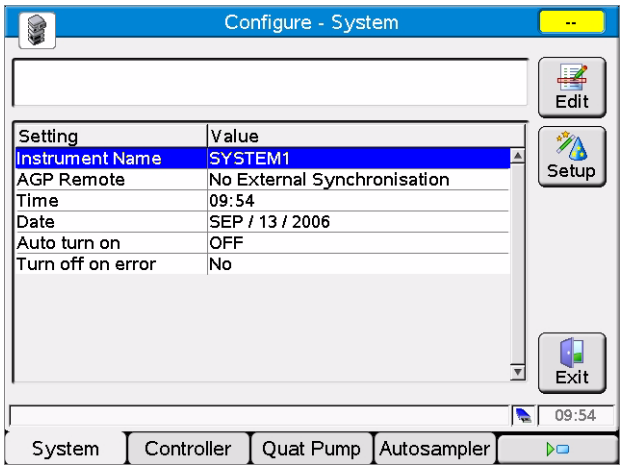


Figure 41 Configuration of System

To change the system configuration, move to the line you want to change and press **Edit**. After doing the changing, press **OK** or **Done**.

The Instrument Name will appear as identifier on the screens (e.g. Welcome) or printouts/reports.

To start the Setup Wizard (see also "Getting Started" on page 40), press **Setup** (in system).

To change a module specific setting, select the appropriate module view.

Maintenance Information

To view/change the Maintenance information, press **More** from the **Welcome** screen and select **Maintenance** from the menu.

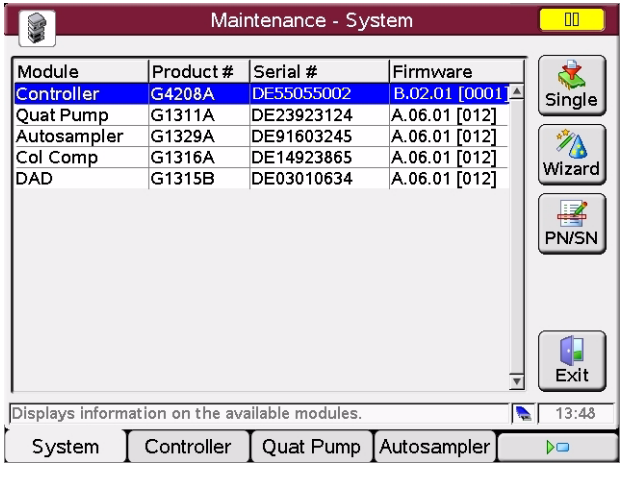


Figure 42 Maintenance Screen

The **Maintenance System** screen shows a list of all modules in the system with their names, product and serial numbers, and the firmware revision.

You can update the firmware using **Update Wizard**, which allows updating all modules of the system at once, or using **Single** to update a selected module. The firmware must be on an inserted and activated USB Flash Drive in its root directory.

On the module-specific screens you can

- see the Early Maintenance Feedback (EMF), error and maintenance events,
- set the EMF limits (see "Early Maintenance Feedback (EMF)" on page 60),
- do module maintenance (e.g. calibrations),
- add maintenance activities into the permanent log,
- identify the module in the stack (flashing LED).

Press the **Exit** button or **Esc** key to leave the screen.

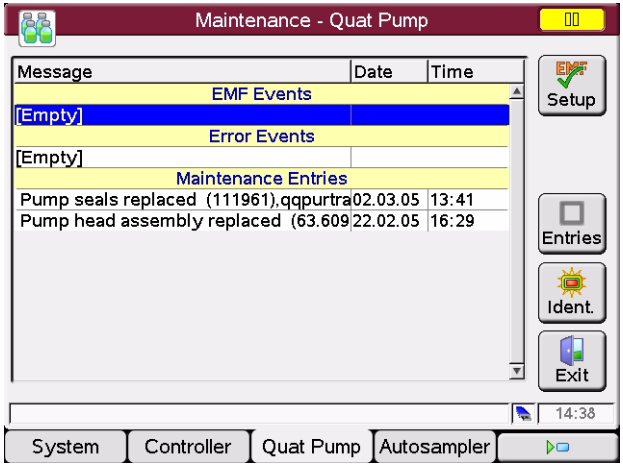


Figure 43 Maintenance Screen - Pump

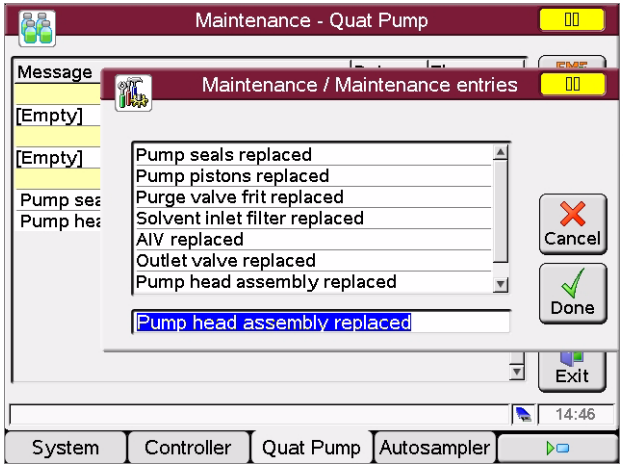


Figure 44 Maintenance Screen - Select Maintenance Activity

Early Maintenance Feedback (EMF)

In case you have set the EMF limits and the limit has been reached, a message pops up.

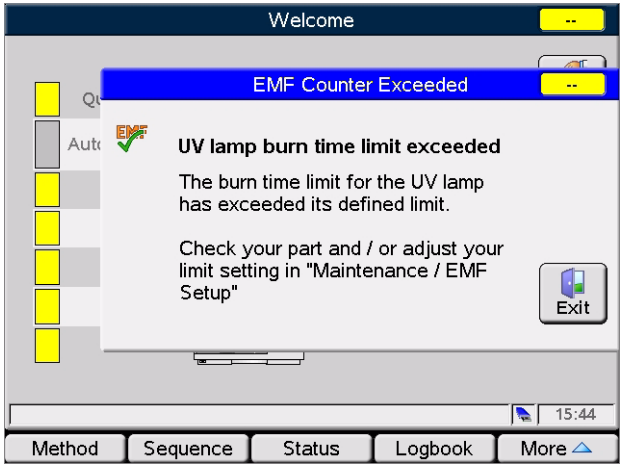


Figure 45 Early Maintenance Feedback (EMF) - Message

The limits can be set in the **EMF Setup** screen.

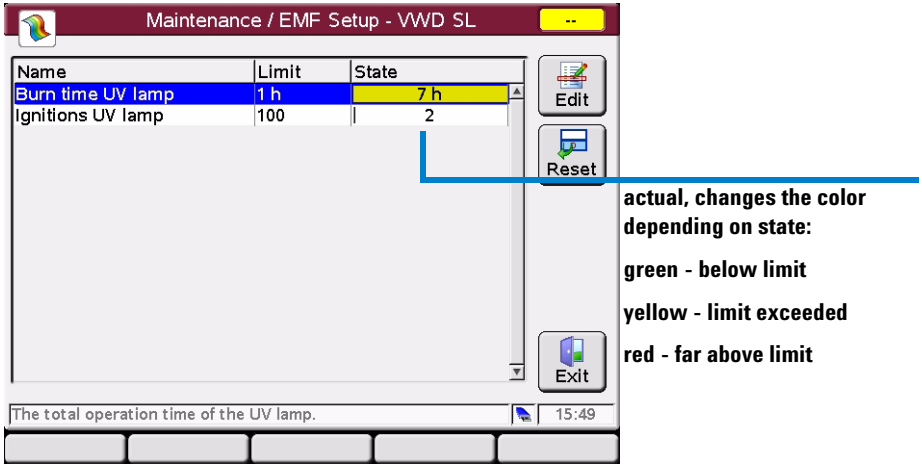


Figure 46 Early Maintenance Feedback (EMF) - Setting the limits

Product Number and Serial Number Change

NOTE

When the main board has to be replaced, the new board does not have a serial number. For some modules (e.g. pumps or auto samplers) the type has to be changed (multiple usage boards). Use the information from the serial number plate of your module. The changes become active after the reboot of the module.

This function should be used by Agilent trained personnel only. Otherwise, the module may be no longer accessible.

Details can be found in the manual provided with the HPLC module.

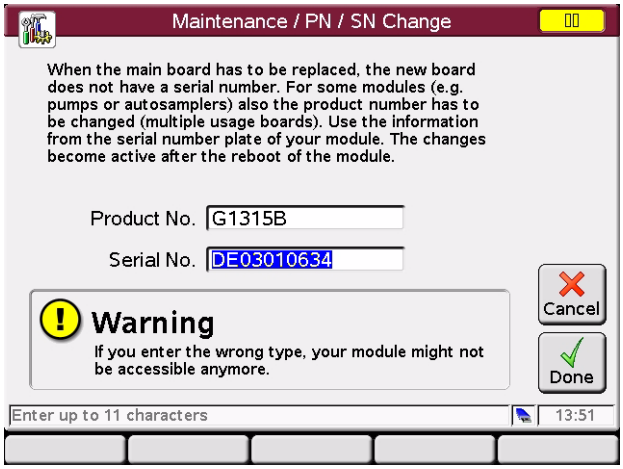


Figure 47 Maintenance Screen - Product Number and Serial Number Change

Diagnosis Information

To perform a module-specific test, press **More** from the **Welcome** screen and select **Diagnosis** from the menu.

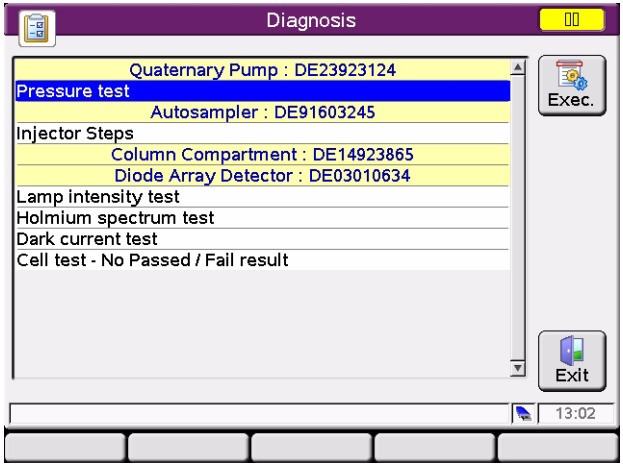


Figure 48 Diagnosis Screen

The **Diagnosis** screen shows a list of all modules in the system with their available tests.

To select a test, scroll down to the list and press **Exec** or **OK** to start the test.

A test report is shown at the end of the test.

Press **Exit** or **Esc** to leave the screen.

Turning Modules ON/OFF/Standby

To switch a module ON or OFF or into STANDBY, press **Control** from the **Welcome/Method/Status/Logbook** screen.

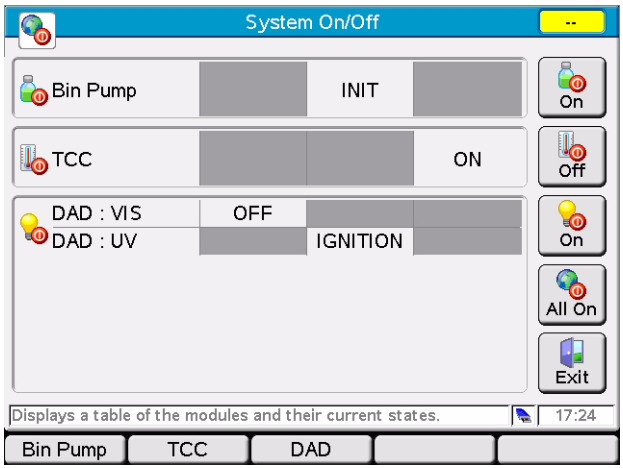


Figure 49 System On/Off screen

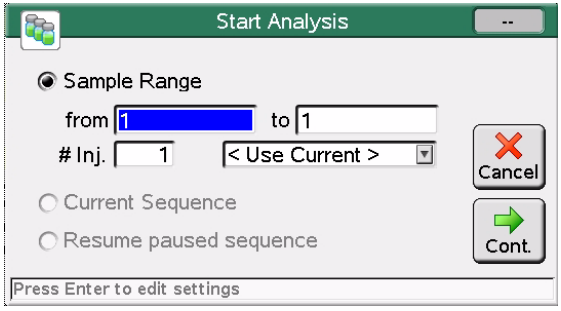
The three on/off states - off, init/ignition and on - are grouped vertically to have a fast overview of the system's on/off state.

The modules are grouped by modules types - Pumps, TCC (temperatures) and Detectors (lamps) - with a frame next to the buttons on the right side. The correlation to the buttons on the right side gets only lost, if pumps or temps group has more then 2 modules. Then the following groups are shifted downwards to free up the required space. For high numbers of modules, the overall modules list gets a scroll bar.

Start Analysis Screen

With firmware revision B.02.01 and A.05.11 (November 2006) the Start Analysis screen, known from the G1323B Control Module, has been enhanced. It allows to set up a simple analysis by

- pressing the START key
- adding the vial range and number of injections
- selecting the current or a different method (internal or from USB Flash Drive)
- use of current sequence (if active)
- resume paused sequence



leaves this screen

starts the Analysis (when all modules are ready)

Figure 50 Analysis Start Screen

Switching from G1323A/B Control Module to Instant Pilot

The Instant Pilot is a further development of the G1323A/B Control Module which has been reworked and structured in a new modern way (more like an Agilent ChemStation). Therefore some areas of the G1323A/B Control Module appear in different areas. Table 10 shows the main changes.

Table 10 G1323A/B Control Module vs. Instant Pilot Functions

G1323A/B Control Module	G4208A Instant Pilot	Comment
Analysis screen	Welcome screen - Status	
Analysis screen - Settings / Method	Welcome screen - Method	
Analysis screen - Time Table	Welcome screen - Method - Time Table	
Analysis screen - Sequence	Welcome screen - Sequence	
Analysis screen - Vial range	Start button - Sample Range	
Analysis screen - ON/OFF (on various screens)	Control button - System ON/OFF and System: Get Ready (on various screens)	
System screen	Welcome screen - Logbook	
System screen - Control	Control button (on various screens)	
System screen - Configuration	Welcome screen - More - Configuration	
System screen - Tests	Welcome screen - More - Maintenance/Diagnostics	
System screen - Records	Welcome screen - Details Welcome screen - More - Maintenance - System	System Info Product number, serial number, board ID and firmware revision
System screen - Records - EMF	Welcome screen - More - Maintenance - [Module] - EMF Setup	
System screen - Records - Logbooks	Welcome screen - Logbook Welcome screen - More - Maintenance - [Module]	System, Controller, Modules EMF Events, Errors Events and Maintenance Entries

Table 10 G1323A/B Control Module vs. Instant Pilot Functions

G1323A/B Control Module	G4208A Instant Pilot	Comment
System screen - Records - FW Update	Welcome screen - More - Maintenance - System - Single/Wizard - PN/SN	Firmware updates and Product and Serial Number change
Status screen	Welcome screen - Status	
Plot screen	Welcome screen - Status - Plot	
Spectrum (DAD/MWD/VWD/FLD)	Control button (on various screens)	

Information on Newer Firmware Revisions

New Features with B.02.01/A.05.11

The following features have been implemented with the firmware release in November 2006.

- A.05.11 supports the Agilent 1100/1200 modules with firmware A.05.09/10 and A.05.11/12 installed (not compatible with A.06.xx and B.01.xx).
- Print to USB Flash Drive, refer to "Printing To USB Flash Drive" on page 78
- added Sample Range in Start Analysis screen, refer to "Start Analysis Screen" on page 64
- Instrument Name added (Start-up Wizard / More/Configuration/System, see "Getting Started" on page 40)
- Injector Program, refer to "Injector Program" on page 98
- DAD/MWD/VWD Spectrum (Control), refer to "DAD/MWD/VWD/FLD Spectrum" on page 116
- DAD/MWD Wavelength Calibration Test (Maintenance)
- Autosampler Transport Alignment (Maintenance)
- FLD Intensity Test (Diagnosis)
- support of new modules G1329B ALS/G1315D DAD/G1365D MWD (for B.02.01 only)
- Toggle feature allows switching between filtered an unfiltered method view (see "Filtering Method Information" on page 86).

Compatibility Issues with B.02.01

The Instant Pilot firmware revision B.01.xx and B.02.xx is not compatible with any 1100/1200 module firmware A.05.xx and below.

Compatibility Issues with A.05.11

The Instant Pilot firmware revision A.05.11 is based on the feature set of the B.02.01. The limitations below result from the changes between the 1100 and 1200 series firmware revisions A.05.xx and A.06.xx/B.01.xx.

NOTE The Instant Pilot firmware revision A.05.11 is not compatible with any 1100/1200 module firmware A.06.xx/B.01.xx and above.

Table 11 Compatibility Issues with A.05.11

Modules	Comment
Autosampler (G1313A/G1329A/G1389A/G2260A)	no "Sample Illumination" below A.06.02
Autosampler SL (G1329B)	Introduced with A.06.04, not supported (1)
Well Plate Sampler (G1367A/G1377A)	no injector purge kit method parameters below A.06.01
High Performance Autosampler (G1367B/G1367C)	Introduced with A.06.02, not supported (1)
Dual Loop Autosampler (G2258A)	Introduced with A.05.09, no overlapped injection method parameter ("Overlap") below A.05.11
Binary Pump SL (G1312B)	Introduced with A.06.02, not supported (1)
Variable WL Detector (G1314B/G1314C)	Introduced with A.06.02, not supported (1)
Diode Array Detector SL (G1315C/G1365C)	Introduced with B.01.01, not supported (2)
Diode Array Detector (G1315D/G1365D)	Introduced with B.01.04, not supported (2)
Column Compartment SL (G1316B)	Introduced with A.06.02, not supported (1)
Injector Purge Kit (G1373A)	Introduced with A.06.01, not supported
2Pos/6Port Valve SL (G1158B)	Introduced with A.06.02, not supported
6Pos/7Port Valve (G1156A)	Introduced with A.06.01, not supported

(1) must be converted to a “A” version and downgraded to A.05.09/10 or A.05.11/12.

(2) cannot be downgraded below initial firmware (new electronic platform).

New Features with B.02.05

The following features have been implemented with the firmware release in May 2007.

- Status View received small editable method parameter tiles and large "G1323-like" module summary tiles based on G1323's analysis screen layout. The default was changed to make use of these new tile types. See "Status Information" on page 50.
  - ALS and WPS now show the actual vial number and injection volume not only during injection, but preserves it and shows it continuously during analysis.
  - New "Wavelength" status tiles show the actual used wavelength for DAD, MWD or VWD. It could defer from the method wavelength shown in the existing "Signal" tiles, when a timetable is used to change the set wavelength over runtime.
- System On/Off screen simplified to a pure system on/off dialog. See "Turning Modules ON/OFF/Standby" on page 63.
- Support of some, but not all functions of the Fraction Collectors (G1364A, G1364B, G1364C, and G1364D). The Instant Pilot will be used together with ChemStation or Purification Software to allow manual fraction triggering.

  Beside this the Instant Pilot will support:
  - the events and error messages and basic maintenance functionality.
  - clusters of up to 3 collectors plus one recovery collector.

  Not supported are:
  - Fraction Parameters: Location setup (Reserved Loc., Recovery Loc., Fraction...)
  - Trigger Modes
  - Configuration: Delay setup / Calibration/ Tray setup / Cluster setup
  - Tests
  - Control Functions
  - Status Information
  - Method
  - Import from G1323B
  - Editing.

- Sequence. See “Sequence - Automating Analyses” on page 103.
  - overview of tray in current sequence’s status is shown graphically
  - the current sample is colored alternating
  - view and print of sample ranges
- Well Plate Sampler: Dialog allows to view plate definitions and setup of plate definitions.
- UIB: visible as supported module. It does not have any settings or features by its own.
- Refractive Index Detector: Two control functions for are added to control the recycle and the purge valve
- Fast Scrolling in Lists: All lists are now speeding up scrolling after a few lines if the up or down button remains pressed.
- File Protection (Method/Sequence/Status) reworked. See “Setup of a Status Information Screen” on page 52, “Method File Protection” on page 91 and “Saving a Sequence” on page 107.
- Diagnosis:
  - Pumps: Added leak test procedures to the diagnosis screen. Preparation is described in help. Preparation steps (like purging the pump) are NOT included in the automatic actions list itself. For Binary STD/SL, Isocratic, Quaternary, Micro, Nano and Prep pump).
  - VWD: Intensity Test with Raw Sample / Reference Signal Counts.
  - FLD: Calibration Printing: The FLD deviations and the calibration history can be printed.
  - FLD: Excitation / Emission Spectrum (view and print). See “FLD Spectrum” on page 117.
- USB Flash Drive - Handling of Unsupported Formats. If an unsupported format on a newly inserted USB flash drive is found, the Instant Pilot brings up a warning and asks the user to format the drive in a proper way. See “Handling of Unsupported USB Flash Drive Formats” on page 77.

Compatibility Issues

The Instant Pilot firmware revision B.02.05 is not compatible with any 1100/1200 module firmware A.05.xx and below.

New Features with A.05.12

The following features have been implemented with the firmware release in June 2007.

- reworked System ON/OFF screen.
  - Simplified to a pure system on/off dialog.
- reworked Status View - the status has two new tile types:
  - small editable method parameter tiles and large 'G1323' module summary tiles based on G1323 analysis screen layout.
  - The status view setup shows these new tile types as '... - editable' and 'Analysis'
  - ALS and WPS now shows the actual vial number and injection volume not only during injection, but preserves it and shows it continuously during analysis.
  - New 'Wavelength' status tiles show the actual used wavelength for DAD, MWD or VWD. It could defer from the method wavelength shown in the existing 'Signal' tiles, when a timetable is used to change the set wavelength over runtime.
  - Entering the setup select dialog now focuses the currently selected tile's entry in the list or - if it is an empty tile - the last selected entry.
  - Properties added (history and lock/unlock status views)
- Automated Fraction Collectors (supported)
  - The Instant Pilot will support some but not all functions of the fraction collectors (G1364A, G1364B, G1364C, and G1364D).
  - The Instant Pilot will be used together with purification software and the most important function will be the manual trigger function.
  - Beside this the Instant Pilot will support the events and error messages and basic maintenance functionalities.
  - Clusters of up to 3 collectors plus one recovery collector (see limitations).
  - Manual Trigger View via Control / System - Manual Trigger (see limitations).
  - Zero Fill Volumes Request
  - Initialize Micro Fraction Collector
  - EMF Counter, Needle Counter will be supported.

  - Generic configuration parameters (module name, LAN, RS232) are supported.
  - Switch temperature On/Off set temperature.
- Automated Fraction Collectors (not supported)
  - Fraction Parameters
  - Location Setup (Reserved Loc., Recovery Loc., Fraction...)
  - Trigger Modes
  - Configuration
  - Delay Setup / Calibration
  - Tray Setup / Well Plate Setup
  - Cluster Setup
  - Tests
  - Control Functions
  - Status Information
  - Method
  - Import from G1323B
  - Editing.
- Sequence: Overview of Tray
  - The current sequence's status is shown graphically
  - View and Print Sample Ranges
- WPS: Custom Well Plate Dialog to view plate definitions and setup custom plate definitions
- RID: Two control functions for the RID are added to control the recycle and the purge valve and the parameters in configuration are removed.
- Method/Sequence/Status Setup File Protection
  - If a file is protected, the user can not edit the currently loaded content or its filter settings.
  - System Info (Details): Board ID of Instant Pilot is shown.
  - Fast Scrolling in Lists
  - All lists are now speeding up scrolling after a few lines if the up or down button remains pressed.
- FLD: Calibration Printing

  - The FLD deviations and the calibration history can be printed from Maintenance/ FLD Calibration Dialog.
- UIB: Visible as supported module. It does not have any settings or features.
- Leak Test (Binary STD (G1312A only), Isocratic, Quaternary, Micro, Nano, Prep)
  - Added leak test procedures to the diagnosis screen. Preparation is described in help. Preparation steps (like purging the pump) are NOT included in the automatic actions list itself.
- VWD: Intensity Test with Raw Sample / Reference Signal Counts
  - Added two lines to the VWD intensity test results that show the raw sample and reference signal counts right before the intensity test was started. There is no passed/failed information available for these values. It uses the currently selected wavelength.
- FLD: Excitation / Emission Spectrum (under Control/More)
- USB Flash Drive: Handling of Unsupported Formats
  - If an unsupported format on a newly inserted USB flash drive is found, the Instant Pilot brings up a warning and asks the user to format the drive in a proper way with the IP.

Compatibility Issues

  - The Instant Pilot firmware revision A.05.12 is not compatible with any 1100/1200 module firmware A.06.xx/B.01.xx/B.06.xx and above.

Revision B.02.06 / A.05.13

This release was a maintenance release in August 2007 and fixed known issues.

Compatibility Issues

The Instant Pilot firmware revision B.02.06 is not compatible with any 1100/1200 module firmware A.05.xx and below.

The Instant Pilot firmware revision A.05.13 is not compatible with any 1100/1200 module firmware A.06.xx/B.01.xx/B.06.xx and above.

New Features with B.02.07

The following features have been implemented with the firmware release in August 2008.

- Support for G1314D VWD and G1314E VWD SL+
- Support for G1367D High Performance Autosampler SL+
- Start/stop sequence at/from a selected sequence line.
- Extended FLD wave length range: EX 200 - 1200 nm, EM 200 - 1200 nm

Compatibility Issues

The Instant Pilot firmware revision B.02.07 is not compatible with any 1100/1200 module firmware A.05.xx and below.

New Features with B.02.08

The following features have been implemented with the firmware release in July 2009.

- Support for Agilent 1290 Infinity System
  - G4212A Diode Array Detector
  - G4220A Binary Pump
  - G4226A Autosampler
  - G1316C Thermostatted Column Compartment

NOTE The G1316C TCC for the Method Development application is not fully supported, like switching valves etc.

Compatibility Issues

The Instant Pilot firmware revision B.02.08 is not compatible with any 1100/1200 module firmware A.05.xx and below.

2
Working with the Instant Pilot

This chapter describes the operation of the Instant Pilot.

Using a USB Flash Drive

You can use many USB Flash Drive with USB 1.1 support that can be physically inserted while the Instant Pilot is attached to the Agilent system.

NOTE

Since USB Flash Drives may vary from vendor to vendor or from type to type, incompatibilities can occur. In general, USB Flash Drives from Sandisk and Kingston should work. The USB Flash Drives must be FAT-16 formatted and without encryption. See "USB Flash Drive Kit" on page 168.

See also "Handling of Unsupported USB Flash Drive Formats" on page 77.

1 Open the USB cover.

2 Insert the USB Flash Drive.

The display shows whether the USB Flash Drive is inserted and active by an icon.

not present - grey,
present - blue,
active - yellow with red dot (do not unplug!)

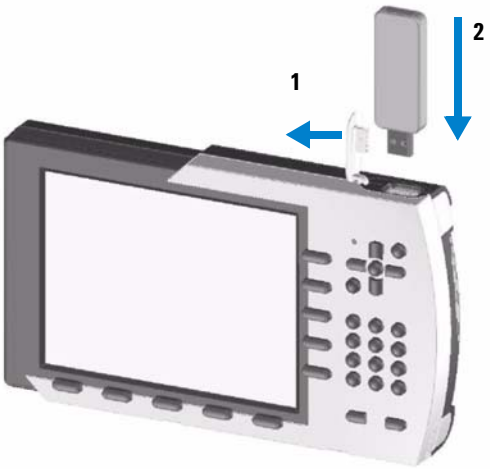


Figure 51 Inserting a USB Flash Drive

Handling of Unsupported USB Flash Drive Formats

If a unsupported format on a newly inserted USB Flash Drive is found, the Instant Pilot brings up a warning and asks the user to format the drive in a proper way.

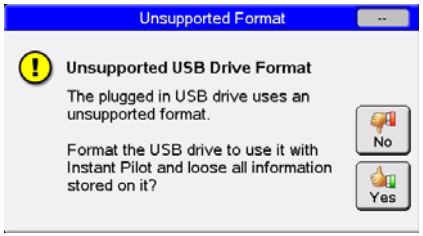


Figure 52 Unsupported USB Flash Drive

When selecting "No", theUSB Flash Drive will be ignored/can not be used in the Instant Pilot, even it is still inserted.

When selecting "Yes", there are two possible responses: formatting succeeds or fails.

NOTE During the format of the USB Flash Drive all stored data currently will be lost.

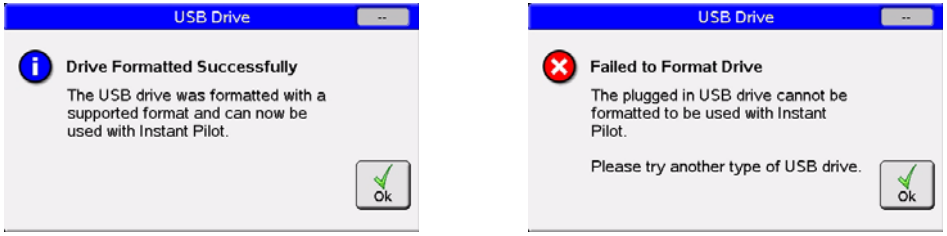


Figure 53 Format of USB Flash Drive succeeded or failed

In case it failed, try a different type of USB Flash Drive or use the Agilent recommended "USB Flash Drive Kit" on page 168.

Printing To USB Flash Drive

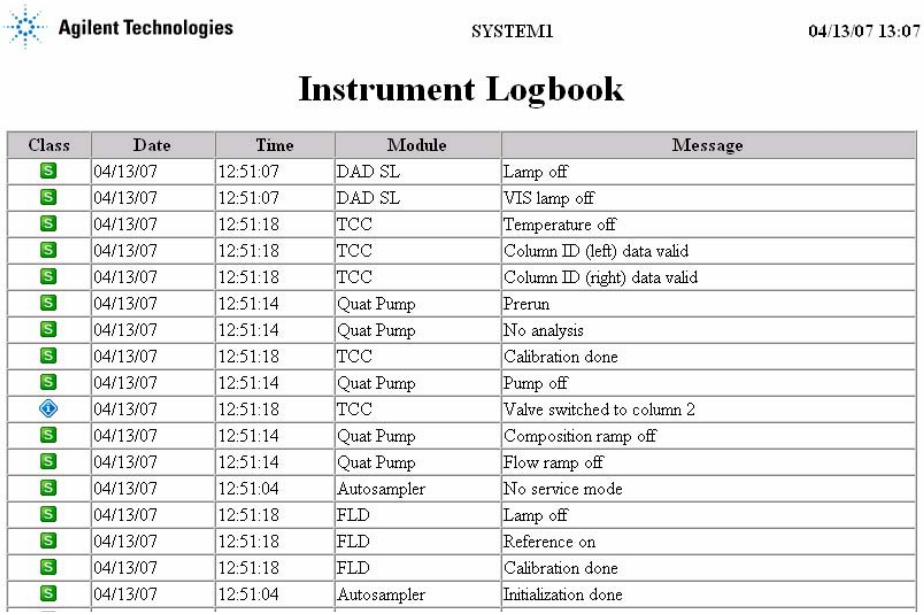
There is no direct printing via a printing device connected to the 1100/1200/1290 system possible. But certain information can be printed to a file that is saved to an USB Flash Drive into a folder \PRINTOUT.

The files are of type .MHT or .HTM, depending on the setting in **Configuration/Controller/"Print document as"**. The difference is:

.MHT	all files of a printout are in a single archive file (preferred)
.HTM	a htm file plus all graphic files are saved separately in a folder with the name of the printout.

The files can be opened with a PC using Microsoft Word or Internet Explorer and printed from there.

The printouts have a header containing date and time, see Figure 54.



Agilent Technologies SYSTEM1 04/13/07 13:07

Instrument Logbook

Class	Date	Time	Module	Message
S	04/13/07	12:51:07	DAD SL	Lamp off
S	04/13/07	12:51:07	DAD SL	VIS lamp off
S	04/13/07	12:51:18	TCC	Temperature off
S	04/13/07	12:51:18	TCC	Column ID (left) data valid
S	04/13/07	12:51:18	TCC	Column ID (right) data valid
S	04/13/07	12:51:14	Quat Pump	Prerun
S	04/13/07	12:51:14	Quat Pump	No analysis
S	04/13/07	12:51:18	TCC	Calibration done
S	04/13/07	12:51:14	Quat Pump	Pump off
◆	04/13/07	12:51:18	TCC	Valve switched to column 2
S	04/13/07	12:51:14	Quat Pump	Composition ramp off
S	04/13/07	12:51:14	Quat Pump	Flow ramp off
S	04/13/07	12:51:04	Autosampler	No service mode
S	04/13/07	12:51:18	FLD	Lamp off
S	04/13/07	12:51:18	FLD	Reference on
S	04/13/07	12:51:18	FLD	Calibration done
S	04/13/07	12:51:04	Autosampler	Initialization done

Figure 54 Example of a Printed Document - Instrument Logbook

The following information can be "printed".

Table 12 Overview of Printable Information

Dialog Name	Button	File Name in \PRINTOUT	Comment
System Details	Print	SYSINFO.MHT	via Details button, see Figure 54 on page 78
Method	File - Print	METHOD.MHT	Contains Method, Timetable, Inj.Programm
Sequence	File - Print	SEQUENCE.MHT	
Logbook	Print	LOGBOOK.MHT	
Plot	Print	PLOT.MHT	via Status button single or multiple, pressure, composition, temperature, detector signals
SCANs			via Control button
• DAD/MWD Scan	Print	DETSCAN.MHT	sample scan
• VWD Scan	Print	DETSCAN.MHT	blank (reference) and sample scan
• FLD Scan	Print	DETSCAN.MHT	Excitation or Emission scan
Calibrations			via More button and Maintenance
• DAD Calibration	Print	DADCALIB.MHT	
• MWD Calibration	Print	MWDCALIB.MHT	
• VWD Calibration	Print	VWDCALIB.MHT	
• FLD Calibration	Print	FLDCALIB.MHT	not implemented yet
Diagnostic			via More button and Diagnosis shows diagram, actions, results and sign-off, see Figure 55 on page 81
• DAD/MWD Intensity	Print	DIAGRES.MHT	
• DAD/MWD Holmium	Print	DIAGRES.MHT	
• DAD/MWD Dark Current	Print	DIAGRES.MHT	
• DAD/MWD Cell Test	Print	DIAGRES.MHT	
• VWD Intensity	Print	DIAGRES.MHT	with Raw Sample / Reference Signal Counts
• VWD Holmium	Print	DIAGRES.MHT	

Table 12 Overview of Printable Information

Dialog Name	Button	File Name in \PRINTOUT	Comment
• FLD Intensity	Print	DIAGRES.MHT	
Pressure Tests			
• ISO Pump, Bin Pump, Micro Pump Normal, Quad Press	Print	DIAGRES.MHT	
• High Flow Pump Press	Print	DIAGRES.MHT	
• Micro Pump Micro Press Test	Print	DIAGRES.MHT	
Leak Tests	Print	DIAGRES.MHT	
• ISO Pump, Bin Pump, Quad Press, Micro Pump, Nano Pump, Prep Pump	Print	DIAGRES.MHT	Preparation is described in Help. Preparation steps (like purging the pump) are NOT included in the automatic actions list itself.

NOTE If reports of the same type generated, the files are named DIAGRES.MHT, DIAGR~1.MHT, DIAGR~2.MHT and so on (DOS-8-character naming convention). Can be renamed.

NOTE For saving/printing of screen shots refer to "Saving a Screenshot to USB Flash Drive" on page 125.

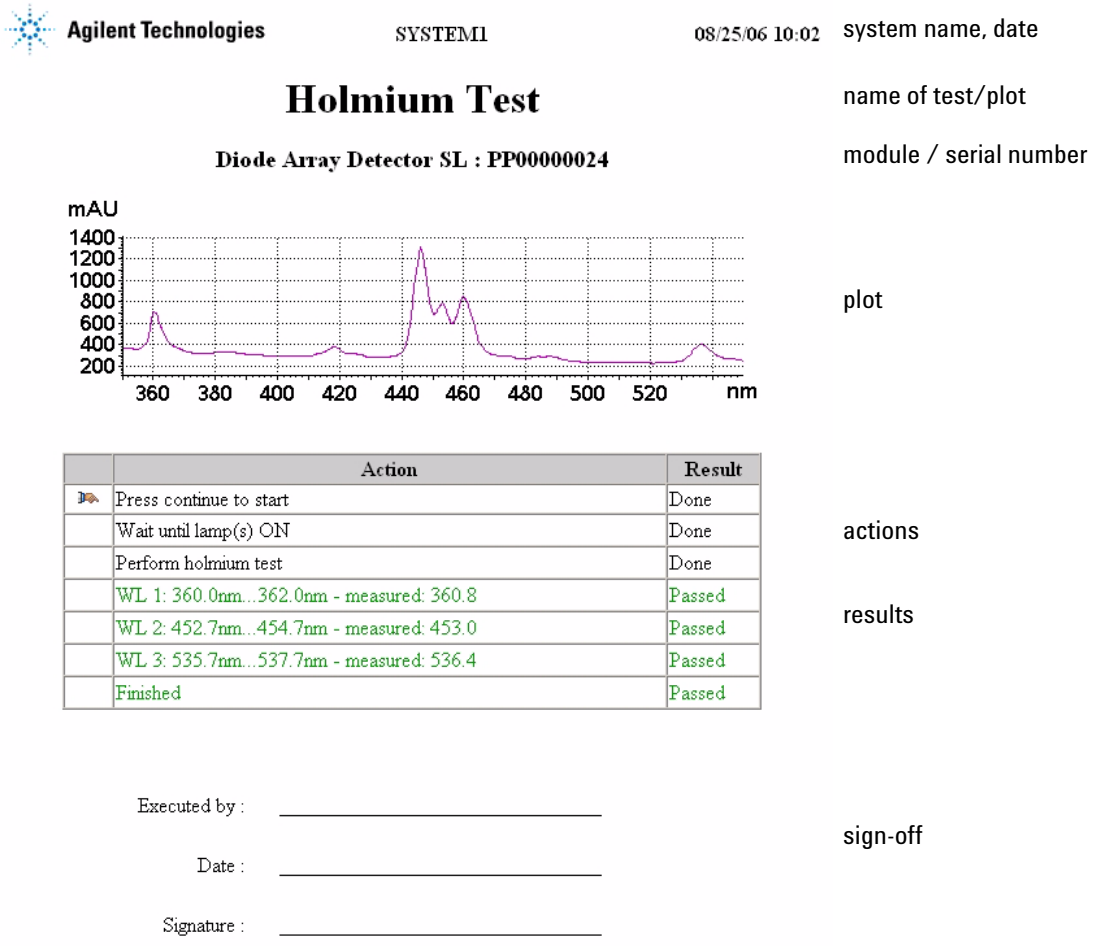


Figure 55 Example of a Printed Document - DAD Holmium Test

Working with Methods

NOTE If additional details are required on a specific topic/function/parameter not mentioned in this document, please use the Instant Pilot's Online Information System (i), see "The i (info) key - Online Information System" on page 36.

A method contains a complete set of injection, separation and detection parameters, including the timetable and injector program. The sample position information is not part of the method.

There are two types of methods:

- The Instant Pilot method. The method is stored in the internal memory of the Instant Pilot. The actual method's parameters are stored in the individual LC modules. A method that is stored in the individual LC modules can be loaded, modified, saved and run from the Instant Pilot.
- The USB Flash Drive method. The method parameters are stored on a USB Flash Drive. A method that is stored on the USB Flash Drive can be loaded to the LC modules or transferred to another LC system. Methods cannot be run directly from the USB Flash Drive. The method must first be loaded from the USB Flash Drive before it can be run. When the USB Flash Drive method is loaded, it becomes the current module method.

Unless stated otherwise, the following sections refer to module methods.

To view/edit the method information, press **Method** from the **Welcome** screen.

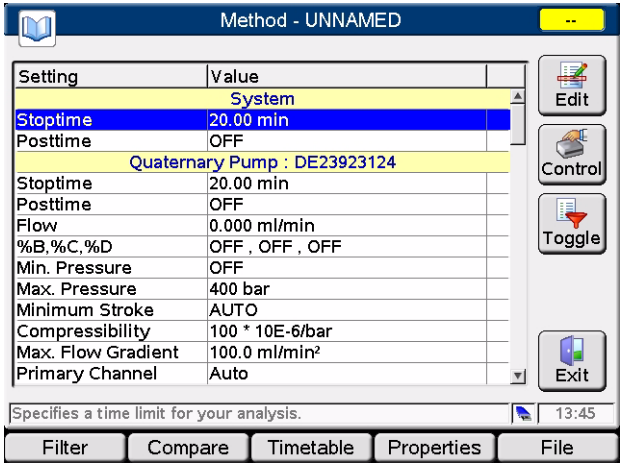


Figure 56 Method Screen

Loading a Method

A method can be loaded pressing **File** in the **Method** screen:

1 Enter the **Method** screen.

2 The current parameters are displayed.

3 Press **File**.

4 Select option 1 - **Load**.

5 Select a method from the list.

6 Press **OK** or **Load**.

The Method/Module screen lists all methods that are stored in the modules. For each method there is a date when the method was last changed. When a method is loaded it becomes the current method.

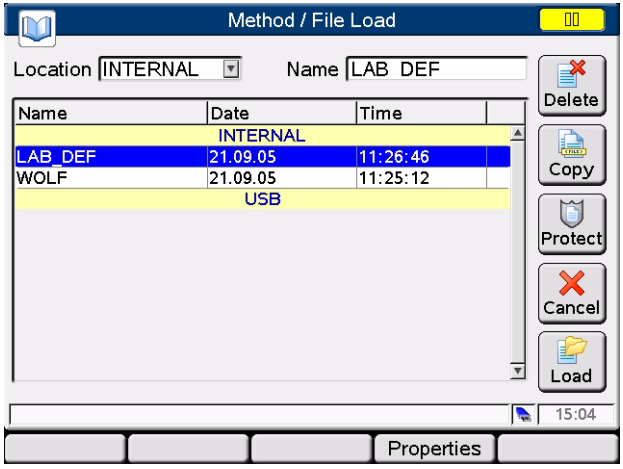


Figure 57 Method - File Load Screen

Modifying a Method

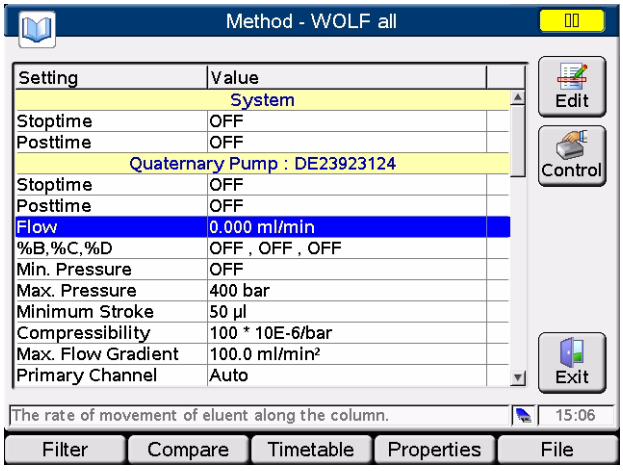
A method can be modified by changing the settings in the **Method** screen.

1 Scroll to the line you want to change.

2 Press **Edit** or **OK**.

3 Enter the new value.

4 Press **Done**.



Edit the selected parameter

Opens a menu to control certain system settings/activities

Exits this screen

Figure 58 Method - Edit screen

If you change a method setting, the value is immediately downloaded to the LC module.

An asterisk (*) will appear next to the method name to indicate that the current method has been modified.

An hash (#) will appear next to the method name to indicate that the method is from a different configuration (setup with other modules).

Modules marked red are missing or not switched on.

Filtering Method Information

When a Filter is selected, only the parameters that are selected in this filter are shown on the **Method** screen.

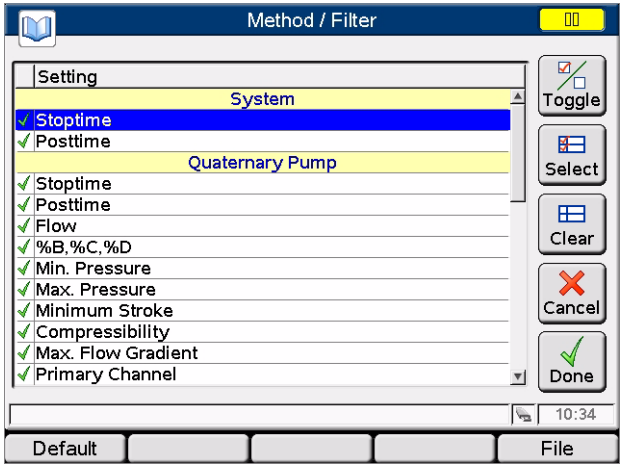


Figure 59 Method - Filter screen

Using **Default** resets the filter selection to factory settings.

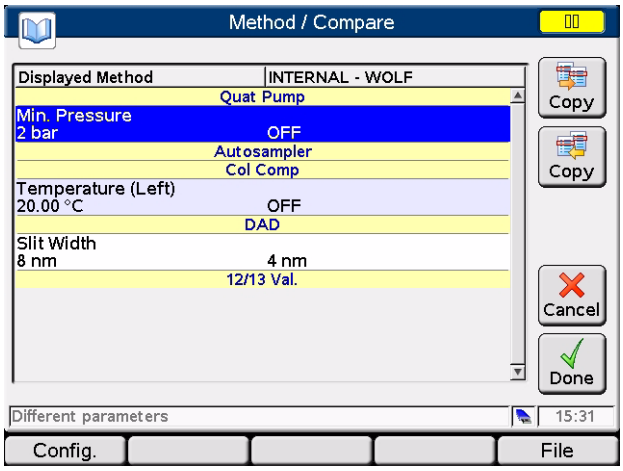
Using **File**, the filter settings can be stored and or stored filter setting can be loaded.

If a filter is set, the Method screen will show the information “Method - name filtered”.

The filter can be activated from the Method screen using the **Toggle** button. If no user defined filter is in use, the default filter is chosen.

Compare Methods

The **Compare** screen is a tool that allows you to compare two methods. The differences are shown in a list by displaying the values from both methods side by side. You can copy parameters between the two selected methods using the **Copy** function.



Copy parameter left to right

Copy parameter right to left

Exits this screen

Saves the settings and leaves the screen

Config: view configuration differences

Figure 60 Method - Compare screen

Displayed Method	is the actual loaded method (modified), e.g. WOLF*
Internal Method	is the actual loaded method (not modified), e.g. WOLF

If there are differences in the configuration and/or timetable, a message is shown in the status line, and you can view the differences via **Config**.

NOTE

If the configuration differs, only the differences of the configuration are shown.

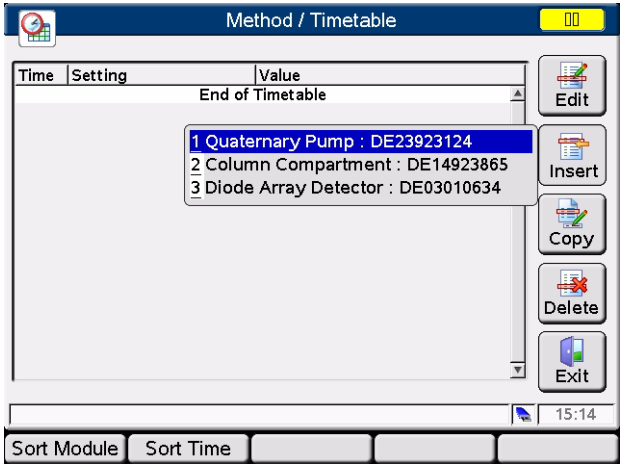
Method Timetable

To time-program selected settings during the analysis, you can create a timetable. Using the **Timetable** screen, you can create a time-based program that will automatically control the modules of a system and external contacts (if an external contact board is used).

In some cases, the settings change instantaneously from the initial value to the value specified after a certain time in the timetable (e.g. wavelength). In other cases (e.g. solvent composition) these changes take place dynamically, approaching the set value in a stepwise and linear manner.

NOTE The timetable becomes part of the current method when the method is saved.

The **Timetable** screen shows the timetable used in the currently shown method. The timetable can be edited in the **Timetable** screen and is stored together with the method. You can edit lines, insert new lines, copy lines and delete lines. You may choose if the list should be ordered by module (default) or time.



Edit a line

Insert a line with choice of module

Copy a line

Delete a line

Saves the settings and leaves the screen

Sort lines by module or time

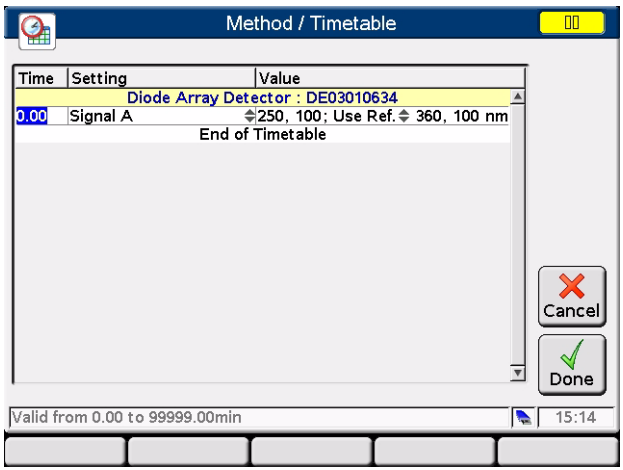
Figure 61 Method - Timetable screen

A timetable line can be inserted by pressing **Insert** and consists of the following:

- Time
  Set the time span between the instant of injection and the desired parameter change.
- Setting
  Select the parameter to be changed.
- Value
  Enter the desired parameter value.

You can edit an existing timetable line by pressing **Edit** or **OK**. Use **Delete** to delete the selected line.

You can copy a timetable line by pressing **Copy**.



Edit a line and change the parameter

Cancels the action and leaves the screen

Saves the settings and leaves the screen

Figure 62 Method - Timetable screen

Method Properties

The properties of a method can be reviewed in the Properties screen. The user can view change history.

- The method's name. This string is used as unique identification of the method and is also used as the filename.
- The description allows you to describe the method more precisely.
- The history shows all changes done.
- The method can be protected / unprotected with a password.

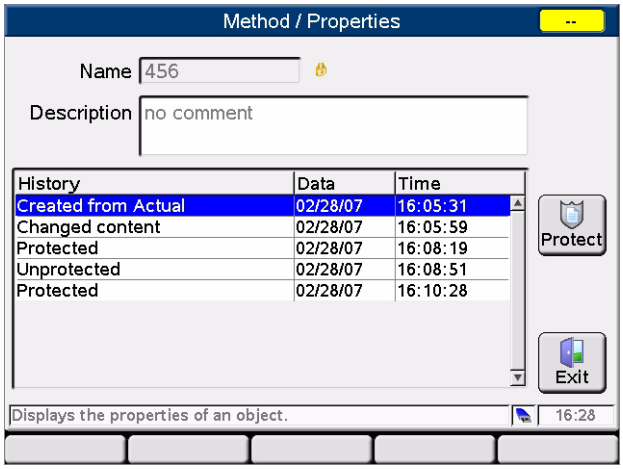


Figure 63 Method - Properties screen

The method can be protected against inadvertent changes. Any change to the method is not accepted until the method is unprotected, or by saving it again without protection.

Any unauthorized method or instrument changes can be traced by the system logbook.

The **Protection** button is available in all **File** operations.

For more information see "Method File Protection" on page 91.

Method File Protection

With firmware revsion B.02.05 (May 2007) several additional checks and disabling of functions were added to ensure protected file security - online and offline:

- If a file is protected, the user can not edit the currently loaded method content or its filter settings.
- "Edit", "Filter" and "Save" buttons are disabled.
- Enter edit mode by pressing "Enter" button is disabled.
- "Save As" under a different name is allowed and will be stored under the new name unprotected. Using the same name results in "File Save Failed: Permission denied" error.
- Renaming a protected file is not allowed.
- "Transfer" of protected file is allowed, if not a protected file with the same name already exists in the targeted destination. Then the user has to unprotect the protected file on target first.
- "Import" fails, if a protected method with the same name on the Instant Pilot already exists.
- In the files dialogs, a protected file can be copied, but not renamed or deleted. "Copy" a protected file, makes an unprotected copy under a different name on the same medium.
- To unprotect a file, the user has to enter the correct password.

A password to protect a file can have up to 12 digits. If left empty, no/empty password will be added to the file protection.

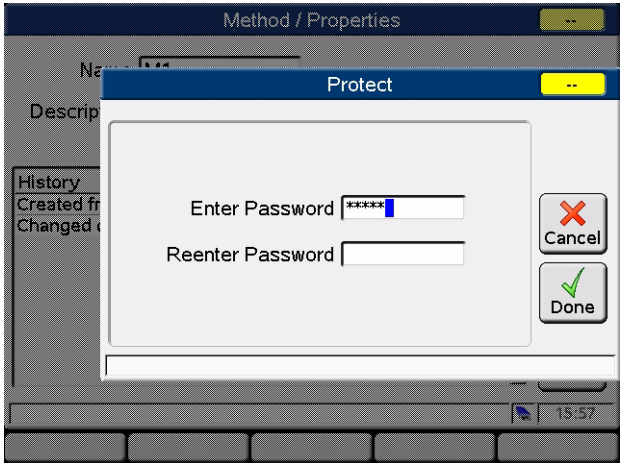


Figure 64 Method - Protection

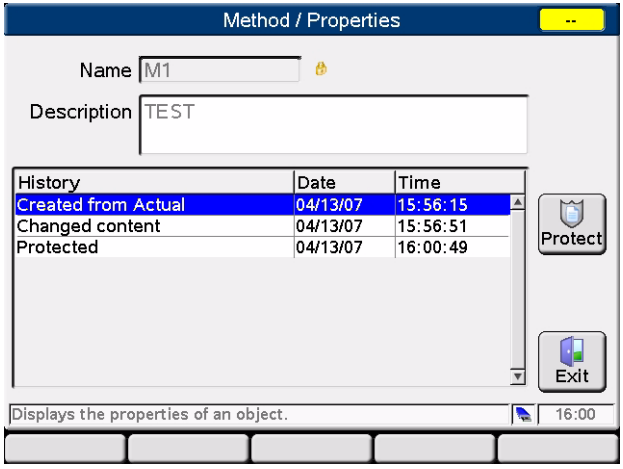


Figure 65 Method - Properties / History

Saving a Method

Methods are stored within the Instant Pilot (internal memory) and/or on an external USB Flash Drive. The currently loaded method is also the active method in the modules. Changes to the method are immediately transfered to the modules. The Instant Pilot generates a list of all available methods that can be loaded.

The number of methods that can be stored depends on the number of timetable and injector program lines included. In general, more than 100 methods may be stored in the Instant Pilot. With differing method contents, the actual amount of methods to be stored may change significantly.

Use a USB Flash Drive in order to store an infinite number of methods for future use or for exchange between LC instruments (see “Transfer of Methods” on page 95).

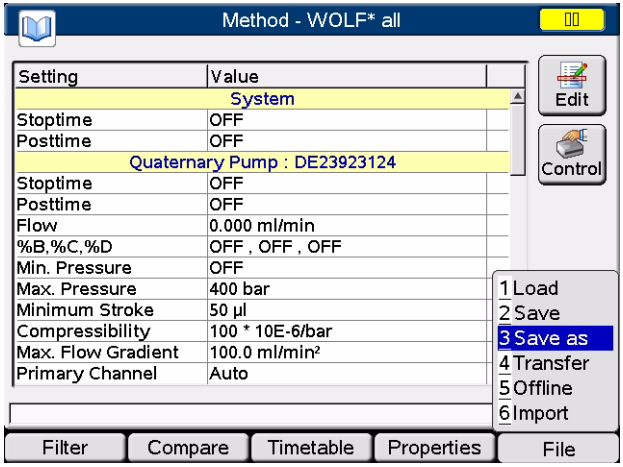


Figure 66 Method - File menu

- **Save** stores the actual method in the Instant Pilot’s internal memory.
- **Save as** allows the selective storage in the Instant Pilot’s internal memory or on the external USB Flash Drive and copy/delete/protection functions.

1 Press **File** and select the **Save as**.

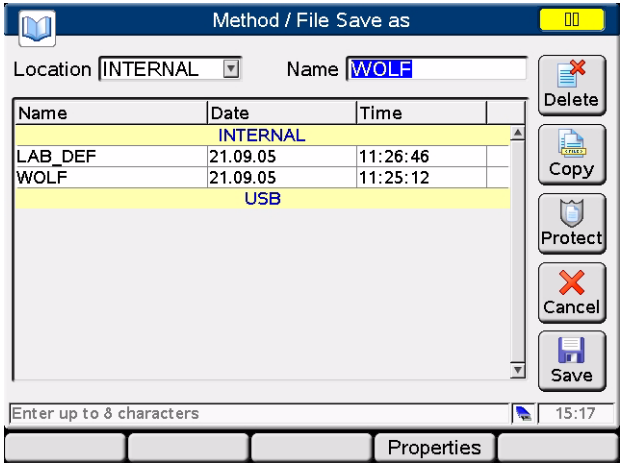


Figure 67 Method - Save As

2 Choose the location (internal = Instant Pilot or USB = USB Flash Drive) and a name (if not already done).

3 You may delete or copy methods from one location to the other.

4 You may protect/un-protect a method (see "Method Properties" on page 90 and "Method File Protection" on page 91).

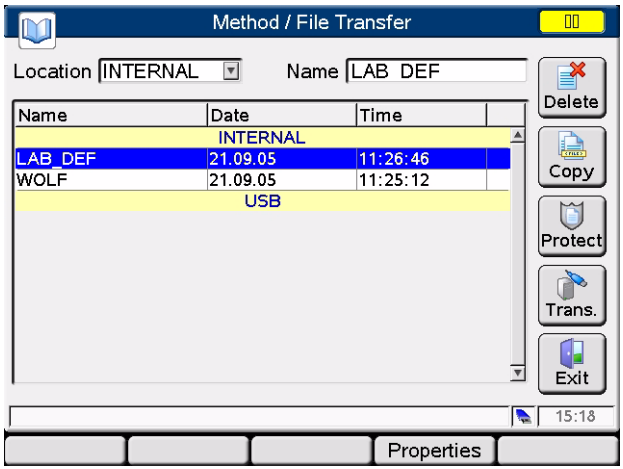
The stored method now contains all the current LC system and module settings.

If you disconnect the Instant Pilot from one LC system and connect it to another LC system, the Instant Pilot's current method will get an (*) or (#) because its settings vary from the settings of the new LC system.

To transfer methods from one LC system to another you can use the Instant Pilot or a USB Flash Drive.

Transfer of Methods

The "File Transfer" dialog allows you to transfer files between internal file storage and the connected USB Flash Drive.



Deletes a method

Copies a method

Protect/unprotect the method

Transfers the method

Exits this screen

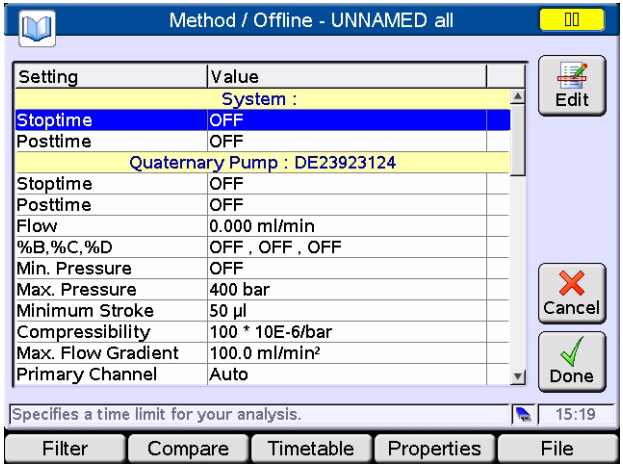
Figure 68 Method - Transfer

1 Select a method.

2 Press **Transfer**. The method is transferred.

Offline Work on Methods

The Import dialog gives you the ability to edit methods offline. It is possible to edit methods that were not actually loaded onto the modules. The offline method dialog starts with a copy of the actual method. The “offline mode” is emphasized by the different dialog color.



Edits a method

Exits the screen

Saves the information and exits the screen

Figure 69 Method - Save As

All buttons have the same function as in the online method dialog (see “Modifying a Method” on page 85). Only the **Control** button is removed and the **Exit** button is replaced with a **Done**/**Cancel**.

Import of Methods

This functions allows the import of G1323 Control Module methods stored on the instrument or on the USB Flash Drive. Export is not possible.

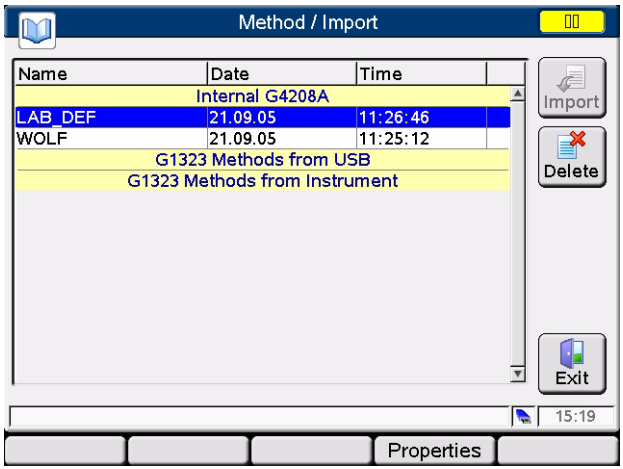


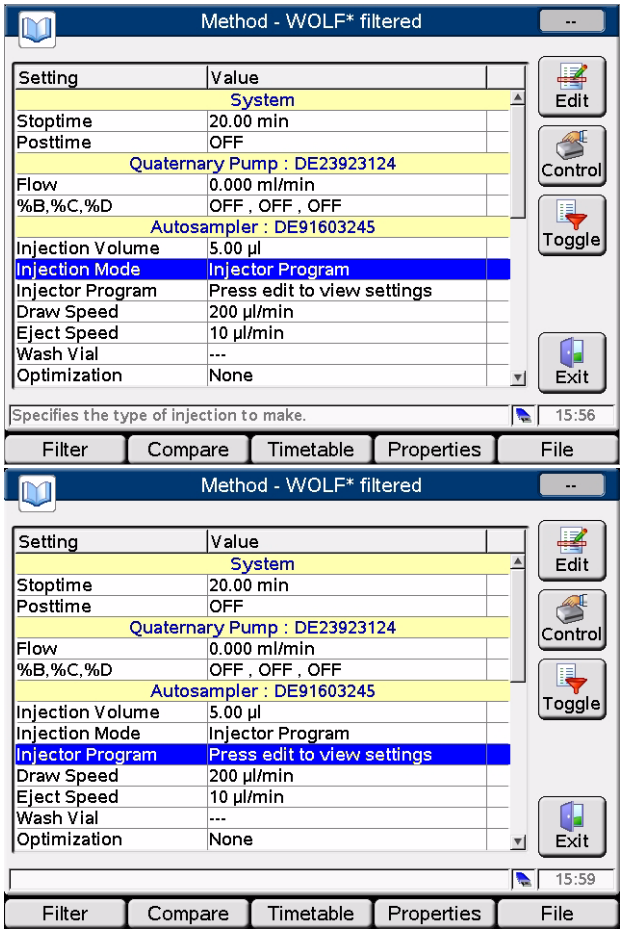
Figure 70 Method - Import

G1323 methods from USB	generated with G1323 Control Module, then transferred via G1323/PC-card/PC/USB Flash Drive to the Instant Pilot
G1323 methods from instrument	generated with G1323 Control Module, transferred via HPLC module to the Instant Pilot

Injector Program

With firmware revisions B.02.01 and A.05.11 (November 2006) the Injector Program has been implemented.

The injector program is part of the method. The injector program screen can be accessed by pressing edit on the Injection Mode line and change it to Injector Program in the Method view.



edits the selected line

toggles between filtered and unfiltered

exits the method screen

Figure 71 Method Screen - Injector Program

Press the **Default** button to start with a pre-defined injector program. This can be modified or expanded.

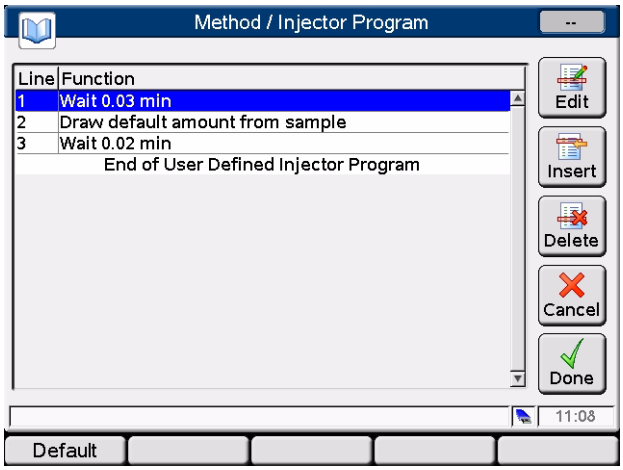
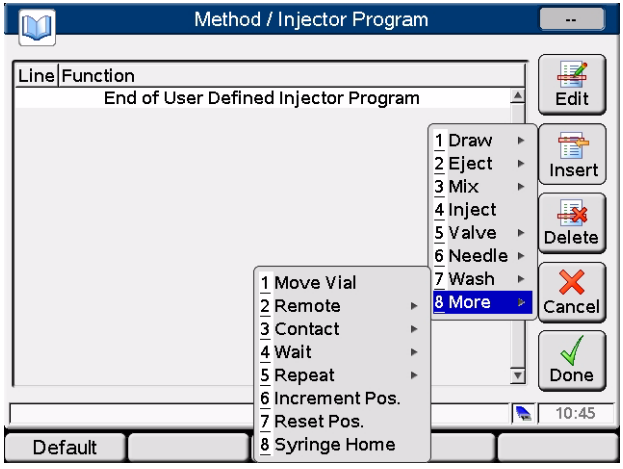


Figure 72 Injector Program - Default Program

Move to a line of the Injector Program and press **Edit** button to view the current settings or start a new line.



edits the selected line

inserts a program line

deletes a program line

exits the injector program without any changes

ends the injector program

Figure 73 Injector Program - Setup Screen

Press the **Insert** button and select an action item.

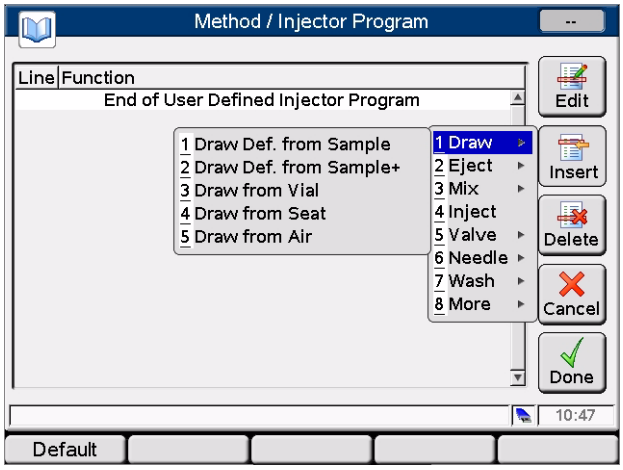


Figure 74 Injector Program - Setup Screen

Move to line “End of User Defined Injector Program“, press the **Insert** button and select additional action items as required.

Via the **Edit** button you can change the parameters.

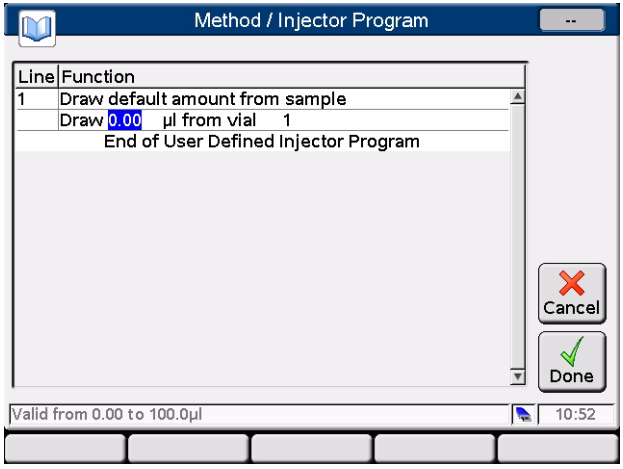


Figure 75 Injector Program - Modifying a Parameter

Table 13 lists all injector program lines that are insertable / editable.

Table 13 Insertable / Editable Injector Program Lines

Command	Comment
Draw default amount from sample (from actual position)	
Draw default amount from sample plus x vial(s) from actual position	
Draw x µl from vial y	
Draw x µl from seat	
Draw x µl from air	
Draw x µl from flush	DLA only *
Eject all into seat	
Eject x µl into sample	
Eject x µl into location y	
Eject x µl into seat	
Eject x µl into air	
Mix x µl in seat, z time(s)	
Mix x µl in air, z time(s)	
Mix x µl in air, at y µl/min, at z time(s)	
Mix w µl in location x, offset y, z time(s)	WPS only †
Inject	
Valve mainpass	
Valve mainpass with start pulse	
Valve bypass	
Needle up	
Needle into seat	
Needle into vial x	
Needle to wash port	
Wash needle in default wash vial, x time(s)	

Table 13 Insertable / Editable Injector Program Lines

Command	Comment
Wash needle with default wash parameters	
Wash in vial x, y time(s)	
Wash in flush port for x sec	WPS only
Move vial from sample position to (waste) location 220	ALS only ‡
Remote ready	
Remote not ready	
Remote start	
Wait x minutes	
Wait for ready, timeout x min	
Wait for start, timeout x min	
Contact x open/close	
Repeat Start, x times	
Repeat End	
Increment actual sample position + x vial(s)	ALS only
Increment actual sample position + w tray(s), + x plate(s), + y row(s), + z column(s)	WPS only
Reset actual sample position	ALS only
Reset actual tray position	WPS only
Reset actual plate position	WPS only
Reset actual row position	WPS only
Reset actual column position	WPS only
Syringe to home position	

* DLA: G2258A

† WPS: G1367X, G1377A, G2258A

‡ ALS: G1313A, G1329A, G1389A, G2260A

Sequence - Automating Analyses

NOTE If additional details are required on a specific topic/function/parameter not mentioned in this document, please use the Instant Pilot's Online Information System (i), see "The i (info) key - Online Information System" on page 36.

You can use the Sequence screen to create completely automatic unattended analyses, from sample preparation to injection. The Sequence screen is accessed by pressing **Sequence** in the Welcome screen.

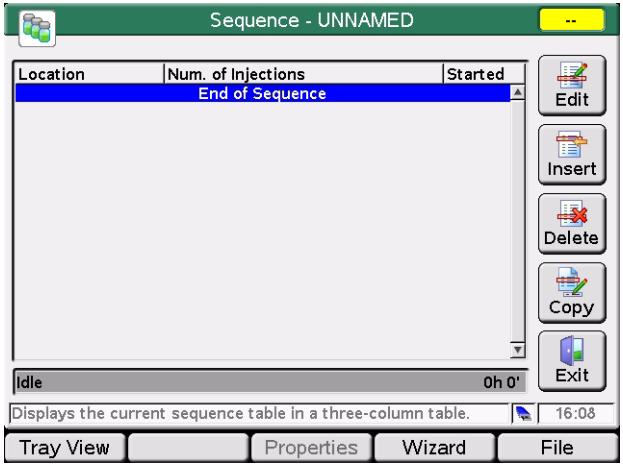
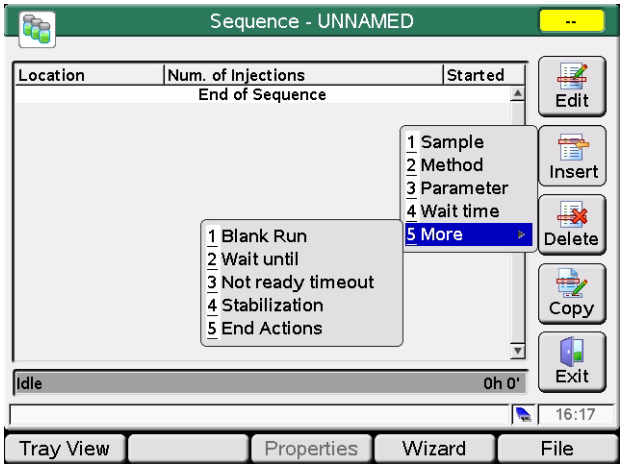


Figure 76 Sequence - Start-up screen

Using the **Sequence** screen, you can link several methods together. For example, you can first run a method containing an injector program to do sample preparation followed by an analytical run to analyze a batch of samples. You can then run a second method to analyze further samples with different analytical conditions.

When the second method is loaded, it waits for a specified time before starting the analysis, allowing the column to equilibrate to the new conditions. All sequence events can be traced in the Logbook available from the **Welcome** screen.



Insert a line (for details refer to Instant Pilot's Info System).

Figure 77 Sequence - Add a sequence line

At the end of the sequence, you can specify either to load a method (e.g. to flush the LC system to remove buffer salts to avoid crystallization or to program a soft shut-down method) using **Insert/Method** or turn OFF the LC system using **End Actions**.

You can set up automatic re-calibration using the **Calibration Settings** screen. The **Calibration Settings** screen is accessed by selecting **Calibration** in the **Sequence Wizard** screen.

You can re-calibrate using one or more standards and have the flexibility to choose various calibration intervals and patterns. You can define the frequency to re-calibrate and the order of calibration vial analysis using the Alternate and Multi settings. Alternate analyzes the calibration vials alternately. Multi analyzes the calibration vial or vials in complete groups according to the calibration interval.

Using the Sequence Wizard

You may use the Wizard to set up a sequence.

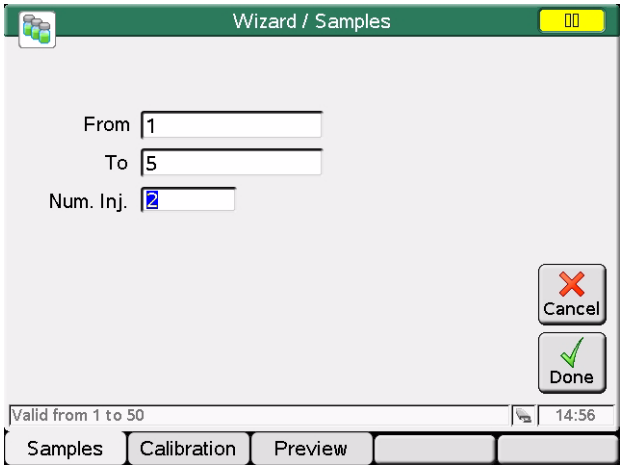
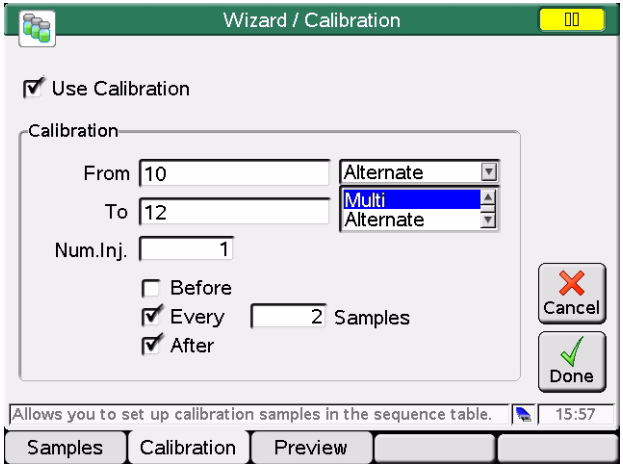


Figure 78 Sequence Wizard - Adding Samples Information



See Figure 80 and Figure 80 on page 106 for effect of selection "Multi" and "Alternate"

Figure 79 Sequence Wizard - Adding Calibration Information

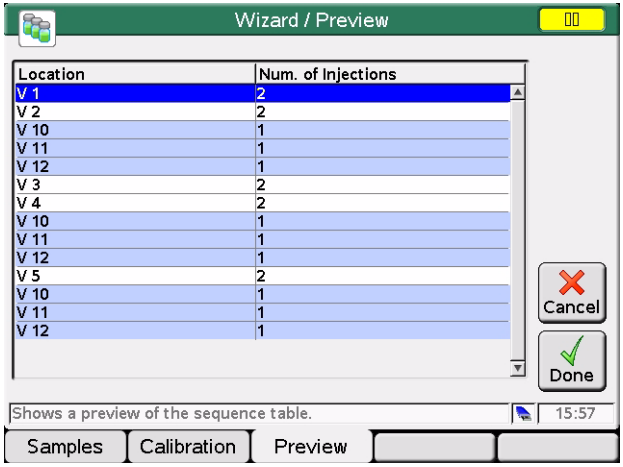


Figure 80 Sequence Wizard - Preview with Calibration Parameter Multi

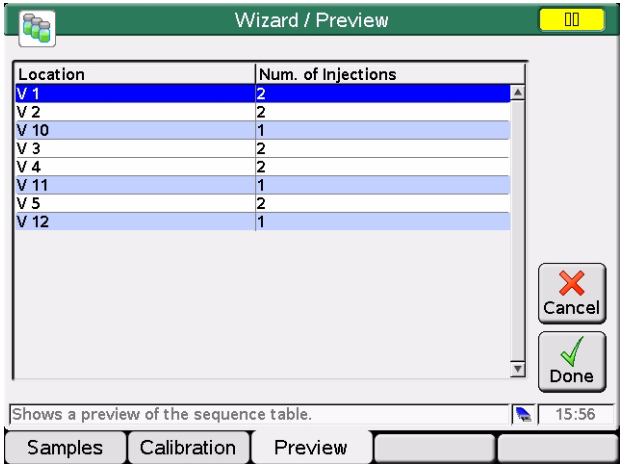


Figure 81 Sequence Wizard - Preview with Calibration Parameter Alternate

Saving a Sequence

Sequences are stored within the Instant Pilot (internal memory) and/or on an external USB Flash Drive. The sequence is only in the controller. Changes to a sequence line can be when the line is not active (if sequence is running). The Instant Pilot generates a list of all available sequences that can be loaded.

The number of sequences that can be stored depends on the number of timetable and injector program lines included. In general, more than 100 squinches may be stored in the Instant Pilot. With differing sequence contents, the actual amount of sequences to be stored may change significantly.

Use a USB Flash Drive to store an infinite number of sequences for future use or exchange between LC instruments (see "Transfer of Methods" on page 95).

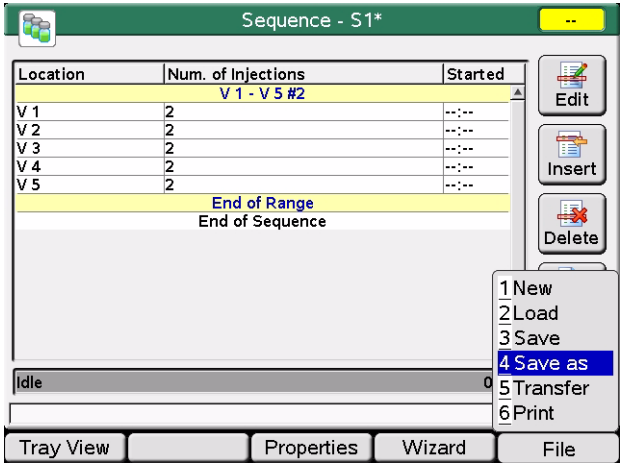


Figure 82 Sequence - File menu

- **Save** stores the current sequence into the file it was loaded from.
- **Save as** allows the selective storage in the Instant Pilot's internal memory or on the external USB Flash Drive and copy/delete/protection functions.

1 Press **File** and select the **Save as**.

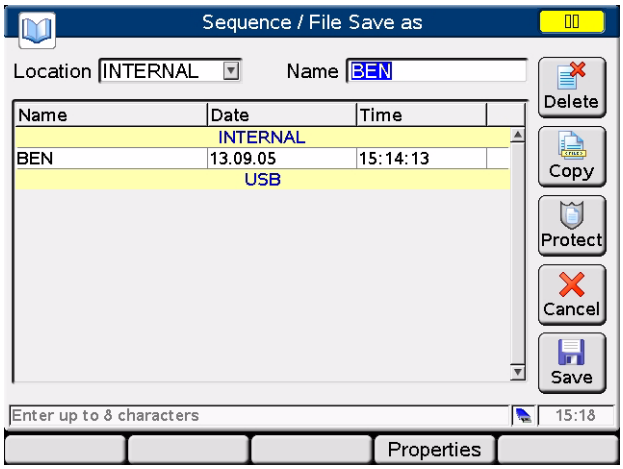


Figure 83 Sequence - Save As

2 Choose the location (internal = Instant Pilot or USB = USB Flash Drive) and a name (if not already done).

3 You may delete or copy sequences from one location to the other.

Sequence - File Protection

You may protect/un-protect a sequence (see “Method Properties” on page 90 and “Method File Protection” on page 91).

Differences are:

- "Edit", "Insert", "Delete", "Copy", "Wizard" and "Save" buttons are disabled.
- There is no "Import" functionality

To transfer sequences from one LC system to another you can use the Instant Pilot or a USB Flash Drive.

Tray View

The current sequence's status is shown graphically. The sequence samples are shown at their locations on the tray using colors representing their states.

Green	already processed sample
Blue	sample to process
Magenta	calibration sample
Yellow	aborted sample

The current sample is colored alternating blue (sample) or magenta (calibration sample) and light blue. The currently processed sample location and the method name are also shown textual on the left. The bar graph at the bottom shows the sequence state and overall sequence time.

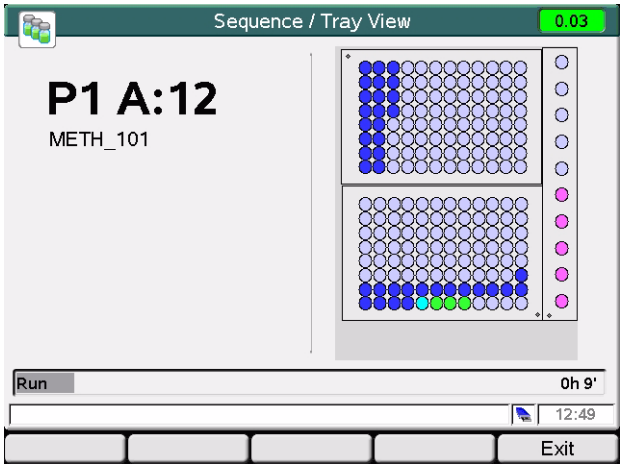


Figure 84 Sequence - Tray View

Starting and Stopping a Sequence

When you press **Start**, the **Start Analysis** dialog pops up where you can select between

- setting up a sample range,
- starting the current (saved) sequence or
- resuming a paused sequence.

If no sequence is currently paused, this functions is disabled.

The sample range possibility is for running sequences without parameter changes for the specified method(s).

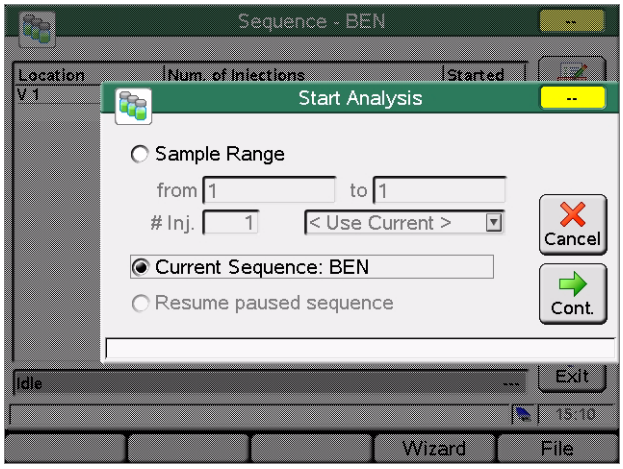


Figure 85 Sequence - Start

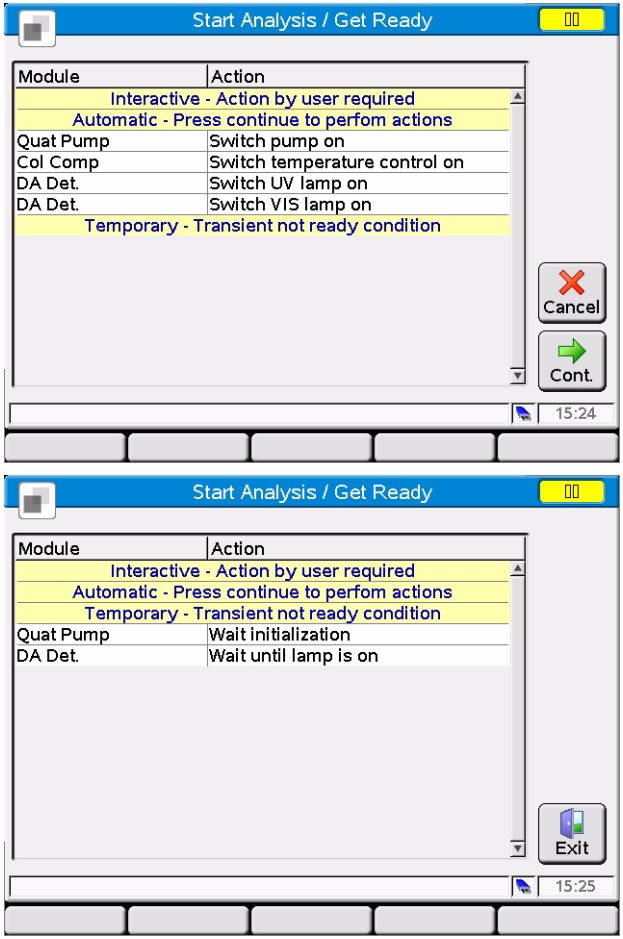
You may press **Start** again to bypass the above screen.

If any actions are still required to get the system into a ready state, the **Get Ready** screen will show up (Figure 86 on page 111), otherwise

- the system status changes to green,
- the sequence starts immediately and
- the last screen shows up.

Press **Status** to display the actual system status.

If any activities before the system ready (gray status) are still required, press **Continue** and all actions (e.g. required lamps are turned on) are performed automatically.



Yellow status indicates a not ready condition

Exits this screen

Continues will start all activities automatically to get the system ready

Current actions are displayed

Figure 86 Sequence - Get Ready screen

When all Get Ready activities are complete

- the system status changes to green,
- the sequence starts immediately and
- the last screen shows up.

Press **Status** to display the actual system status.

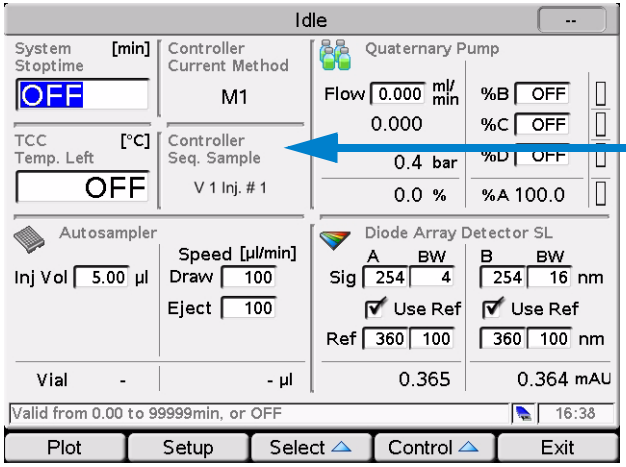


Figure 87 Sequence - Status

When you press **Stop**, the **Stop Analysis** dialog pops up where you can select between aborting immediately or pausing the sequence. **Continue** aborts or pauses — depending on the selection — the current sequence. A shortcut is to press **Stop** again.

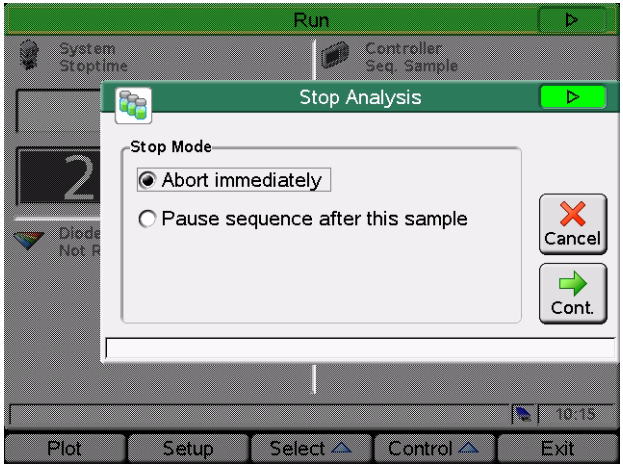
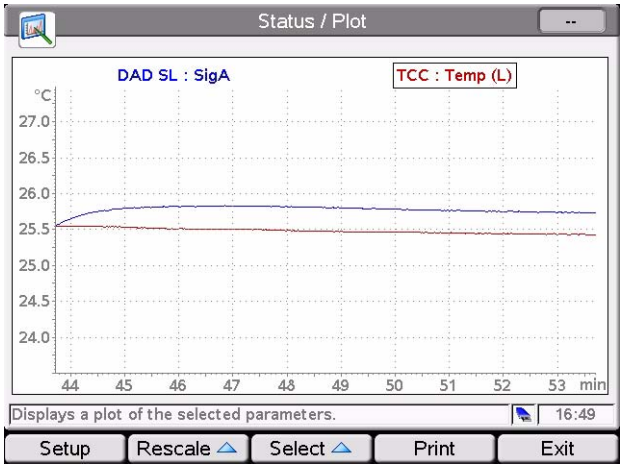


Figure 88 Sequence - Stop

Displaying Data Graphically

The Plot screen gives you many opportunities to display a wide variety of signals on a graphic display while the analysis is performed or not. The plot screen can show different signals of the connected modules over time. The signals are user selectable, can automatically be rescaled for best on-screen fitting.



Selected signal, active is framed

Figure 89 Plot screen

The **Print** button allows the print of the plot window to the USB Flash Drive.

Use the **Setup** button to select the signals of interest, see also "Setup of Signals" on page 114.

Use the **Rescale** button to maximize the signals of interest.

You can use the Direction keys to change the Y-range (up/down) or the time scale (left/right).

Use the **Select** button to make a signal active on the Y-axis or use the number keys 1, 2, 3 or 4.

Setup of Signals

Up to four of the available signals can be chosen for graphical display.

1 From the Plot screen, press **Setup** to show the **Selection** screen.

2 Use the Direction and Selection keys to navigate within – and between the available signals and selected signals list boxes.

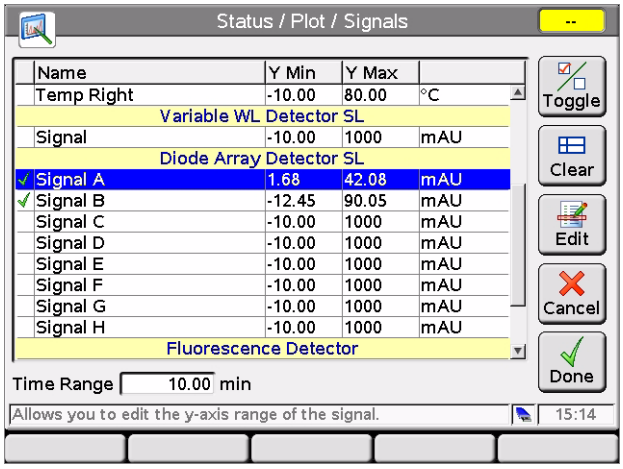


Figure 90 Plot screen - Setup signals

On the right side of the Selected Signals list box, you can see the legend to the signals.

The different signals can be selected by pressing **Toggle** or **OK**. Depending on which signal is highlighted, you can enter an individual Y-Range setting here using **Edit**.

3 When the signals and their Y (signal unit) ranges have been specified press **Done** to switch to the graphic view.

Rescaling the Plot Screen

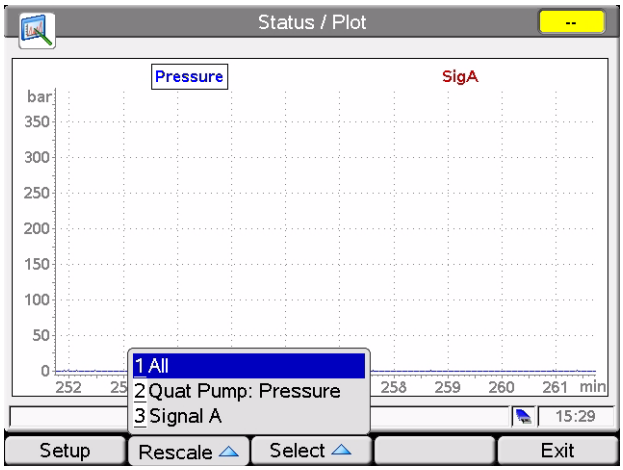


Figure 91 Plot screen - Setup signals

Press **Rescale** and select the signal.

X (time) axis

To rescale the X (time) axis, use the Direction keys (left/right).

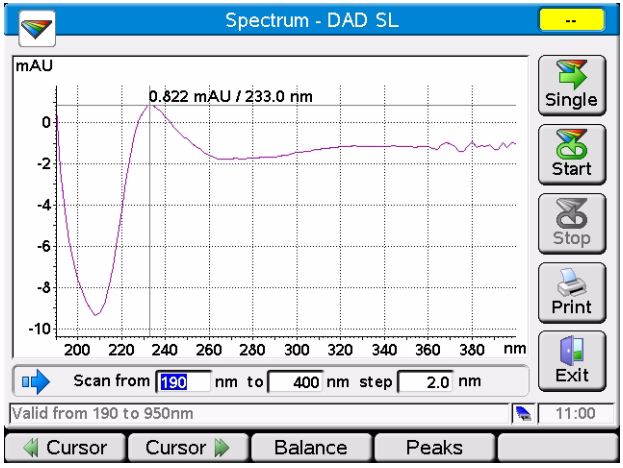
Y (signal unit) axis

There are several possibilities to rescale the Y (signal unit) axis:

- Via **Setup**, you can specify a Y range separately for each signal. Rescaling directly from the **Plot** screen overwrites these settings.
- Use **Rescale** in the **Plot** screen to adjust the Y axis according to the minimum and the maximum signal value within the set time range. Using this function provides the optimum signal display. It refers to all or to a selected signal from the menu.
- Use the Direction keys (**up/down**) to change the scaling of the Y axis by a factor of 2 (**up**) or 1/2 (**down**) of the selected signal.

DAD/MWD/VWD/FLD Spectrum

Via the Control button and **More**, the DAD/MWD/VWD/FLD spectrum screen is accessible.



Single spectrum

starts continuous spectrum

stops continuous spectrum

prints spectrum to USB Flash Drive

exists the screen

Figure 92 Spectrum - Example DAD

The scan range and step width can be set.

Using the **Single** button, starts a single spectrum.

Using the **Start / Stop** button, starts/stops a continues spectrum.

Using the **Cursor** buttons, the cursor can be moved left or right on the wavelength axis.

Using the **Balance** button, the detector performs a baseline balance.

Using the **Peaks** button, a table with all found peaks is displayed (also part of the printed spectrum).

Using the **Blank** button (VWD only), a blank (background) scan is taken.

FLD Spectrum

Under Control/More the user has two additional options: Excitation Spectrum and Emission Spectrum.

Both screens are similar, only the editable parameters are different according the selected spectra type (see Figure 93). The screen has a "Single" scan mode and a "Continues" mode accessible via "Start". Peaks can be displayed (see Figure 94) and the result can be printed.

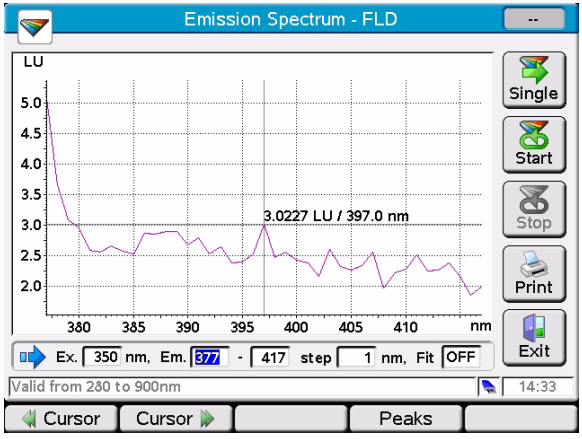


Figure 93 Spectrum - FLD

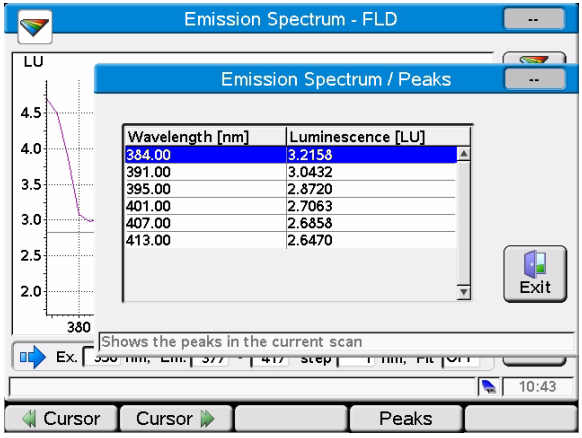


Figure 94 Spectrum - FLD - Peaks

Warnings are shown, if the method parameters are not set to produce spectra information and if the lamp in not switched on. Start keys will be kept disabled until valid conditions are reached.

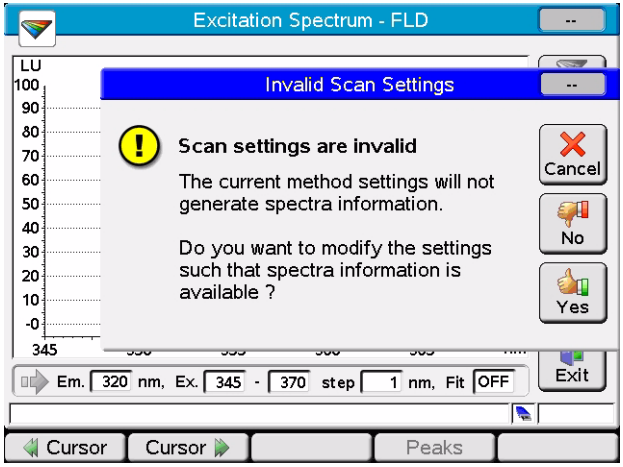


Figure 95 Spectrum - FLD

Connecting External Devices

There are several kinds of interface that enable the Agilent Series modules to communicate with a range of other output devices. For some of them, extra hardware needs to be installed.

Configuration of selected interface parameters is possible and is handled individually for each module, since some interfaces are only available with certain modules (depending on installation).

For further information on interfaces see the corresponding sections in the modules' user or reference manuals.

APG Remote

The system can communicate with external devices via the 9-pin APG remote connector (included in all modules) in order to synchronize the analyses. This is necessary when an external device needs some time to get ready for a new analysis and thus the transmission of a start request is required (see also "Synchronizing Analyses with External Devices" on page 148 for details on sequence modes). Detailed descriptions of the APG Remote connector are available in the HPLC modules' reference manuals.

Among the available signals are:

Power On

This signal is active as soon as all modules connected to the system are switched ON.

Shut Down

When the system has a serious problem (e.g. a leak occurs) this alerts all modules to stop relevant operation in order to reduce safety risks.

Stop

This signal asks all modules to reach the ready state as soon as possible. It works only during the analytical run (controlled by the stoptime setting) and causes the system to begin counting down the postrun time.

Ready

When all Agilent Series modules are ready for the next analysis, this signal is on. Other modules or external devices can now react (e.g. by issuing a start request).

Prepare

This causes the modules to get ready for the next analysis (e.g. the detector performs a balance).

Start Request

This signal causes the modules to get ready for the analysis (e.q. the autosampler will begin the injection cycle). As soon as all conditions to start the analysis (the injection needle is placed in the seat and the valve is in the proper position) are fulfilled, a Start signal is generated to inform the other modules that now the analytical run starts.

Start

In standard mode only the autosampler creates this signal. This sends an order to start run-time controlled activities to all the modules connected to the APG remote bus. From now on (moment of injection), the runtime counts up.

MIO

This interface enables the Agilent Series modules to communicate with PCs configured as Agilent ChemStations using a local area network (LAN). You can use the MIO interface if the respective extension board is installed in one of your modules (detector is recommended) or has on-board LAN and your system is integrated in a LAN.

Serial / RS-232

The module communication is enabled with the CAN cables. This interface is also used by 3rd-party control software, and can be used for firmware upgrades with the LAN/RS-232 Firmware Update Tool.

GPIB

With the GPIB interface (included in some modules) your system is able to communicate with a Personal Computer configured as the Agilent ChemStation. Connect all HPLC modules with CAN cables and use one of them to connect to the Agilent ChemStation via an GPIB cable. See "Simultaneous Execution with Software" on page 122 for further details on how to operate the system using the GPIB interface.

BCD

If the appropriate extension board is part of your system, you can use this output to inform external devices about the vial number currently processed.

External Contacts

With an optional external contacts board, you have various possibilities to synchronize LC activities with external devices.

Simultaneous Execution with Software

With Agilent ChemStation

Features

- All user interfaces, the Instant Pilot, the Agilent ChemStation or the Agilent Cerity WorkStation and OpenLab, can be connected to an Agilent Series system at the same time.
- Parameter entry is possible from both user interfaces. Parameters are updated on the other user interface within a few moments.
- An Agilent ChemStation sequence can be stopped and aborted from the Instant Pilot and vice versa.
- The Agilent ChemStation can generate data files from a Instant Pilot method or sequence. In this case, the pre-fix and file name counter in the Single Sample Info section of the Agilent ChemStation must be enabled (protocol mode only).
- If the Instant Pilot starts an analysis, the Agilent ChemStation is the slave/monitor system.
- The Agilent or 3rd-party user interface may block certain functionality, e.g. editing, load, start or others. In such a case, the screen shows a blinking lock-symbol in the top left.

Restrictions

- If a parameter window is open for parameter entry on the Agilent ChemStation, this specific entry field is disabled on the Instant Pilot.
- If an analysis is running with the Instant Pilot, the Agilent ChemStation must not be turned on.
- If the Agilent ChemStation starts an analysis, the Instant Pilot is the slave/monitor system.
- Parameter changes to a method will be identified on the other user interface as modification.

- The Instant Pilot and the Agilent ChemStation have a different method handling (Agilent ChemStation method can have more information than the method on the Instant Pilot, e.g. additional DAD parameters that are only accessible from the Agilent ChemStation). To have a method available on both controllers, proceed as follows:

  If the method is on the Agilent ChemStation and should be saved on the Instant Pilot or USB Flash Drive, load the method on Agilent ChemStation and then save the method on the Instant Pilot (or USB Flash Drive) with Method — **Save As**.

  If the method is on the Instant Pilot or USB Flash Drive and should be saved on the Agilent ChemStation, first load method DEF_LC.M on the Agilent ChemStation (to have no additional parameter in the format) and then load the required method on Instant Pilot. Then save the method on the Agilent ChemStation with the same name.

CAUTION

A method that is available on the Instant Pilot as a protected method can be modified by the Agilent ChemStation and then saved on the Instant Pilot without any warning.

The method will be changed in the instruments, but the file cannot be saved anyway

With 3rd Party Control Software

There may be problems when connecting the Agilent Instant Pilot G4208A to an Agilent 1100/1200/1290 instrument controlled by third party software, if this software generates an error when detecting an unknown module in the configuration. Therefore the Agilent Instant Pilot G4208A can be made invisible to other controllers.

To change the setting open the **Configure - Controller** screen. Scroll to **3rd Party Software** and change to **ON**.

Backward compatible OFF	visible to other controllers (default)
Backward compatible ON	invisible to other controllers

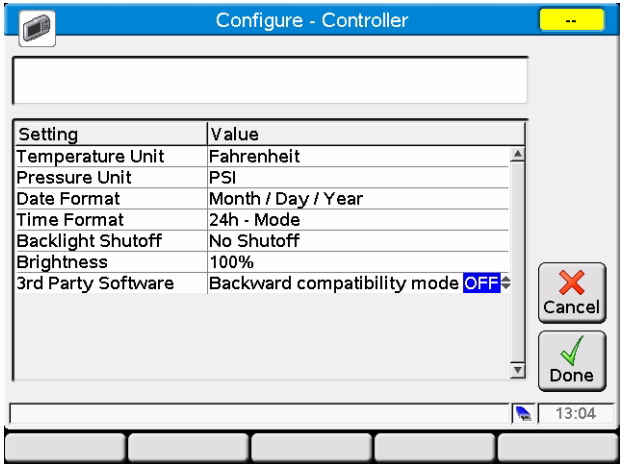


Figure 96 Configure Controller - 3rd Party Software Compatibility

NOTE

Whenever this setting is changed, the Instant Pilot needs to be rebooted to make the change active.

If the Instant Pilot is in **"Backward compatible mode ON"**, see"With 3rd Party Control Software" on page 124, it will not be seen by the LAN/RS-232 Firmware Update Tool. For updating firmware reconfigure the Instant Pilot to **"Backward compatible mode OFF"**.

Special Functions

Saving a Screenshot to USB Flash Drive

You may want to create a screenshot for

- adding it to a documentation or
- troubleshooting reasons.

To do so,

- insert the USB Flash Drive.
- wait until the USB Flash Drive has been initiated.
- press the key sequence **. i** (dot info).

The screenshot is saved as `SCR~nn.BMP` (where nn is a number) on the USB Flash Drive. The figure can be opened on the PC with any graphic or word processing application.

3
Running an Isocratic Analysis

This chapter describes how to analyze the Agilent Technologies isocratic standard sample using a single injection analysis.

What You Will Need

Instruments Agilent Series isocratic, binary or quaternary pump, an autosampler and a UV-detector.

Column A 125 mm × 4.0 mm Hypersil ODS, 5 µm (Agilent Technologies part number 7982618-564).

Solvents For the isocratic pump, a solvent mixture of LC grade bidistilled water (35 %) and acetonitrile (65 %).

Sample The Agilent Technologies isocratic standard sample (Agilent Technologies part number 01080-68704). This contains 0.15 wt.% dimethylphthalate, 0.15 wt% diethylphthalate, 0.01 wt.% biphenyl and 0.03 wt.% o-terphenyl dissolved in methanol.

NOTE The descriptions are based on Agilent 1100/1200 systems. The Agilent 1290 Infinity System may have other requirements on the setup and material.

Preparing the LC System

1. For the isocratic pump, fill the solvent bottle with the mixture of LC-grade bidistilled water (35 %) and acetonitrile (65 %). For the binary or quaternary pump, fill one solvent bottle with bidistilled water (channel A) and the other with acetonitrile (channel B).
2. Turn on the detector lamp and pump via the **Control** - **System On/OFF** screen.
3. For the quaternary pump, turn on the degasser by pressing the line-power switch.
4. Purge the pump.
5. Allow the detector at least 15 minutes to provide a stable baseline.
6. Transfer the contents of an Agilent Technologies isocratic standard sample ampoule into a vial and seal the vial with a cap. Place the vial in position 1 of the autosampler tray.
7. Pump the water/acetonitrile (35/65 %) mobile phase through the column for 10 minutes at a flow rate of 2 ml/min.

Entering Settings

To set up the isocratic analysis, you will set the LC system settings to default and then modify selected settings. The other settings will remain with their default values. You will then save these settings to a method called ISO.

1. Enter the Method screen.
2. Select **Control** and select **System: Set Defaults**.
3. Set the Stoptime to 6 minutes.
4. Set the Flow to 1.5 ml/min.
5. Set %B 65, (%C OFF, %D OFF for quaternary pump. If you have a binary pump, set %B to 65.).
6. Set Injection volume to 1 µl.

NOTE The channels of a pumping system are named A, B, C and D (depending on the pump type). %A is automatically calculated by 100% - (%B + %C + %D). If no values for %B, %C and %D are entered, %A is always 100%.

Saving Settings in a Method

1. Select **File** in the Method Information screen.
2. Select **"Save As"**.
3. Enter the method name as `ISO` using the selection keys (also see "Saving a Method" on page 93).
4. Press **Save** to save the method.
5. Press **Exit** to leave the Method screen.

Creating a Sequence

1 Select **Sequence** in the Welcome screen.
2 Press **Insert** and select **Method**.
3 Select Method named `ISO` and press **OK**.
4 Press **Insert** and select **Sample**.

   If your sample is not in vial 1, you have to modify the vial number (also see "Sequence - Automating Analyses" on page 103.
5 Select **File** and select **"Save As"**.
6 Enter the sequence name as `ISO` using the numeric keys (see also "Saving a Sequence" on page 107).
7 Press **Save** to save the sequence.
8 Press **Exit** to leave the Sequence screen.

Selecting a Signal

1 Setup the signal parameters in the Method Information screen.
2 Select **Status** in the Welcome screen.
3 Press **Plot**.
4 Press **Setup**.
5 Choose a Detector Signal from the Available Signals list.

NOTE You can choose several signals at a time. The plot function will display all signals that are shown in the Selected Signals list box. Use the selection keys to navigate within the list box and select the signal(s).

6 Press **Done**.

Observing the Chromatogram

1 Select the Status screen.

2 Press **Start**.

3 Select **Continue** to confirm the start of the analysis.

4 If the system is not ready (yellow), you have to press **Continue** again.

The modules automatically get ready and start the analysis.

5 Change to the Status screen (if started from here, the plot will be active after start).

6 Press **Plot** to show the chromatogram

A typical chromatogram for this analysis is shown in Figure 97.

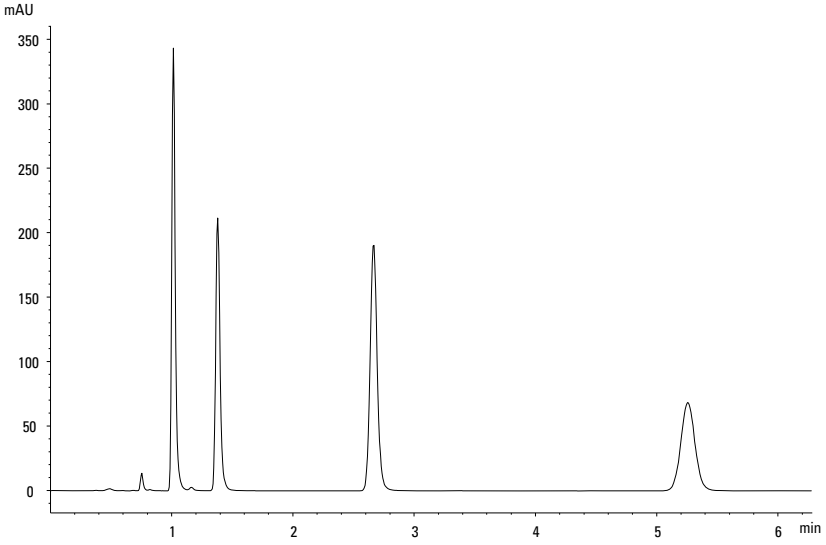


Figure 97 Analysis of Isocratic Standard Sample

The exact profile of the chromatogram depends on the column you have used. Differences in retention times and areas of the peaks in your chromatogram and the one shown in Figure 97 might be a result of variations in the concentration of the sample from batch to batch, the quality of the solvents used and the column temperature.

NOTE

You can rescale the plot using **Rescale**, or the cursor keys or you define the plot window within the Setup (see also "Rescaling the Plot Screen" on page 115).

4
Running Multiple-Vial Analyses

This chapter describes how to setup multiple vial analyses using the same method and different methods.

Analyzing Multiple Vials Using the Same Method

This section describes how to set up a 25-vial analysis with one injection from each vial. You will use a previously created method. The samples are located in positions 1 to 25 of the autosampler tray. For details see "Working with Methods" on page 82.

1 Enter the Sequence screen.

2 Enter Wizard

3 Enter first ...

4 Enter last ...

If the current method is used, loading is not required.

Analyzing Multiple Vials Using Different Methods

This section describes how to set up a 50-vial analysis using three methods which you have previously created called e.g. METH1, METH2 and METH3. For example: METH1 and METH2 have the same analytical settings but differ in the injection volume and stoptime values. METH3 uses a different temperature and requires a wait time of 30 minutes for the LC system to equilibrate.

NOTE This way of combining methods is called *Sequence*.

- The first 20 vials are analyzed using METH1 with one injection per vial,
- the next 20 vials are analyzed using METH2 with two injections per vial,
- the last 10 vials are analyzed using METH3 with three injections per vial.

The vials are located in positions 1 to 50 of the autosampler tray.

The example assumes that the sequence table is empty. If the sequence table is not empty, use the **Delete** button to delete all lines or use **File - New**.

1 Select the Sequence screen.

2 Move to line 1 and press **Insert**.

3 Select **Method** and then move to METH1 and press **Load**.

4 Move to the End of sequence list, select the **Wizard** button and enter:

Vial Range	1 to 20
#Inj.	1

5 Select **Done** to accept entries.

6 Move to the End of sequence list and select **Insert**.

7 Select **Method** and then move to METH2 and press **Load**.

8 Move to the End of sequence list, select the **Wizard** and enter:

Vial Range	21 to 40
#Inj.	2

9 Select **Done** to accept the entries.

10 Move to the End of sequence list and select **Insert**.

11 Select **Method** and then move to METH3 and press **Load**.

12 Move to the End of sequence list and select **Insert**.

13 Select **Wait time** and enter:

Wait	30 minutes

14 Select **Done** to accept entries.

15 Move to the End of Sequence list, select the **Wizard** and enter:

Vial Range	41 to 50
#Inj.	3

16 Select **Done** to accept entries.

17 Press **Start** and confirm the start of the sequence.

Single-Level Calibration Sequences

The following procedure describes how to set up a calibration sequence for an analysis which uses single-level calibration.

There is one calibration standard (C) and 9 samples (S).

The analysis requires that:

- each sample is analyzed in duplicate,
- the calibration standard is analyzed once before the samples and re-analyzed once after every 2 samples,

  C S S C S S C S S C S S C S C

- the calibration standard is located in position 90 and the 9 sample vials are in positions 1 to 9 of the autosampler tray, and
- the method called METH1 is used for the samples and standards.

The example assumes that the sequence table is empty. If the sequence table is not empty, use the **Delete** button to delete all lines or use **File - New**.

1 Select the Sequence screen.

2 Move to line 1 and press **Insert**.

3 Select **Method** and then move to METH1 and press **Load**.

4 Move to the End of sequence list, select the **Wizard** and enter:

Vial Range	1 to 9
#Inj.	2

5 Select **Calibration** to display the Calibration Settings screen.

6 Change the settings according to Figure 98.

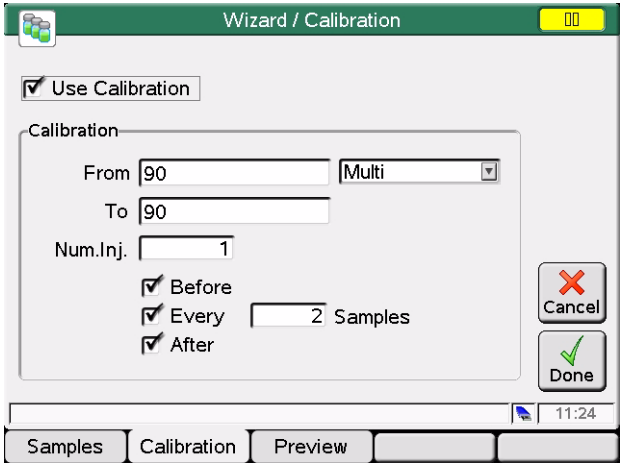


Figure 98 Sequence Calibration Wizard

7 Press **Preview** to view the result.

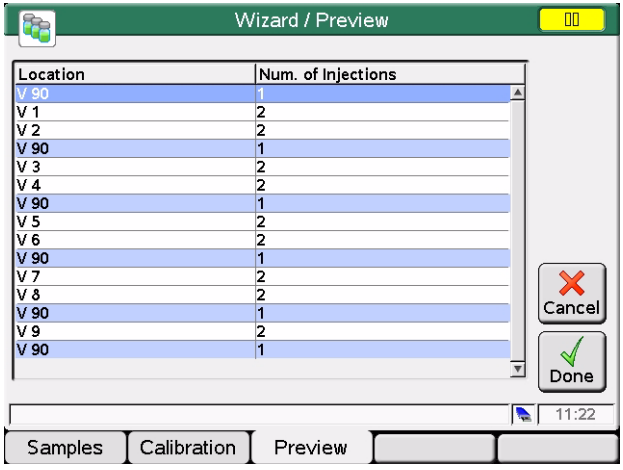


Figure 99 Sequence Calibration Wizard - Preview

8 Select **Done** to accept entries.

9 Press **Start** and confirm the start of the sequence.

Multiple-Level Calibration Sequences

The following sections describe how to set up calibration sequences for analyses which use multiple-level calibration.

Re-calibrating With the Same Group of Standards

There are three calibration standards of different concentrations (C1, C2, C3) and 15 samples (S). The standards and samples are analyzed using the same method.

The analysis requires that:

- each sample is analyzed twice,
- the calibration standards are analyzed twice before the samples and re-analyzed twice after every 5 samples,

  C1 C2 C3 S10-S14 C1 C2 C3 S15-S19 C1 C2 C3 S20-S24 C1 C2 C3
- the calibration standards are located in positions 90 to 92 of the autosampler tray,
- the 15 sample vials are located in positions 10 to 24 of the autosampler tray, and
- the samples and standards are analyzed using a method called METH1.

The example assumes that the sequence table is empty. If the sequence table is not empty, use the **Delete** button to delete all lines or use **File - New**.

1 Select the Sequence screen.

2 Move to line 1 and press **Insert**.

3 Select **Method** and then move to METH1 and press **Load**.

4 Move to the End of sequence list, select the **Wizard** and enter:

Vial Range	10 to 24
#Inj.	2

5 Select **Calibration** to display the Calibration Settings screen.

6 Change the settings according to Figure 98.

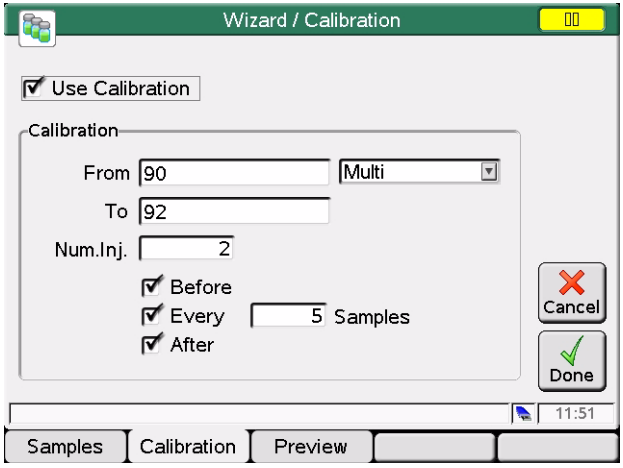


Figure 100 Sequence Calibration Wizard

7 Press **Preview** to view the result.

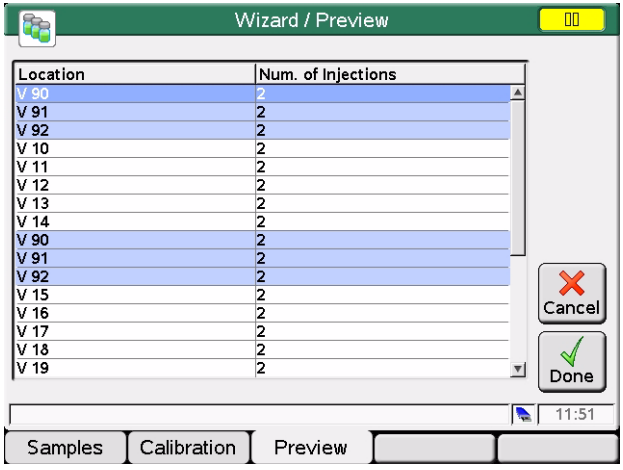


Figure 101 Sequence Calibration Wizard - Preview

8 Select **Done** to accept entries.

9 Press **Start** and confirm the start of the sequence.

The autosampler now analyzes:

- the three calibration standards in duplicate,
- sample vials 10 through 14,
- the three calibration standards in duplicate,
- sample vials 15 through 19,
- the three calibration standards in duplicate,
- sample vials 20 through 24, and
- the three calibration standards in duplicate.

Re-calibrating With Multiple Groups of Standards

There are two different types of sample, A and B that need to be analyzed.

The analysis for sample type A requires a 5 µl injection and a stoptime of 8 minutes.

The analysis of sample type B requires a 2 µl injection and a stoptime of 5 minutes.

For sample type A:

- there are 3 calibration standards of different concentrations and 6 samples,
- each sample must be analyzed once,
- the calibration standards must be analyzed in duplicate and re-analyzed after every 2 samples,

  C1 C2 C3 S7 S8 C1 C2 C3 S9 S10 C1 C2 C3 S11 S12 C1 C2 C3
- The calibration standards of type A are in positions 1, 2 and 3 of the autosampler tray and the 6 sample vials are in positions 7 to 12, and
- the samples and the calibration standards use the same method called METH1.

For sample type B:

- there are 3 calibration standards of different concentrations and 9 samples,
- each sample must be analyzed once,
- the calibration standards must be analyzed twice and re-analyzed after every 3 samples,

  C1 C2 C3 S13-S15 C1 C2 C3 S16-S18 C1 C2 C3 S19-S21 C1 C2 C3
- the calibration standards of type B are in positions 4, 5 and 6 of the autosampler tray and the 9 sample vials are in positions 13 to 21, and
- the samples and calibration standards of type B use different methods.

The samples use METH2 and the calibration standards use METH3. These methods contain the same analytical parameters and differ only in the analysis stoptime.

The example assumes that the sequence table is empty. If the sequence table is not empty, use the **Delete** button to delete all lines or use **File - New**.

1 Select the Sequence screen.

2 Move to line 1 and press **Insert**.

3 Select **Method** and then move to METH1 and press **Load**.

4 Move to the End of sequence list, select the **Wizard** and enter:

Vial Range	7 to 12
#Inj.	1

5 Select **Calibration** to display the Calibration Settings screen.

6 Change the settings according to Figure 98.

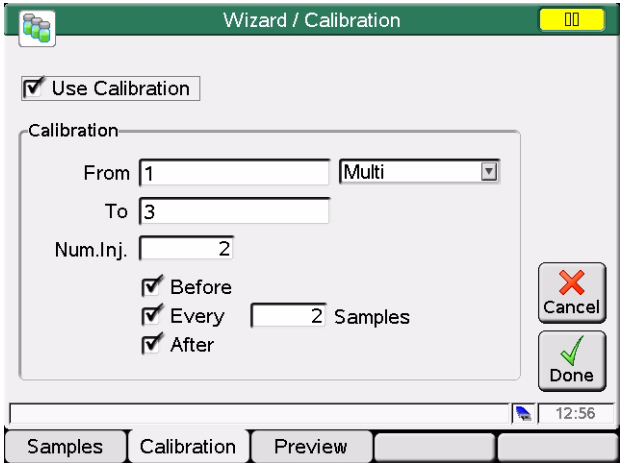


Figure 102 Sequence Calibration Wizard

7 You may press **Preview** to view the result.

8 Select **Done** to accept entries.

9 Move to the End of sequence list and press **Insert**.

10 Select **Method** and then move to METH2 and press **Load**.

NOTE You have to insert METH2/METH3 before/after each calibration sample line(s). Use copy/paste or use insert/parameter/stoptime and only one method.

11 Move to the End of sequence list, select the **Wizard** and enter:

Vial Range	13 to 21
#Inj.	1

12 Select **Calibration** to display the Calibration Settings screen.

13 Change the settings according to Figure 98.

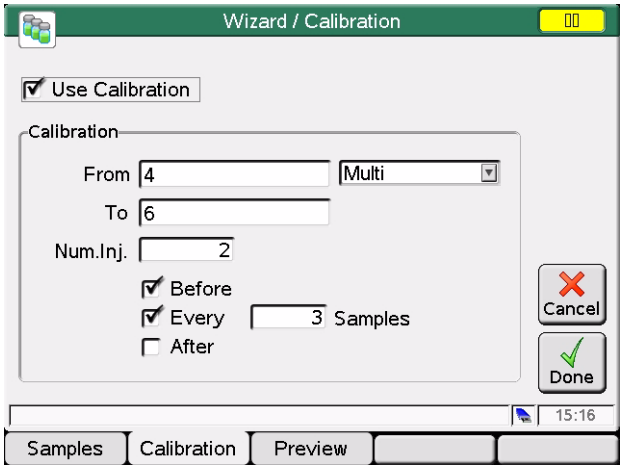


Figure 103 Sequence Calibration Wizard

14 You may press **Preview** to view the result.

15 Select **Done** to accept entries.

16 Press **Start** and confirm the start of the sequence.

The autosampler now analyzes:

- three type A calibration standards in duplicate,
- type A samples in vials 7 and 8,
- three type A calibration standards in duplicate,
- type A samples in vials 9 and 10,
- three type A calibration standards in duplicate,
- type A samples in vials 11 to 12,
- three type A calibration standards in duplicate,

- three type B calibration standards in duplicate,
- type B samples in vials 13, 14 and 15,
- three type B calibration standards in duplicate,
- type B samples in vials 16,17 and 18,
- three type B calibration standards in duplicate,
- type B samples in vials 19, 20 and 21, and
- three type B calibration standards in duplicate.

Synchronizing Analyses with External Devices

With an APG remote connector the system can be connected to external devices in order to synchronize the analyses. This is necessary when an external device needs some time in order to get ready for a new analysis and when transmission of a start request is required (see “Connecting External Devices” on page 119 for further information on interfaces).

The synchronization mode can be chosen in the **Configure - System** screen.

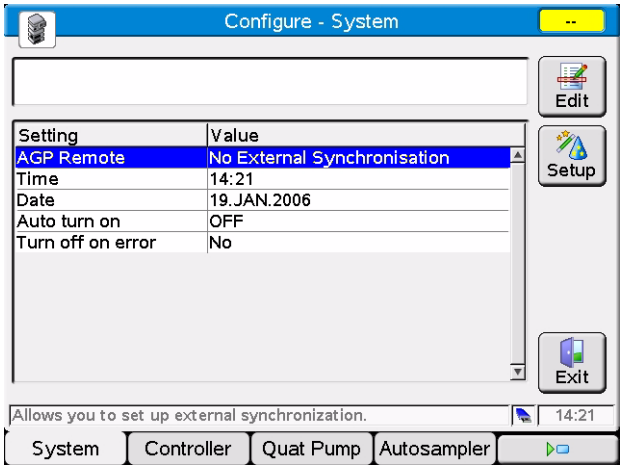


Figure 104 Choosing the Synchronization mode

In any case, do all the analysis preparation using the Instant Pilot.

NOTE

A “Start” command is used to start the analytical run from the point of injection and is usually issued by the autosampler.
A “Start Request” command causes the autosampler to take the next vial and place it under the injection needle (see “APG Remote” on page 119).
The Start button on the Instant Pilot is used to start sequence analysis.

Standard Mode

In the standard mode, the analysis is under the command of the Instant Pilot. The Instant Pilot issues a Start command to the autosampler as soon as all modules are ready for the next analysis. The autosampler issues the Start command at the point of injection. With an Agilent Autosampler integrated in the system and no external devices, this is the normal mode of operation.

Send Single Start Request

After you start the analysis with the Instant Pilot, it will generate a single start request on the APG remote lines. This triggers the external device, which starts each injection by sending a start signal. The vial range or sequence is started by the Instant Pilot, but then both systems run free without further synchronization.

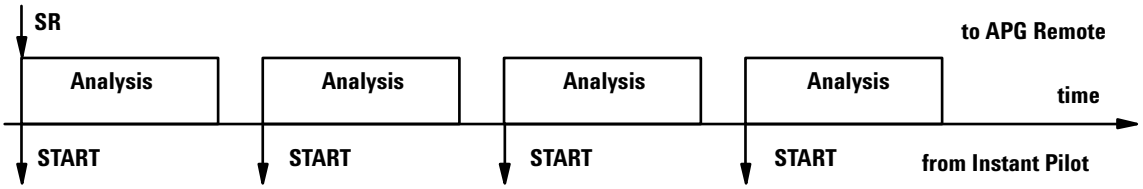


Figure 105 Send single external start request

Send Multiple Start Request (external controlled injector)

This will cause the Instant Pilot to generate start requests before each run. The external device starts each injection then by sending a start signal to the APG remote line. That is, after all the programming has been completed on the Instant Pilot and the Start button has been pressed, a Start Request is issued before each run and the external device must give the Start command for the injection process.

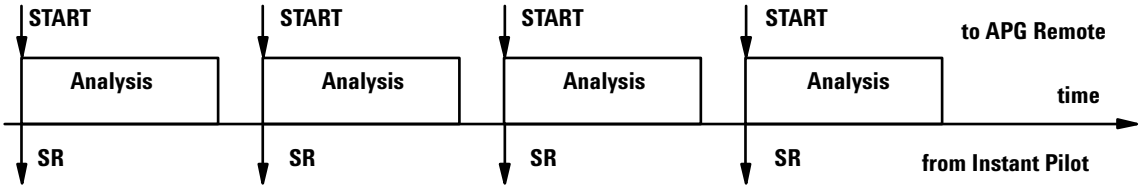


Figure 106 Send repeated external start request

Here, too, the module simply tracks the progress of the analysis.

Wait for Single (External) Start Request

After pressing the Start button, the Instant Pilot waits for a single external start request on the APG remote lines. When the start request is received, the complete vial range or sequence is done as in standard mode under the command of the Instant Pilot without further external synchronization.

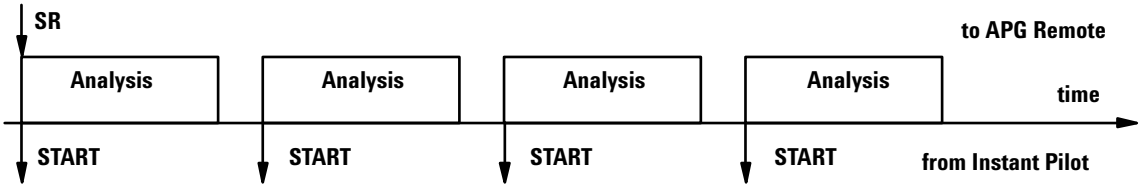


Figure 107 Wait for single external start request

Wait for Multiple Start Request (Instant Pilot controls injector)

After pressing the Start button, the Instant Pilot waits for an external start requests before injection or sequence. The start requests have to be generated by the external device. This mode is recommended when a device needs extra time to get ready for the next analysis, and thus has to be in charge of the start event. The receive of a Start Request leads first to a Prepeare (e.g. balance of a detector) and afterwards to an injection by the sampler who then sends the Start via APG remote.

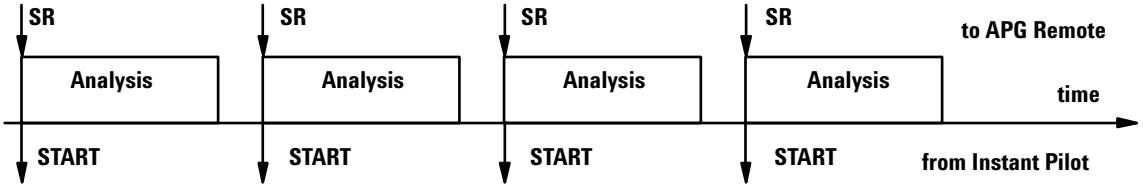


Figure 108 Wait for repeated external start request

NOTE

An Agilent variable wavelength detector or diode array detector will perform a balance (assumed that Auto Balance is set to pre-run) when receiving a start command from the Instant Pilot. This will only happen in the Standard and Wait for single (multiple) start request modes. In the Send single (multiple) start request modes, a balance before the run will NOT be performed. If regular balancing is required, set the Auto Balance check box to Postrun.

5
Maintenance and Repair

This chapter describes how to perform firmware updates, troubleshooting and replacements.

Firmware Updates

The Agilent HPLC modules and the Instant Pilot have firmware installed that will be updated from time to time to add new features and/or remove malfunctions.

The firmware of the instrument consists of two independent sections:

- a non-instrument specific section, called resident system,
- an instrument specific section, called main system.

Resident System

- the complete communication capabilities (CAN, LAN and RS-232C, on the Instant Pilot only CAN),
- memory management,
- ability to update the firmware of the ‘main system’.

Main System

Its properties are:

- the complete communication capabilities (CAN, LAN and RS-232C, on the Instant Pilot only CAN),
- memory management,
- ability to update the firmware of the resident system.

In addition, the main system comprises the instrument functions that are divided into common functions like

- synchronization
- error handling,
- diagnostic functions,
- module specific functions

The firmware of Agilent HPLC modules or the Instant Pilot can be updated using the Instant Pilot and a USB Flash Drive that holds the firmware files in the root directory or using the LAN/RS-232 Update Tool 2.4 and a PC with LAN or RS-232 connected to a 1100/1200/1290 module.

Table 14 Firmware Update Tools

Update via Module	Instant Pilot G4208A	LAN/RS-232 Update Tool 2.4 and a PC with LAN or RS-232	Agilent LabAdvisor/Utilities B.01.03 and above and a PC with LAN or RS-232
Instant Pilot G4208A	USB Flash Drive	via the HPLC system plus CAN	via the HPLC system plus CAN
1100/1200/1290 HPLC Modules	USB Flash Drive plus CAN cable	requires LAN / RS-232 plus CAN cable	requires LAN / RS-232 plus CAN cable

The installation of older firmware might be necessary:

- to keep all systems on the same (validated) revision, or
- if third-party control software requires a special version.

To upgrade/downgrade the firmware,

1 Download the firmware and the documentation from the Agilent web

http://www.chem.agilent.com/scripts/cag_firmware.asp.

NOTE The use of the LAN/RS-232 Update Tool 2.4 is also possible, see Table 14. It is also available via the above-mentioned Agilent web.

NOTE If the Instant Pilot is in **"Backward compatible mode ON"**, see"With 3rd Party Control Software" on page 124, it will not be seen by the LAN/RS-232 Firmware Update Tool. In this case reconfigure the Instant Pilot to **"Backward compatible mode OFF"**.

2 Load the firmware into the module(s) as described in "Updating the Firmware Using The Single Mode" on page 156 or "Updating the Firmware Using The Wizard" on page 158.

Updating the Firmware Using The Single Mode

NOTE Only one firmware revision (set) should be stored on the USB Flash Drive. If more than one firmware version for a module is available, the Instant Pilot always takes the most recent firmware version. In this case, delete those versions not required.

CAUTION Do not disconnect the Instant Pilot or the USB Flash Drive while a firmware update is running. Otherwise the module may become unusable.

To open the Maintenance - System information, press **More** from the Welcome screen and select **Maintenance**.

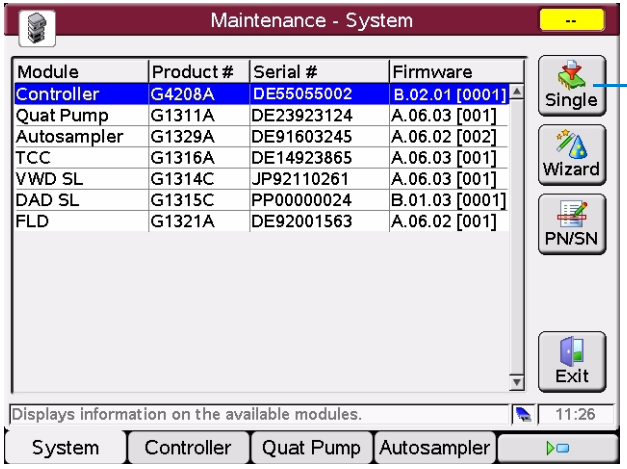


Figure 109 Firmware Update Screen - Simple Mode

1 Move the curser to the module you want to update.

2 Press **Single**.

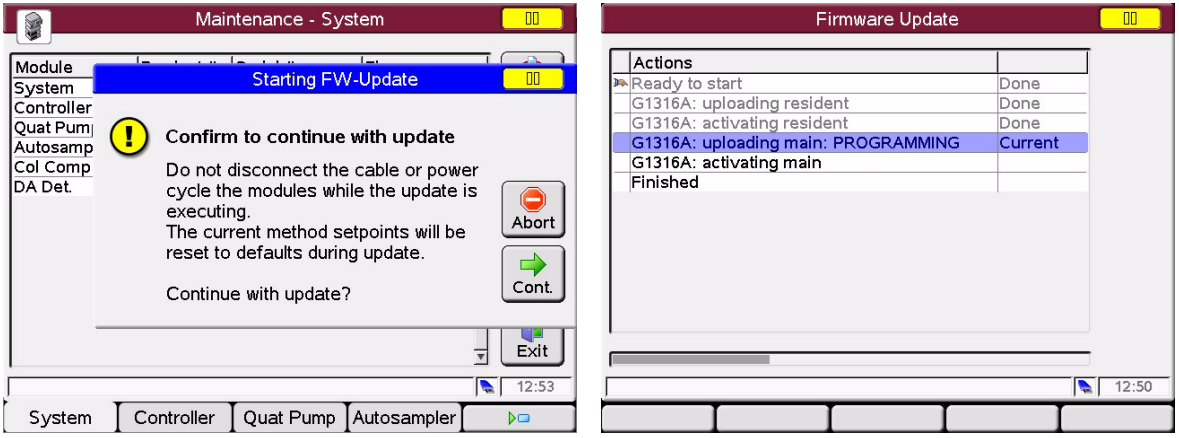


Figure 110 Firmware Update Screen - Ready for Update

3 Press **Cont.** button to confirm, and **Cont.** start the update or **Cancel** to exit this screen.

The actions and the progress is shown.

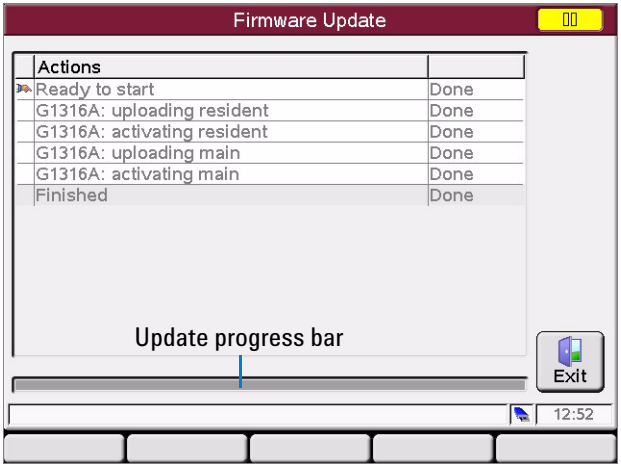


Figure 111 Firmware Update Screen - Update has completed

In the case of an error, refer to “Errors During Firmware Updates” on page 165.

Updating the Firmware Using The Wizard

NOTE Only one firmware revision (set) should be stored on the USB Flash Drive. If more than one firmware version for a module is available, the Instant Pilot will always take the most recent firmware version. In this case, delete those versions not required.

CAUTION Do not disconnect the Instant Pilot or the USB Flash Drive while a firmware update is running. Otherwise the module may become unusable.

To open the Maintenance - System information, press **More** from the Welcome screen and select **Maintenance**.

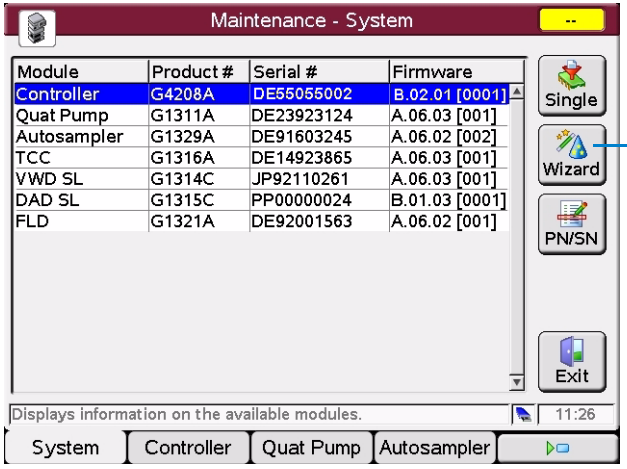
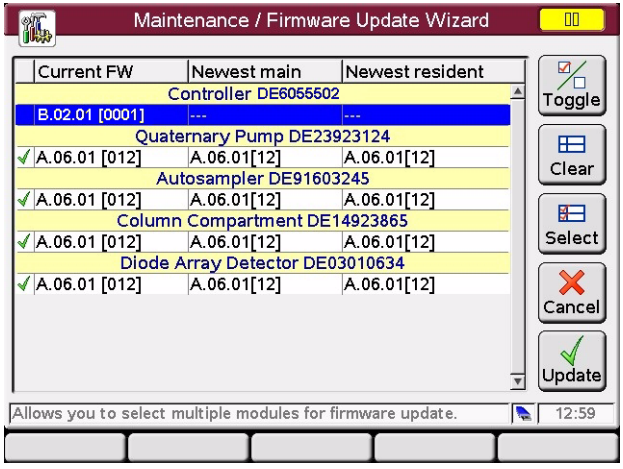


Figure 112 Firmware Update Screen - Update Wizard

The **Update Wizard** allows you to define the modules to be updated. This screen also shows the installed firmware revision versus the available.

1 Press **Update Wizard** and then **Cont.**, or **Abort** to cancel the update process.

2 The next screen (Figure 113) shows all modules, their installed firmware revisions and the available firmware revisions on the USB Flash Drive.



select/de-select a module

clear all selections

select all modules

exists this screen

starts the update

USB Flash Drive must be active

Figure 113 Firmware Update Screen - Update Wizard

3 Do your selections and press **Update**, or **Cancel** to exit the screen.

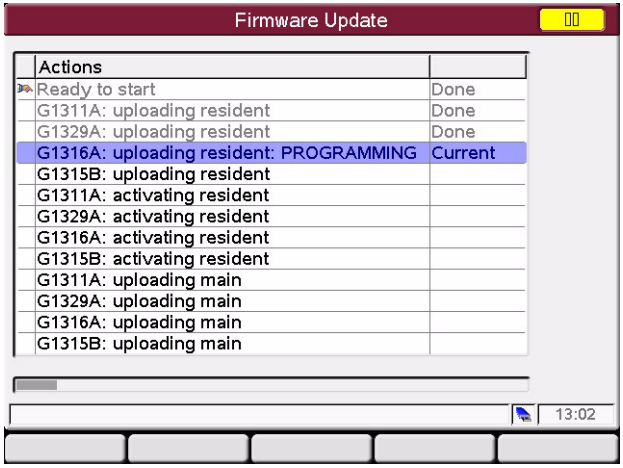


Figure 114 Firmware Update Screen - Update in Progress

In the case of an error, refer to "Errors During Firmware Updates" on page 165.

Update Information for A.05.13 Firmware

NOTE Before you downgrade to revision A.05.13, upgrade the Instant Pilot to the latest B.xx.xx firmware revision. This will assure that the later upgrade from A.05.13 to B.xx.xx works smoothly.

Using the Instant Pilot

Downgrade to Revision A.05.13

In those cases where a Instant Pilot has to be downgraded from B.xx.xx to A.05.13 to allow the operation with A.05.09/12 firmware installed on Agilent 1100/1200 series modules, follow the procedure below.

1. Copy the firmware file G4208A_A513.dlb to an USB Flash Drive (the A.05.13 has only main firmware, the resident of B.xx.xx resides in the memory).
2. Insert the USB Flash Drive into the Instant Pilot.
3. Start the firmware update.

Upgrade to Revision B.xx.xx

When the Instant Pilot needs to be upgraded to a B.xx.xx firmware to be compatible with Agilent 1100/1200 series modules working on A.06.xx/B.01.xx, follow the procedure below.

1. Copy the firmware files 4208A_Bxxx_yyy.dlb and res_4208A_Bxxx_yyy.dlb to an USB Flash Drive (the original resident of B.xx.xx in the memory will be overwritten).
2. Insert the USB Flash Drive into the Instant Pilot.
3. Start the firmware update.

Using the LAN/RS-232 Firmware Update Tool

Detailed information about the LAN/RS-232 Update Tool 2.4 can be found within the documentation of this tool provided via the Agilent web at

http://www.chem.agilent.com/scripts/cag_firmware.asp.

NOTE Use the latest LAN/RS-232 Update Tool 2.4. Version 2.3 and below do not work with this procedure.

NOTE If the Instant Pilot is in **"Backward compatible mode ON"**, see"With 3rd Party Control Software" on page 124, it will not be seen by the LAN/RS-232 Update Tool 2.4. For updating firmware reconfigure the Instant Pilot to **"Backward compatible mode OFF"**.

NOTE If your Agilent 1100/1200 system runs on firmware A.05.xx, the Instant Pilot is not recognized by the LAN/RS-232 Update Tool 2.4. In this case either one of the modules or the complete system must be upgraded to A.06.xx/B.01.xx.

NOTE Before you downgrade the Instant Pilot to revision A.05.13, upgrade the Instant Pilot to the latest B.xx.xx firmware revision. This will assure that the later upgrade from A.05.13 to B.xx.xx works smoothly.

NOTE The preferred way of updating the Instant Pilot firmware should be the use of a USB Flash Drive. This is much faster than the use of the LAN/RS-232 Update Tool 2.4 (4 minutes vs. 10 minutes via LAN vs. 70 minutes via RS-232).

Use one of the following procedures:

- "Downgrade from B.xx to A.05.1x" on page 162
- "Upgrade from A.05.1x to B.xx" on page 162
- "Upgrade from A.05.11 to A.05.13" on page 163

Downgrade from B.xx to A.05.1x

1. When the Agilent 1100/1200 series modules are on a firmware platform A.06.xx, downgrade the Instant Pilot to A.05.1x first. During the downgrade process the screen is black.
2. After boot of the Instant Pilot,
   - the Instant Pilot shows “Scanning System ...”
   - the LAN/RS-232 Update Tool 2.4 indicates “100% updated” but does not display the result dialog.
3. Press **Cancel** (red cross button) on the LAN/RS-232 Update Tool 2.4 to stop the Update process. The Instant Pilot is no longer listed in the tree view of the Update Tool.
4. Downgrade all 1100/1200 modules together to the target firmware (A.05.11/13 or A.05.09/10).
5. When finished,
   - the LAN/RS-232 Update Tool 2.4 shows all 1100/1200 modules without the Instant Pilot.
   - the Instant Pilot shows all modules of the system in the Welcome screen.
6. Close the connection and the LAN/RS-232 Update Tool 2.4.

Upgrade from A.05.1x to B.xx

1. When the Agilent 1100/1200 series modules are on a firmware platform A.05.09/1x, then update the modules to platform A.06.xx.
2. Connect the Instant Pilot (with A.05.1x firmware) to one of the modules (if not already done).
3. After boot, enter the Maintenance screen and press the **Controller** button.

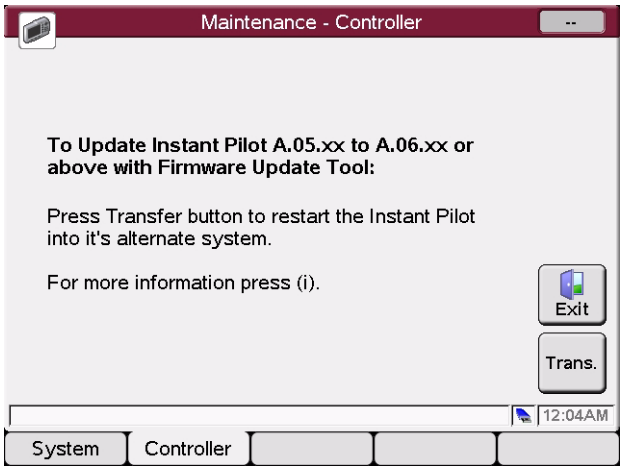


Figure 115 Update Information for firmware A.05.11

4 Press the **Transfer** button. The Instant Pilot will switch into resident mode (black screen) and the Update Tool will list the Instant Pilot.

5 Select the Instant Pilot for update to the target firmware revision

6 Start the update.

7 When finished, the Instant Pilot boots in main mode and shows all modules of the system in the Welcome screen.

8 Close the connection and the LAN/RS-232 Update Tool 2.4.

Upgrade from A.05.11 to A.05.13

If the Instant Pilot needs to be updated with a new firmware revision , follow these steps:

1 Disconnect all 1100/1200 series module from that module that hosts the LAN/RS-232 interface.

2 Upgrade this module to firmware A.06.xx first (otherwise the Instant Pilot is not visible in the LAN/RS-232 Update Tool 2.4).

3 After boot, enter the Maintenance screen and press the **Controller** button.

4 Press the **Transfer** button. The Instant Pilot will switch into resident mode (black screen) and the Update Tool lists now the Instant Pilot.

5 Select the Instant Pilot for update to the target firmware revision

6 Start the update.

7 After boot of the Instant Pilot,

- the Instant Pilot shows “Scanning System ...”
- the LAN/RS-232 Update Tool 2.4 indicates “100% updated” but does not display the result dialog.

8 Press **Cancel** (red cross button) on the LAN/RS-232 Update Tool 2.4 to stop the Update process. The Instant Pilot is no longer listed in the tree view of the Update Tool.

9 Downgrade the 1100/1200 module to the target firmware (A.05.11/13 or A.05.09/10).

10 When finished,

- the LAN/RS-232 Update Tool 2.4 shows all 1100/1200 modules without the Instant Pilot.
- the Instant Pilot shows all modules of the system in the Welcome screen.

11 Close the connection and the LAN/RS-232 Update Tool 2.4.

Errors During Firmware Updates

If an error stops the update process, it is displayed.

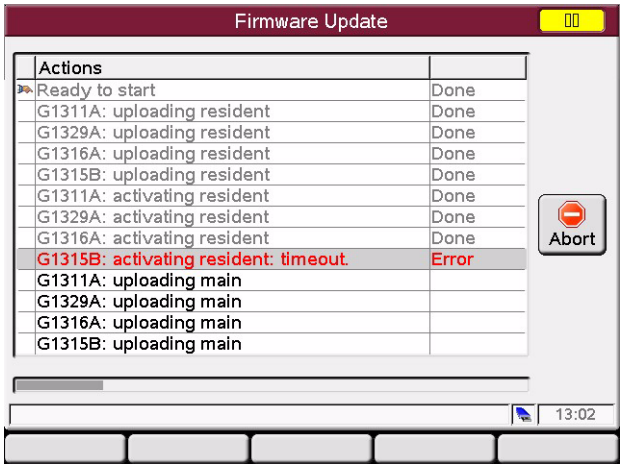


Figure 116 Firmware Update Screen - Error during the update

Press **Abort** to leave the Update process.

In the above example all modules stay in resident mode (blinking yellow).

Restart the firmware update again.

Troubleshooting

Internal diagnostics continuously monitor the module's condition and record any unusual events in an electronic logbook, see "Logbook Information" on page 55. For example, missing vials or leaking solvent errors and record the errors in the logbook together with the time and date of the occurrence. The logbook is self-updating. All events are listed, even duplicates (up to 1000 entries). This logbook can be saved to the USB Flash Drive. Screenshots also can be saved to the USB Flash Drive, see "Saving a Screenshot to USB Flash Drive" on page 125.

Troubleshooting the Instant Pilot

If your Instant Pilot does not work correctly, disconnect the module CAN connector from the rear of the Agilent Series module it is attached to and reconnect it.

If the problem still remains, then

- power down all connected devices and computers and wait 1 minute and then restart, or
- try to use just one Agilent Series module.

If the problem still remains, call Agilent Technologies.

USB Flash Drive not recognized

NOTE

Since USB Flash Drives may vary from vendor to vendor or from type to type, incompatibilities can occur. In general, USB Flash Drives from Sandisk and Kingston should work. The USB Flash Drive must be FAT-16 formatted and without encryption. See "Handling of Unsupported USB Flash Drive Formats" on page 77 and "USB Flash Drive Kit" on page 168.

Instant Pilot not recognized by Firmware Update Tool

NOTE

If the Instant Pilot is in **"Backward compatible mode ON"**, see"With 3rd Party Control Software" on page 124, it will not be seen by the LAN/RS-232 Firmware Update Tool. In this case reconfigure the Instant Pilot to **"Backward compatible mode OFF"**.

Contact Agilent

If you experience other problems, please contact your local Agilent support provider for help.

Repairing the Instant Pilot

The Instant Pilot cannot be repaired except for the CAN cable.

Parts Identification

Table 15 Part Numbers

Description	Part Number
Instant Pilot G4208A (complete assembly)	G4208-67001
CAN Cable	G4208-81600
Upgrade Kit for NEW HOLDER (for adapting the Instant Pilot to Agilent 1100/1200 series modules, see "Holder Versions for the Instant Pilot" on page 19).	G4208-68701 (available mid of 2007)
Adapter Plate NEW (for adapting the Instant Pilot to Agilent 1100/1200 series modules, see "Holder Versions for the Instant Pilot" on page 19).	G4208-60003
Adapter Plate OLD (for adapting the Instant Pilot to Agilent 1100/1200 series modules, see "Holder Versions for the Instant Pilot" on page 19).	G4208-60002
USB Flash Drive Kit	G4208-68700

NOTE

This product contains an TFT LCD assembly which is backlit by a mercury fluorescent lamp which contains mercury, and must be managed, recycled, and/or disposed in accordance with all applicable laws, ordinances, and regulations. For information on how to recycle or dispose of the mercury lamp contained in this product, or if you have additional questions on the mercury contained within this product, contact Agilent customer service.

Exchanging the CAN Cable

CAUTION Before you open the Instant Pilot, the CAN-cable must be disconnected from the HPLC module to assure that no voltages are present in the Instant Pilot.

CAUTION Electronic boards and components are sensitive to electrostatic discharge (ESD). In order to prevent damage always use an ESD protection when handling electronic boards and components

1 Place the Instant Pilot face down on a bench (as shown in Figure 117).
2 Carefully remove the labels that are across the screws.
3 Remove the six screws that fix the rear panel.

Figure 117 Rear Panel - location of screws

4 Remove the rear panel carefully.

5 The release button [1] (shown in Figure 118) may fall out during the removal. Keep it.

NOTE

Step 5 and 9 are for the OLD rear panel design only. See information on "New Holder Design" on page 20. The new rear panel does not have the release button.

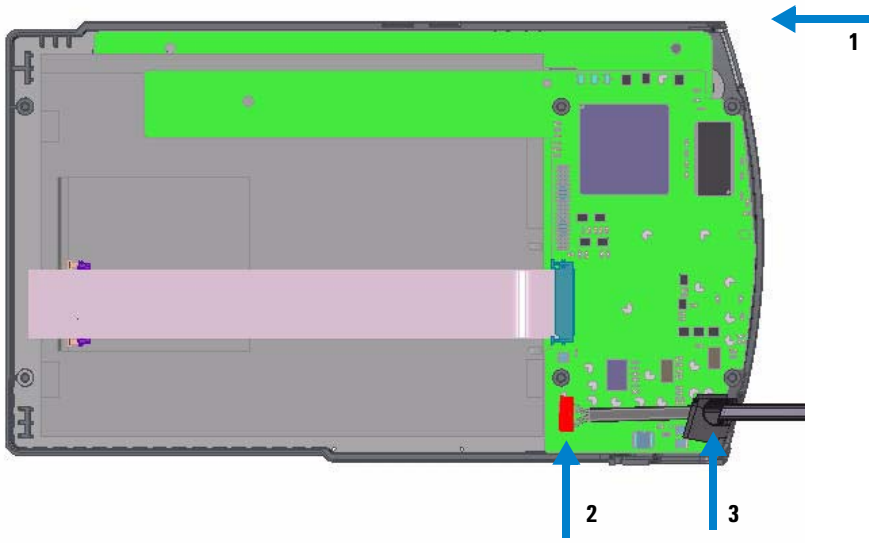


Figure 118 Rear Panel - location of cable, connector and release button

6 Unplug the CAN cable from it's connector [2].

7 Plug the new CAN cable into the connector [2].

8 Fit the cable with the cable relief [3] in the front cover.

9 Place the release button into its location [1].

NOTE

Before you replace the rear panel, observe the release button mechanism at the rear panel. The release button pin must fit into the recess on one end of the connecting rod.

10 Carefully replace the rear panel and fit the release button pin into the recess on one end of the connecting rod of the rear panel, see Figure 119.

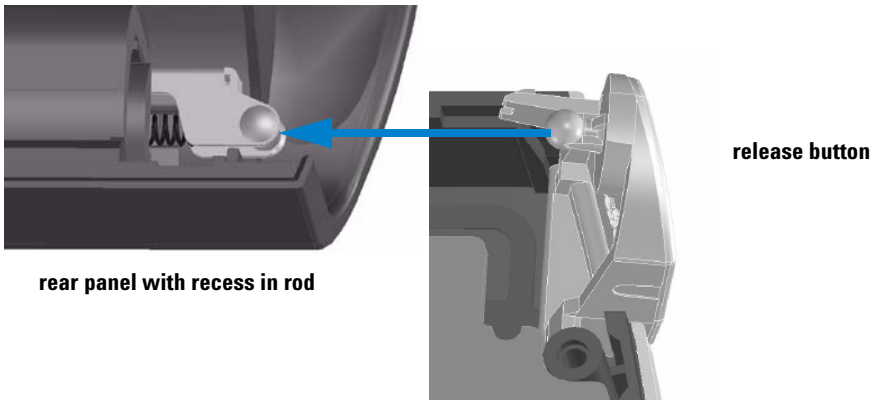


Figure 119 Pin of release button fits into the recess of the rod (OLD rear panel design)

11 Fix the rear panel screws.

6 Appendix

This chapter provides safety and other general information.

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.

Safety Symbols

Table 16 shows safety symbols used on the instrument and in the manuals.

Table 16 Safety Symbols

Symbol	Description
	The apparatus is marked with this symbol when the user should refer to the instruction manual in order to protect the apparatus against damage.
	Indicates dangerous voltages.

WARNING **A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.**

CAUTION A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

General

This is a instrument has been manufactured and tested according to international safety standards.

Operation

Before applying power, comply with the installation section. Additionally the following must be observed.

- Do not remove instrument covers when operating.
- Any maintenance, and repair of the opened instrument under voltage should be avoided as much as possible. When inevitable, this should be carried out by a skilled person who is aware of the hazard involved.
- Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.
- Do not replace components with power cable connected.
- Do not operate the instrument in the presence of flammable gases or fumes. Operation of any electrical instrument in such an environment constitutes a definite safety hazard.
- Do not install substitute parts or make any unauthorized modification to the instrument.
- Capacitors inside the instrument may still be charged, even though the instrument has been disconnected from its source of supply.
- Dangerous voltages, capable of causing serious personal injury, are present in this instrument. Use extreme caution when handling, testing and adjusting.

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 appliances from 13 August 2005.

NOTE

This product complies with the WEEE Directive (2002/96/EC) marking requirements. The affixed label indicates that you must not discard this electrical/electronic product in domestic household waste.

Product Category:
With reference to the equipment types in the WEEE Directive Annex I, this product is classed as a "Monitoring and Control instrumentation" product.

Do not dispose off in domestic household waste

To return unwanted products, contact your local Agilent office, or see www.agilent.com for more information.

NOTE

This product contains an TFT LCD assembly which is backlit by a mercury fluorescent lamp which contains mercury, and must be managed, recycled, and/or disposed in accordance with all applicable laws, ordinances, and regulations. For information on how to recycle or dispose of the mercury lamp contained in this product, or if you have additional questions on the mercury contained within this product, contact Agilent customer service.

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 equipment 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.

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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In This Guide

This book provides information about the Agilent Instant Pilot.

- Start-up Information
- Working with the Instant Pilot
- Running an Isocratic Analysis
- Running Multiple-Vial Analyses
- Maintenance and Repair

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