Agilent 1200 Series
Autosampler Thermostat

User Manual

Agilent Technologies

Notices

Manual Part Number

G1330-90011

Edition

11/08

Printed in Germany

Agilent Technologies
Hewlett-Packard-Strasse 8
76337 Waldbronn

Research Use Only

Not for use in Diagnostic Procedures.

Warranty

The material contained in this document is provided "as is," and is subject to being changed, without notice, in future editions. Further, to the maximum extent permitted by applicable law, Agilent disclaims all warranties, either express or implied, with regard to this manual and any information contained herein, including but not limited to the implied warranties of merchantability and fitness for a particular purpose. Agilent shall not be liable for errors or for incidental or consequential damages in connection with the furnishing, use, or performance of this document or of any information contained herein. Should Agilent and the user have a separate written agreement with warranty terms covering the material in this document that conflict with these terms, the warranty terms in the separate agreement shall control.

Technology Licenses

The hardware and/or software described in this document are furnished under a license and may be used or copied only in accordance with the terms of such license.

Restricted Rights Legend

If software is for use in the performance of a U.S. Government prime contract or subcontract, Software is delivered and licensed as "Commercial computer software" as defined in DFAR 252.227-7014 (June 1995), or as a "commercial item" as defined in FAR 2.101(a) or as "Restricted computer software" as defined in FAR 52.227-19 (June 1987) or any equivalent agency regulation or contract clause. Use, duplication or disclosure of Software is subject to Agilent Technologies' standard commercial license terms, and non-DOD Departments and Agencies of the U.S. Government will receive no greater than Restricted Rights as defined in FAR 52.227-19(c)(1-2) (June 1987). U.S. Government users will receive no greater than Limited Rights as defined in FAR 52.227-14 (June 1987) or DFAR 252.227-7015 (b)(2) (November 1995), as applicable in any technical data.

Safety Notices

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.

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.

Contents

1 Introduction

Introduction to the Thermostatted Autosampler

The Agilent 1200 Series autosampler is designed for use with other modules of the Agilent 1200 Series LC system or with other LC systems if adequate remote control inputs and outputs are available. The autosampler is controlled from the Agilent 1200 Series control module or from the Agilent ChemStation for LC systems.

The specially-designed thermostattable sample trays holds either 100 × 1.8 ml vials or two wellplates and 10 × 1.8 ml vials.

The autosampler thermostat contains Peltier-controlled heat exchangers. A fan draws air from the area above the sample vial tray of the autosampler and is then blown through the fins of the cooling/heating module. There it is cooled or heated according to the temperature setting. The thermostatted air enters the autosampler through a recess underneath the specially-designed sample tray. The air is then distributed evenly through the sample tray ensuring effective temperature control, regardless of how many vials are in the tray.

In cooling mode condensation is generated on the cooled side of the Peltier elements. This condensed water is safely guided into the leak system.

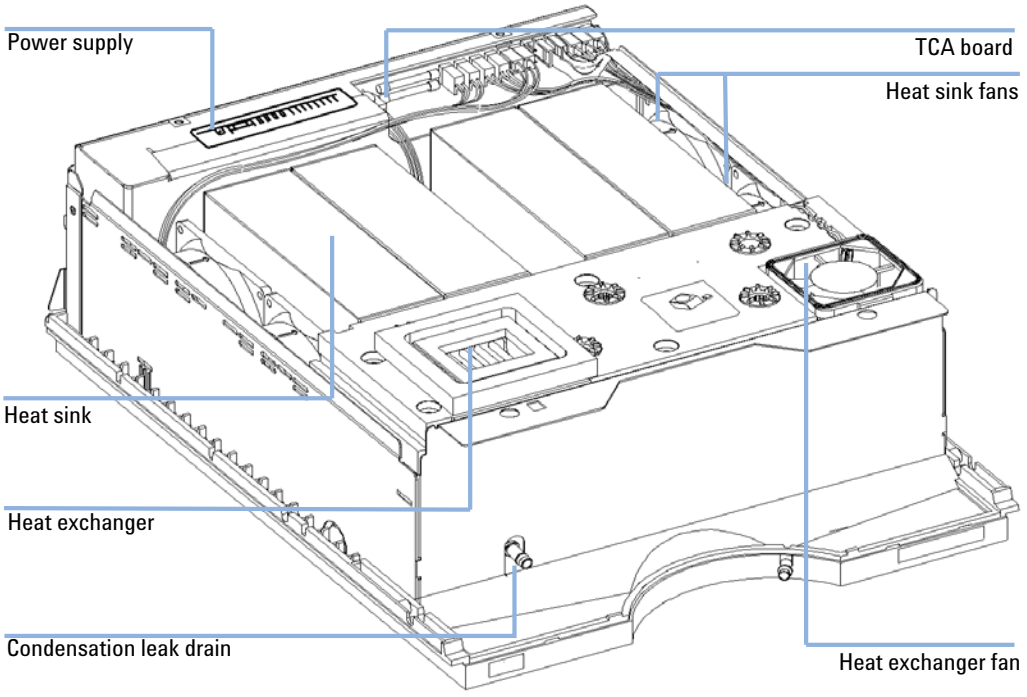


Figure 1 Overview of the Autosampler Thermostat

Autosampler Thermostat Operation

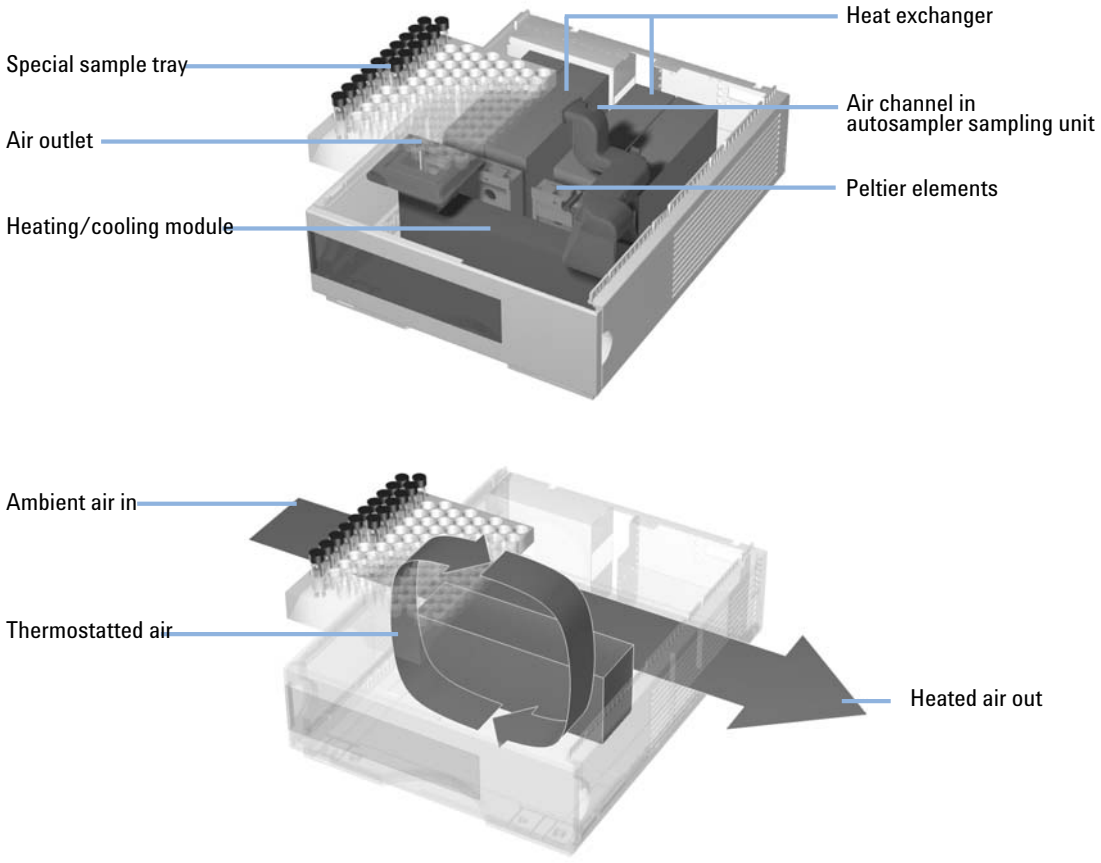


Figure 2 Autosampler Thermostat Principle

The thermostatted autosampler is equipped with a cooling/heating module which uses Peltier elements for efficient air cooling. When turned on the front side of the Peltier elements is heated/cooled according to the temperature setting. A fan draws air from the sample tray area and blows it through the

channels of the heating/cooling module. The fan speed is determined according to the environmental conditions (e.g., ambient temperature, humidity). In the heating/cooling module the air reaches the temperature of the Peltier elements and this thermostatted air is blown underneath the special sample tray where it is evenly distributed and streams back into the sample tray area. From there it is again drawn into the autosampler thermostat. This “recycle” mode assures a very efficient cooling/heating of the sample vials.

In cooling mode the opposite side of the Peltier element will become very hot and to maintain the performance of the elements they have to be cooled down. This is done with large heat exchangers in the back of the autosampler thermostat. Four fans blow air from left to right through the instrument to remove the heated air. The fan speed is controlled according to the temperature of the Peltier elements.

During cooling condensation will appear in the heating/cooling module. The condensed water will be guided out of the autosampler thermostat.

Electrical Connections

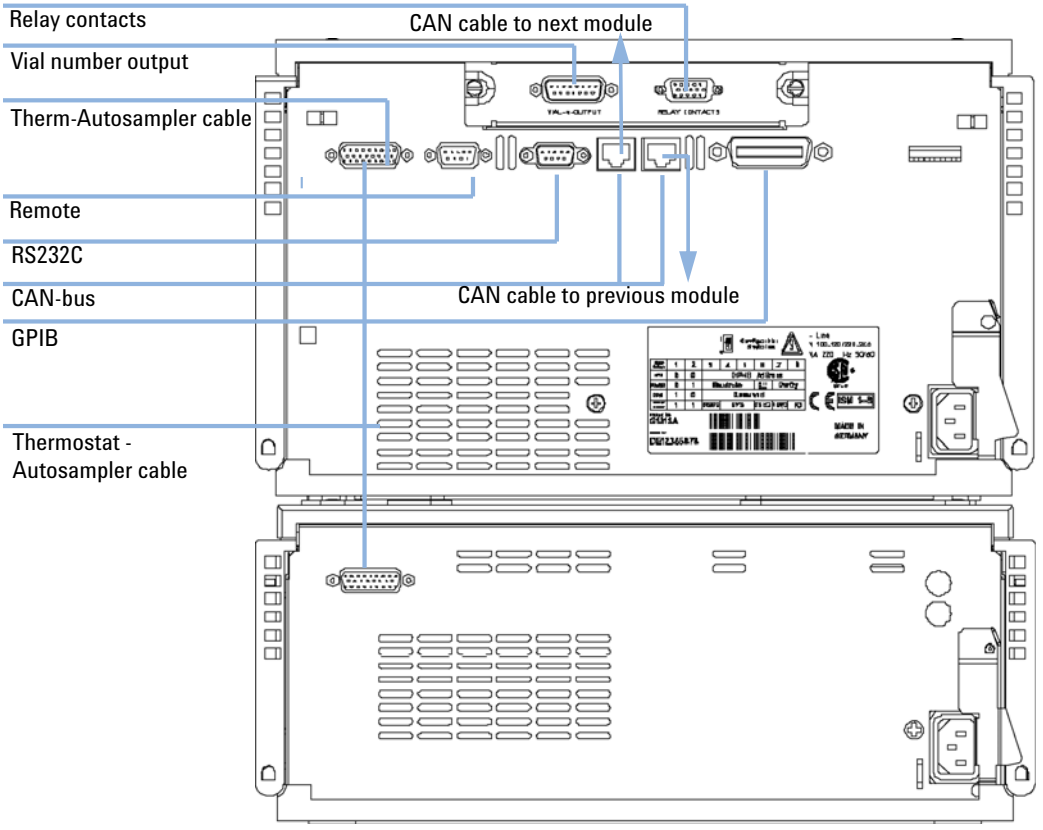


Figure 3 Electrical Connections

- The GPIB connector is used to connect the autosampler with a computer. The address and control switch module next to the GPIB connector determines the GPIB address of your autosampler. The switches are preset to a default address (see Autosampler Reference Manual) and this is recognized immediately after power on.

- The CAN bus is a serial bus with high-speed data transfer. The two connectors for the CAN bus are used for internal Agilent 1200 Series module data transfer and synchronization.
- The REMOTE connector may be used in combination with other analytical instruments from Agilent Technologies if you want to use features such as common shut down, prepare, and so on.
- The RS-232 connector may be used to control the autosampler from a computer through an RS-232 connection, using appropriate software. This connector needs to be activated by the configuration switch module next to the GPIB connector. The software needs the appropriate drivers to support this communication. See your software documentation for further information.
- The Thermostat-Autosampler connection is used for control signal transfer and synchronization of the two modules. The cable must be installed for operation of the autosampler thermostat.
- The power input socket accepts a line voltage of 100–120 or 220–240 volts AC ± 10 % with a line frequency of 50 or 60 Hz. Maximum power consumption of the autosampler module is 300 Watts (Volt-Amps). Maximum power consumption of the autosampler thermostat module is 260 Watts (Volt-Amps). There are no voltage selectors on your autosampler because the power supplies have automatic selection capability. The autosampler module has no externally accessible fuses, because automatic electronic fuses are implemented in the power supply. The power supply of the autosampler thermostat has two externally accessible fuses. The security lever at the power input socket prevents removal of the autosampler cover when line power is still connected.
- The interface board slot is used for external contacts, BCD output and for future use.

2
Site Requirements and Specifications

Site Requirements

A suitable site environment is important to ensure optimum performance of the autosamplers.

Power Consideration

The autosamplers comprises two modules, the autosampler module (G1329A, G1389A, G1367A, or G2260A) and the thermostat module (G1330B Therm). Both modules have a separate power supply and a power plug for the line connections. The two modules are connected by a control cable and both are turned on by the autosampler module.

The autosampler power supplies have automatic voltage selectors (see Table 1 on page 17). Consequently there are no voltage selectors in the rear of the two autosampler modules. The autosampler module has no externally accessible fuses, because automatic electronic fuses are implemented in its power supply. The autosampler thermostat power supply has two externally accessible fuses.

WARNING

Incorrect line voltage at the instrument

Shock hazard or damage of your instrumentation can result, if the devices are connected to a line voltage higher than specified.

➔ Connect your instrument to the specified line voltage.

CAUTION

Unaccessable power plug.

In case of emergency it must be possible to disconnect the instrument from the power line at any time.

➔ Make sure the power connector of the instrument can be easily reached and unplugged.

➔ Provide sufficient space behind the power socket of the instrument to unplug the cable.

Power Cords

Different power cords are offered as options with the module. The female end of all power cords is identical. It plugs into the power-input socket at the rear of the module. The male end of each power cord is different and designed to match the wall socket of a particular country or region.

WARNING **The absence of ground connection and the use of an unspecified power cord can lead to electric shock or short circuit.**

Electric Shock

- ➔ Never operate your instrumentation from a power outlet that has no ground connection.
- ➔ Never use a power cord other than the Agilent Technologies power cord designed for your region.

WARNING **Use of unsupplied cables**

Using cables not supplied by Agilent Technologies can lead to damage of the electronic components or personal injury.

- ➔ Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations.

Bench Space

The autosampler dimensions and weight (see Table 1 on page 17) allow the instrument to be placed on almost any laboratory bench. The instrument requires an additional 25 cm (10 inches) of space on either side for the circulation of air, and approximately 8 cm (3.1 inches) at the rear for electrical connections. Ensure the autosampler is installed in a level position.

If a complete Agilent 1200 Series system is to be installed on the bench, make sure that the bench is designed to carry the weight of all the modules. For a complete system including the thermostatted autosampler it is recommended to position the modules in two stacks, see "Optimizing the Stack Configuration" on page 22. Make sure that in this configuration there is 25 cm (10 inches) space on either side of the thermostatted autosampler for the circulation of air.

Environment

Your autosampler modules will work at ambient temperatures and relative humidity as described in Table 1 on page 17.

CAUTION

Condensation within the module

Condensation will damage the system electronics.

➔ Do not store, ship or use your module under conditions where temperature fluctuations could cause condensation within the module.

➔ If your module was shipped in cold weather, leave it in its box and allow it to warm slowly to room temperature to avoid condensation.

Physical Specifications

Table 1 Physical Specifications

Type	Specification	Comments
Weight	20.7 kg (46 lbs)	
Dimensions (width × depth × height)	140 × 345 × 435 mm (5.5 × 13.5 × 17 inches)	
Line voltage	100 – 240 VAC, ± 10%	Wide-ranging capability
Line frequency	50 or 60 Hz, ± 5%	
Power consumption	260 VA / 210 W / 717 BTU	Maximum
Ambient operating temperature	4 – 55 °C (41 – 131 °F)	See warning below
Ambient non-operating temperature	-40–70 °C (-4–158 °F)	
Humidity	< 95%, at 25–40 °C (77–104 °F)	Non-condensing
Operating Altitude	Up to 2000 m (6500 ft)	
Non-operating altitude	Up to 4600 m (14950 ft)	For storing the module
Safety standards: IEC, CSA, UL	Installation Category II, Pollution Degree 2	For indoor use only. Research Use Only. Not for use in Diagnostic Procedures.

WARNING

Hot rear panel

Using the autosampler at high environmental temperatures may cause the rear panel to become hot.

➔ Do not use the autosampler at environmental temperatures higher than 50 °C (122 °F)

Performance Specifications

Table 2 Performance Specifications Agilent 1200 Series thermostatted autosampler

Type	Specification
Temperature range:	setable from 4 °C to 40 °C in 1 ° increments
Temperature accuracy at ambient temperatures < 25 °C and humidity < 50%	- 1°C to + 4 °C at a setpoint of 4 °C
Temperature accuracy at ambient temperatures > 25 °C and/or humidity > 50%	- 1°C to + 5 °C at a setpoint of 4 °C

3
Installing the G1330B Thermostat

Unpacking the Autosampler

CAUTION

Mechanical damage of the autosampler

If the transport assembly is not parked, the autosampler could be damaged due to excessive shock of the shipping container during transport.

➔ Always park the transport assembly before shipment (see "Transporting the Autosampler" in the corresponding manual).

Damaged Packaging

The two modules of the autosampler are shipped in separate boxes. Upon receipt of your autosampler, inspect the shipping containers for any signs of damage. If the containers or cushioning material are damaged, save them until the contents have been checked for completeness and the autosampler has been mechanically and electrically checked. If the shipping container or cushioning material is damaged, notify the carrier and save the shipping material for the carriers inspection.

Delivery Checklist

Unpack the two boxes of the autosampler. Ensure all parts and materials have been delivered with the autosampler and the autosampler thermostat. The delivery checklist are shown in Table 3 on page 21. Please report missing or damaged parts to your local Agilent Technologies sales and service office.

If the thermostatted autosampler was ordered as an upgrade (G1395A) to an existing autosampler, the shipment will also contain the required software upgrades for your Agilent ChemStation.

Table 3 G1330B Thermostat Checklist

Description	Quantity	Part Number
Autosampler Thermostat G1330B	1	
Power cable	1	as ordered
Accessory kit (Table 4 on page 21)	1	G1330-68705

Table 4 Autosampler Thermostat Accessory Kit Contents G1330-68705

Description	Part Number
Waste Tube	5063-6527
Waste Tube Assembly	G1330-67300

Optimizing the Stack Configuration

If your autosampler is part of a system, you can ensure optimum performance by installing the autosampler in the stack in the position shown in Figure 4 on page 22 and Figure 5 on page 23. This configuration optimizes the system flow path, ensuring minimum delay volume.

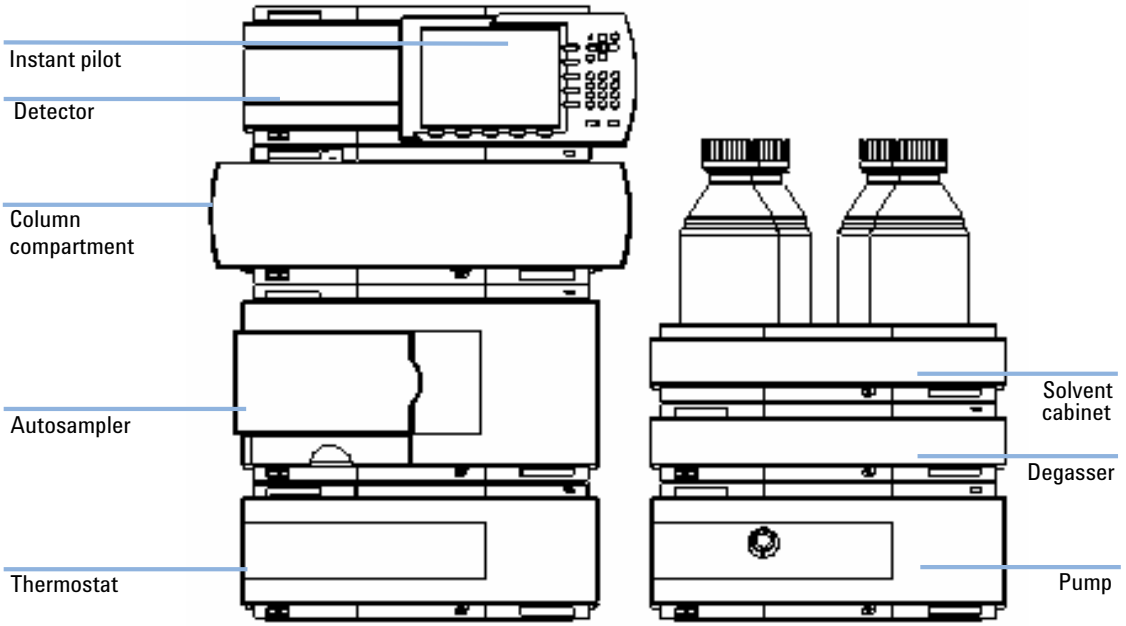


Figure 4 Recommended Stack Configuration (Front View)

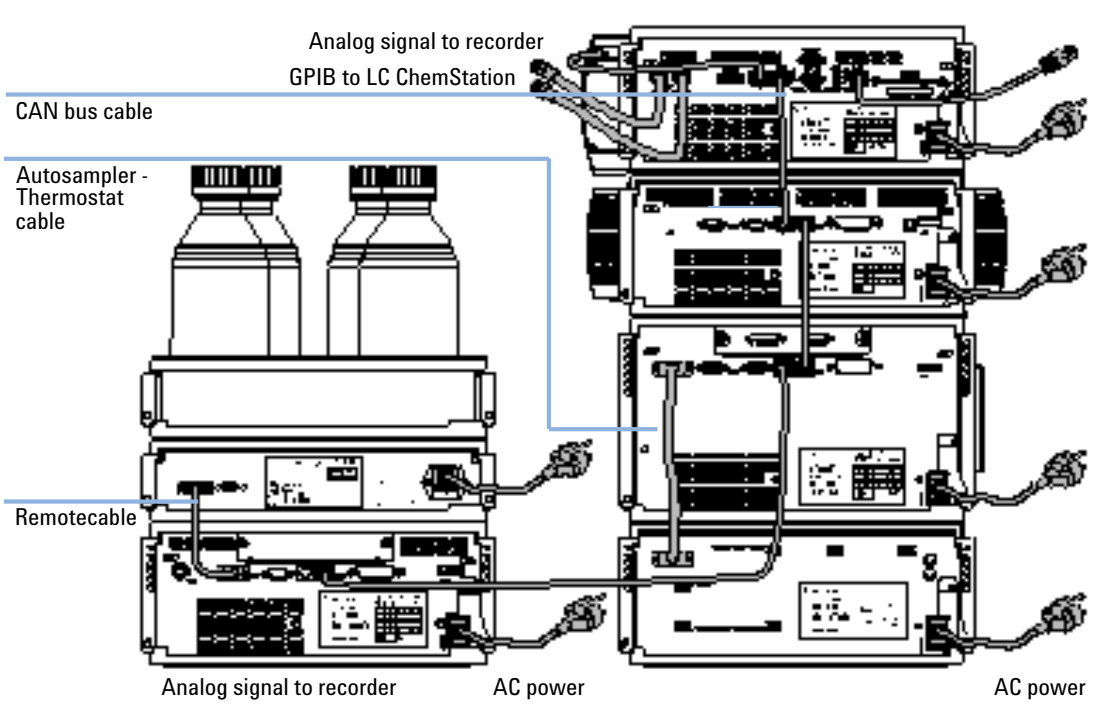


Figure 5 Recommended Stack Configuration (Rear View)

Installing the G1330B Thermostat

WARNING

Instrument is partially energized when switched off

The power supply still uses some power, even if the power switch on the front panel is turned off.

➔ To disconnect the ALS thermostat from line, unplug the power cord.

WARNING

Personal injury

To avoid personal injury, keep fingers away from the needle area during autosampler operation.

➔ Do not bend the safety flap away from its position, or attempt to remove the safety cover (see Figure 6 on page 25).

➔ Do not attempt to insert or remove a vial from the gripper when the gripper is positioned below the needle.

CAUTION

"Defective on arrival" problems

If there are signs of damage, please do not attempt to install the module. Inspection by Agilent is required to evaluate if the instrument is in good condition or damaged.

➔ Notify your Agilent sales and service office about the damage.

➔ An Agilent service representative will inspect the instrument at your site and initiate appropriate actions.

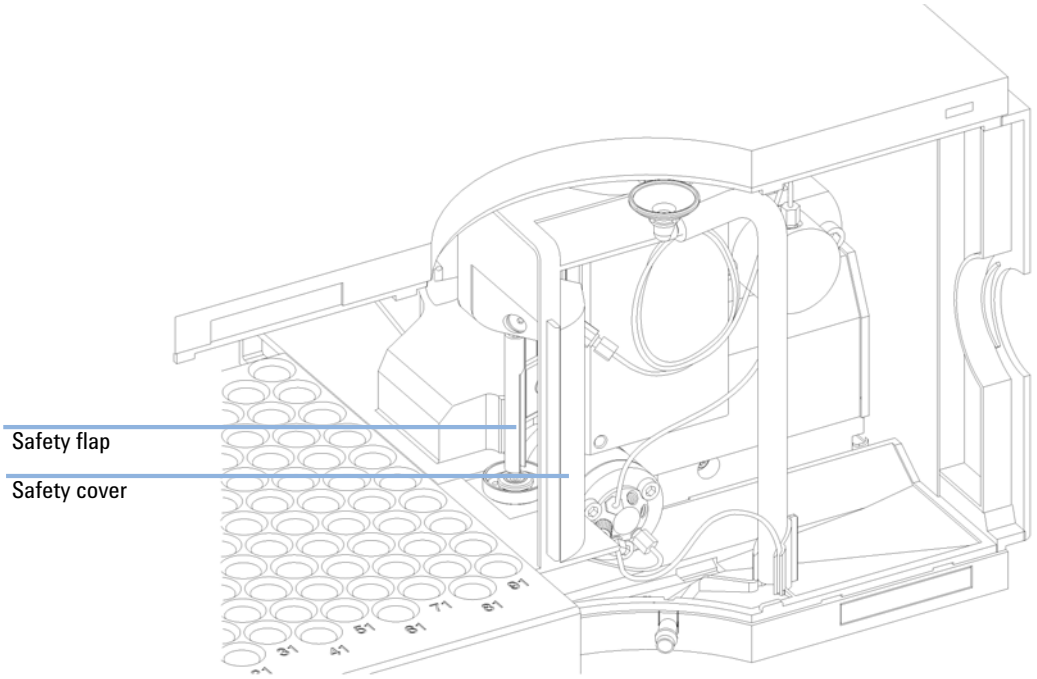


Figure 6 Safety Flap.

Stage 1: Preparing the Autosampler Thermostat and Autosampler

WARNING

Damage through condensation

If the condensation tube is located in liquid the condensed water cannot flow out of the tube and the outlet is blocked. Any further condensation will then remain in the instrument. This may damage the instruments electronics.

➔ Make sure that the condensation tube is always above the liquid level in the vessel.

NOTE

Even under average humidity conditions, a significant amount of condensed water gathers every day. A suitable container must be provided and emptied regularly in order to avoid overflow.

1 Place the autosampler thermostat on the bench or in the stack.

2 Remove the front cover. Press the two snap fasteners on the sides of the cover and move it away.

3 If the autosampler thermostat is located on top of another Agilent 1200 Series Module place the waste tube assembly into the top cover of the autosampler thermostat and locate the other end in the waste funnel of the module beneath.

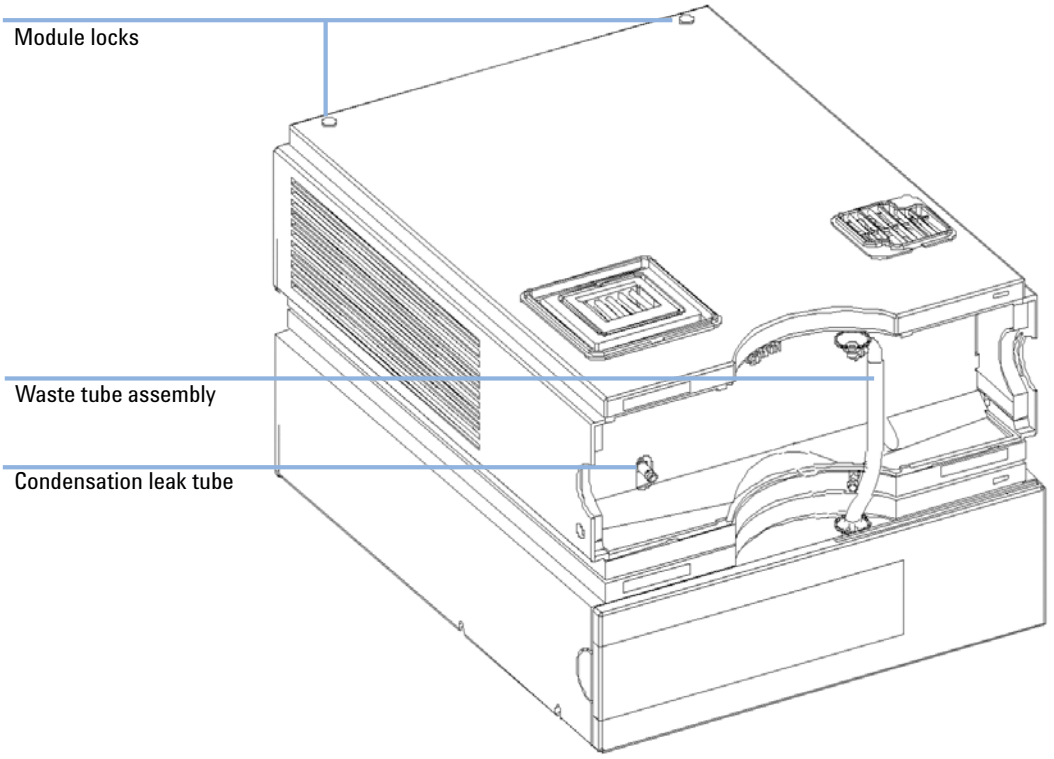


Figure 7 Preparation of the Autosampler Thermostat

4 Connect the condensation leak tube to the main waste exit of the autosampler thermostat and place into an appropriate vessel. It is possible to either let the condensation leak tubing exit the module at the front or at the left side of the module. Make sure that the leak tube is fully fixed on the outlet.

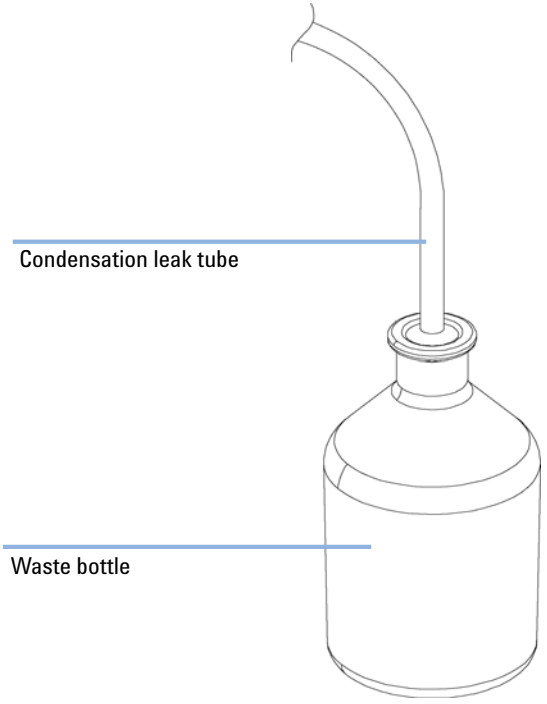


Figure 8 Condensation Leak outlet

5 Install the front cover of the autosampler thermostat.

6 Place the autosampler module on top of the autosampler thermostat. Make sure that the autosampler is correctly engaged in the autosampler thermostat locks.

7 Place the air channel adapter into the autosampler tray base. Make sure the adapter is fully pressed down. This assures that the cold airstream from the autosampler thermostat is correctly guided to the tray area of the autosampler.

8 If there is no Agilent 1200 Series module located beneath the autosampler thermostat connect the waste tube to the central waste exit of the autosampler and place in a waste vessel.

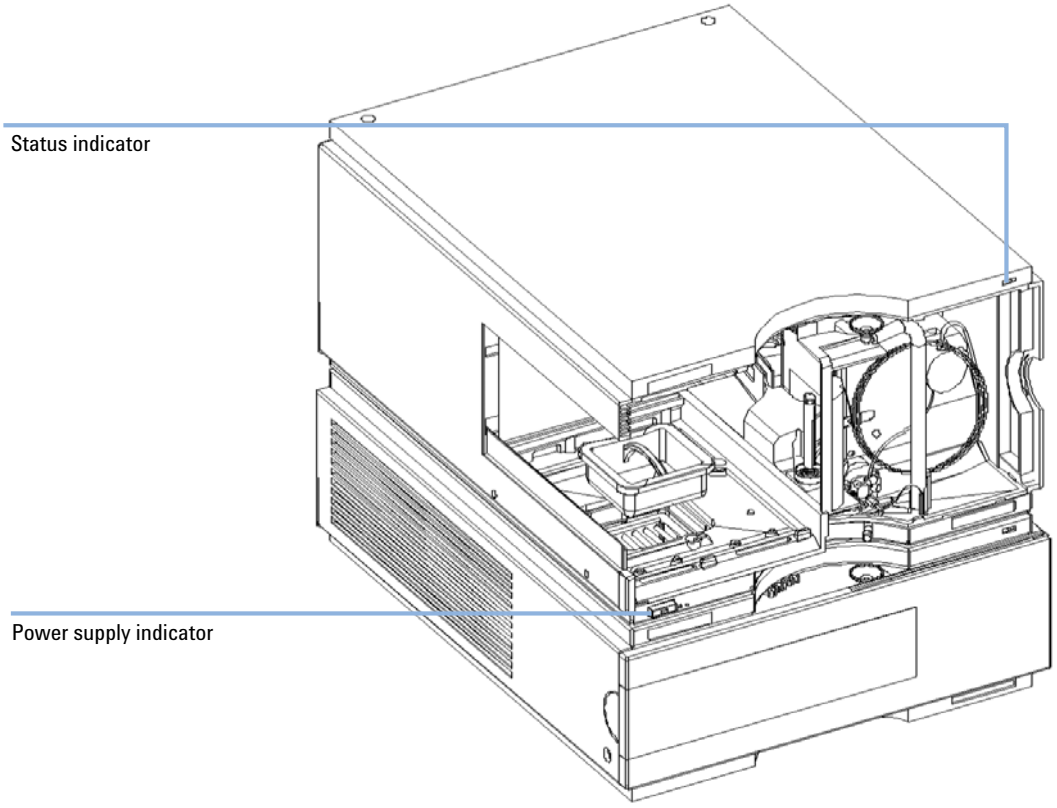


Figure 9 Preparation of Autosampler Thermostat and Autosampler

Stage 2: Power Cable and Interface Cable Connection

WARNING

Damaged electronics

Disconnecting or reconnecting the autosampler to autosampler thermostat cable when the power cords are connected to either of the two modules will damage the electronics of the modules. In such a case, mainboards of both instruments must be exchanged, otherwise they can damage the other instrument.

➔ Make sure the power cords are unplugged before disconnecting or reconnecting the autosampler to autosampler thermostat cable.

1 Ensure the power switch on the front of the autosampler is OFF and the power cables are disconnected.

2 Connect the cable between the autosampler and the autosampler thermostat, see Figure 10 on page 31.

3 Move the safety lever at the rear of the two modules to the right position, see Figure 10 on page 31.

4 Connect the power cables to the power connectors.

5 Connect the CAN interface cables to other modules in the system (see Figure 5 on page 23 and Figure 11 on page 32).

6 If required, connect additional interface and control cables to the autosampler (see Figure 5 on page 23 and Figure 11 on page 32). Refer to the documentation of the Agilent 1200 Series control module or ChemStation for LC for more information.

NOTE

In an Agilent 1200 Series system, the individual modules are connected by a CAN cable. The Agilent 1200 Series control module can be connected to the CAN bus at any of the modules in the system. The Agilent Chemstation can be connected to the system by one GPIB cable at any of the modules, however, it is recommended to connect the GPIB cable to the detector. For more information about connecting the control module or ChemStation refer to the respective user manual. For connecting the Agilent 1200 Series equipment to non-Agilent 1200 Series equipment, see Autosampler manual).

7 Connect additional cables as required (see Figure 11 on page 32).

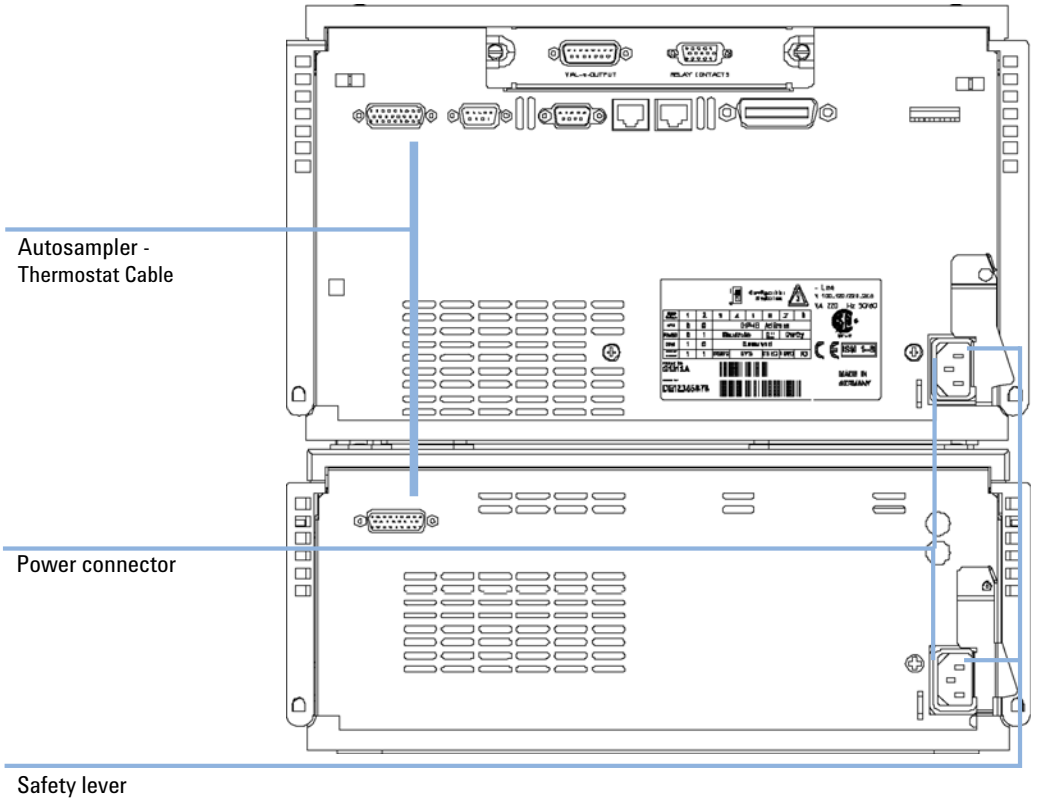


Figure 10 Power Connectors and Safety Levers at Rear of thermostatted Autosampler.

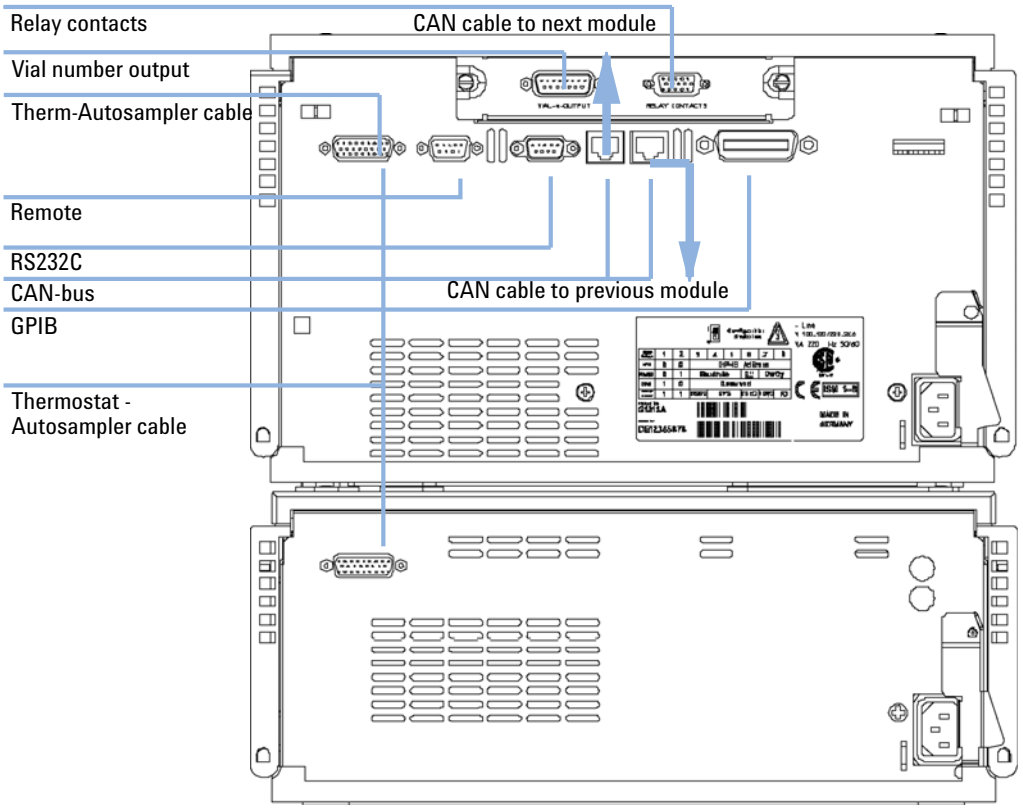


Figure 11 Cable Connections.

Stage 3: Flow Connections

WARNING

When opening capillary or tube fittings solvents may leak out.

The handling of toxic and hazardous solvents and reagents can hold health risks.

➔ Please observe appropriate safety procedures (for example, goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet supplied by the solvent vendor, especially when toxic or hazardous solvents are used.

1 Connect the pump outlet capillary to port 1 of the injection valve.

2 Connect column-compartment inlet capillary to port 6 of the injection valve.

3 Ensure that the waste tube is positioned inside the leak channel.

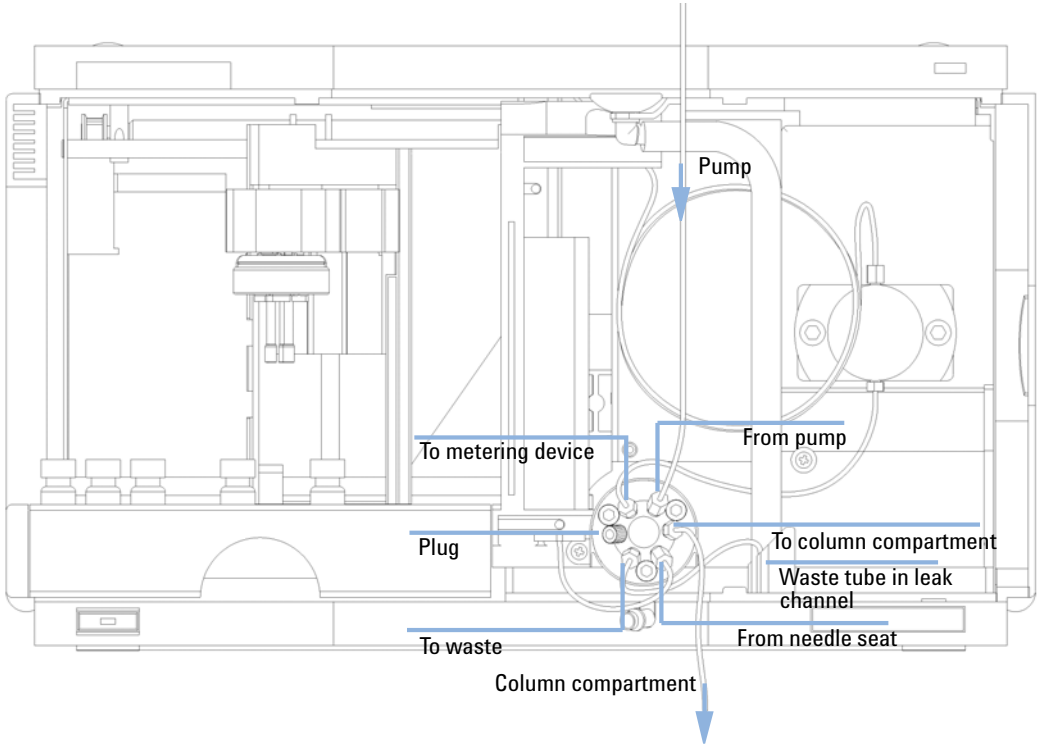


Figure 12 Hydraulic Connections

Stage 4: Installing the Sample Tray

1 Load the sample tray with sample vials as required.

2 Slide the sample tray into the autosampler so that the rear of the sample tray is seated firmly against the rear of the sample-tray area.

3 Press the front of the sample tray down to secure the tray in the autosampler. If the tray pops out of its position the air channel adapter is not inserted correctly.

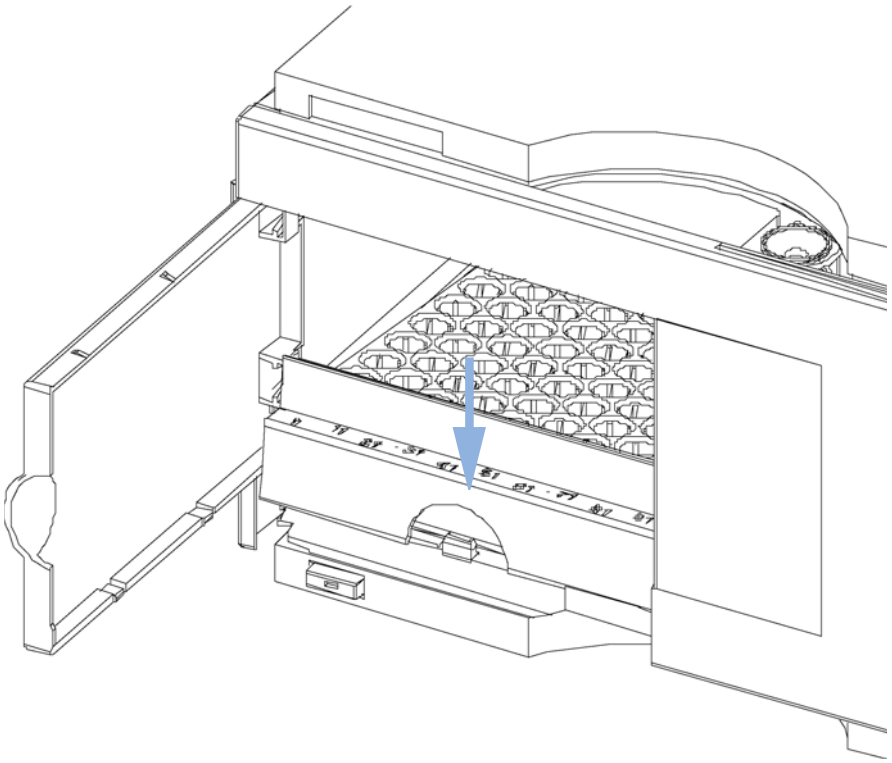


Figure 13 Installing the Sample Tray

Half-Tray Combinations

NOTE In the autosampler only the 100 vial tray is supported for temperature control of the vials. Nevertheless the half trays of the standard autosampler (G1313A) can be used in the thermostatted autosampler as well. However when these trays are installed cooling or heating of the vials in the tray will not work.

Half-trays can be installed in any combination enabling both 1.8 ml-and 6 ml-vials to be used simultaneously.

Numbering of Vial Positions

The standard 100-vial tray has vial positions 1 to 100. However, when using two half-trays, the numbering convention is slightly different. The vial positions of the right-hand half tray begin at position 101 as follows:

Left-hand 40-position tray: 1–40

Left-hand 15-position tray: 1–15

Right-hand 40-position tray: 101–140

Right-hand 15-position tray: 101–115

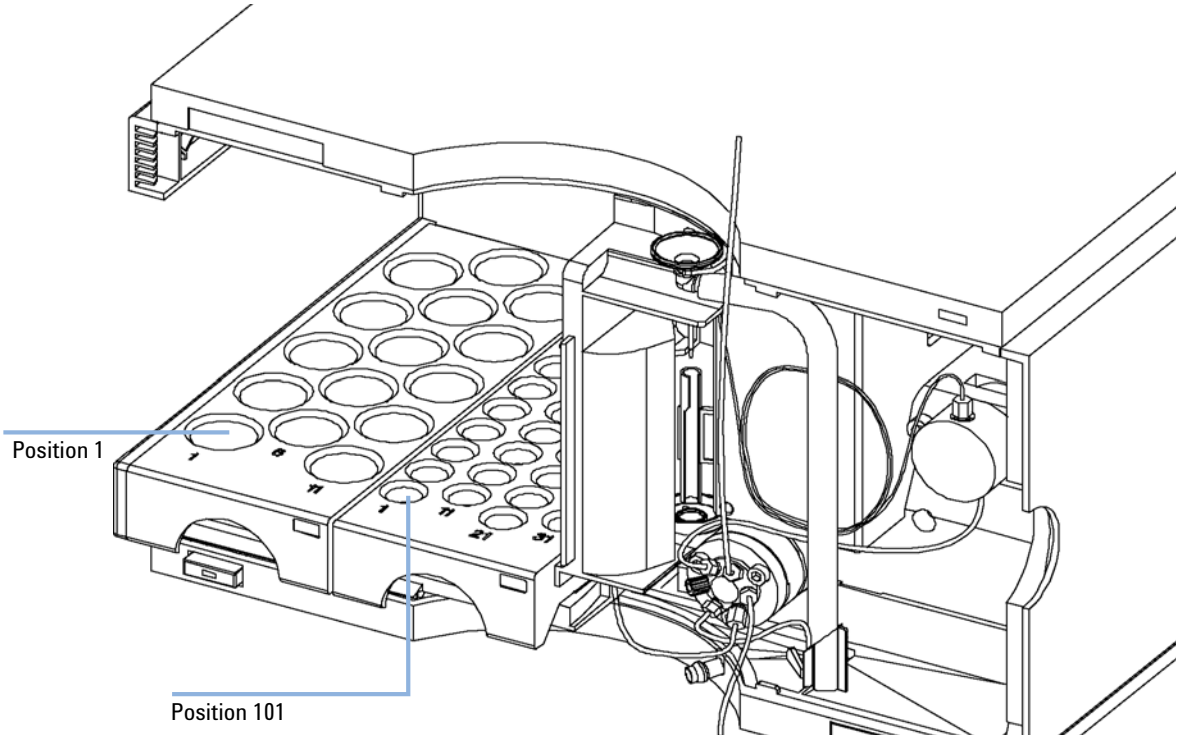


Figure 14 Numbering of Tray Positions.

Stage 5: Installing Tray Cover and Front Cover

1 Fix the tray cover in the clips of the left autosampler cover side by sliding it in position. Do not close the tray cover.

2 Position the front cover in the top left corner of the autosampler and turn it towards the instrument. Press the stop fastener to secure it in the right side cover of the autosampler.

3 Close the tray cover.

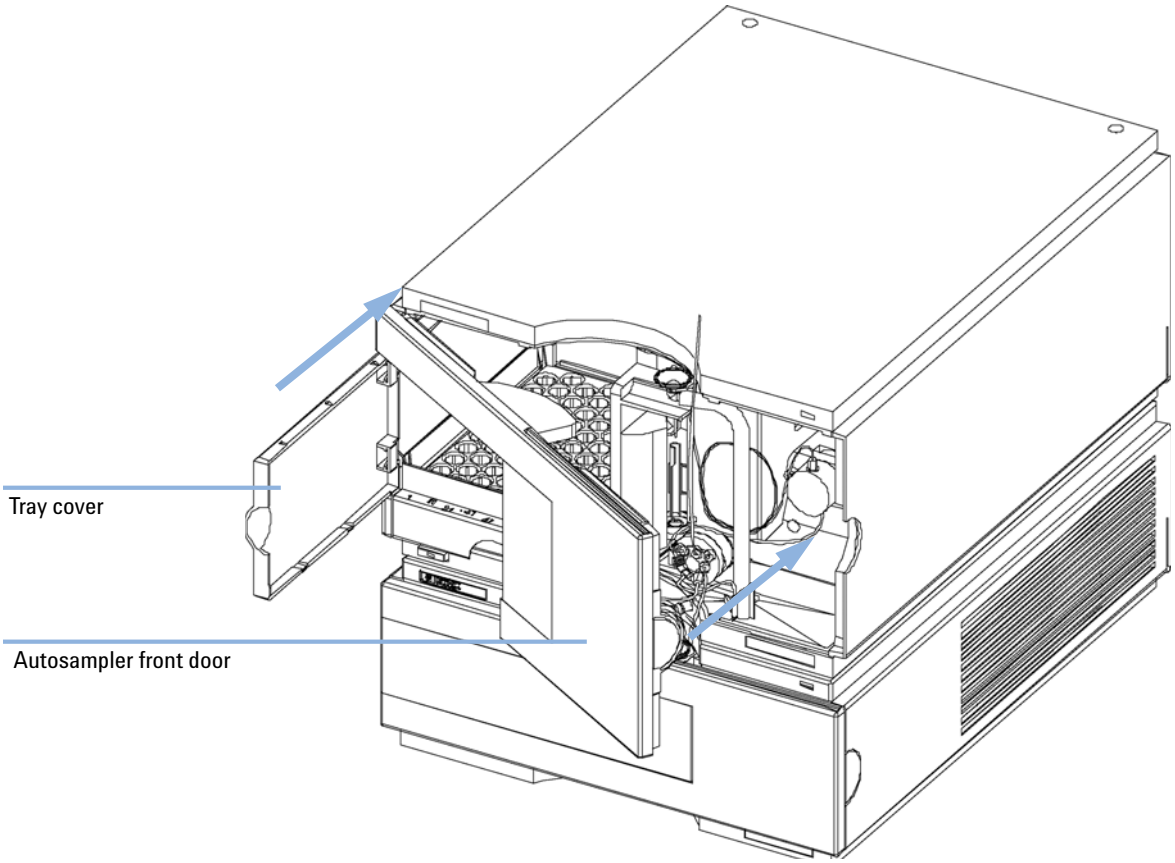


Figure 15 Installation of Tray Cover and Front Cover of the Autosampler

Stage 6: Turning on the Thermostatted Autosampler

1 Depress the power switch to turn on the two modules of the autosampler.

NOTE The power switch stays depressed (1) and a green indicator lamp in the power switch is on when the autosampler is turned on. When the line power switch stands out (Ø) and the green light is off, the autosampler is turned off.

Stage 7: Update of Control Module Firmware

If the control module has a firmware revision A.01.30 or higher, you do not need to update the control module firmware.

If you have a control module version A.01.30 or lower, update the firmware as described.

1 Disconnect the control module before inserting the PC card.

2 Insert the PC card into the card slot of the control module.

3 Reconnect the control module for restarting it.

4 Press “System” (F5) - “Records” (F4). Highlight the LC-System line in the display using the up-down arrows.

5 Press “FW-Update” (F5).

6 Select the file for the firmware update (LCB202en.BIN).

7 Press “Execute” and select “Yes” to confirm loading of the new firmware. The control module reboots and loads the firmware indicated by (.) and (*) on the display. When finished with the update the control module reboots again.

8 Check that the correct firmware was loaded by pressing “System” (F5) - “Records” (F4).

9 Disconnect the control module and remove the PC card by pressing the card-eject button.

Stage 8: Update of the Agilent ChemStation Software

If you have a Agilent ChemStation software version A.05.02 or higher, you do not need to update your Agilent ChemStation software.

If you have a Agilent ChemStation software version A.05.01 or lower, please update your software as described.

Starting from revision A.04.01 or A.04.02 of the Agilent ChemStation

If you have ordered the G1395A Upgrade kit you will be provided with a A.04.02 and a A.05.01 update CD ROM, which gives you the choice of keeping your old major software version or updating to A.05.01 release.

CAUTION

Hard- and Software Requirements

Agilent ChemStation Software will not run, if you use wrong PC hard- and software.

➔ Ensure that your PC hard- and software meets the requirements for A.05.01. A.05.01 requires Windows 95 or Windows NT 4.0 as operating system and a Pentium PC with a minimum of 24 MB (NT -systems require also GPIB board Agilent 82341C). Publication 12-5965-6805E gives detailed information about the PC requirements. The application note can be obtained from the Internet (http://www.chem.agilent.com/cag/literature/apglit.html) or your local Agilent Technologies sales office.

1 If you decide to update your A.04.01 Agilent ChemStation to A.05.01, use the provided A.05.01 CD-ROM and follow the steps described in the Installing your ChemStation manual, provided as portable document format (PDF) file on the A.05.01 CD-ROM in the directory MANUALS\INSTALL\LC. If you do not already have the Adobe Acrobat reader installed, use the file MANUALS\READER\AR32e30.EXE to install the reader.

2 After you have updated your system, insert the 3.5” floppy labeled ‘Driver update Disk (A.05.02 Beta)’ and open a DOS prompt by selecting Start->RUN and typing *command*.

3 At the DOS prompt type *A:*.

4 Press Enter and then *HPUPDATE*.

Press Enter only if your Agilent ChemStation is installed in the directory C:\HPCHEM. If your Agilent ChemStation is installed in a different directory, e.g. D:\HPCHEM, you need to type *HPUPDATE D:\HPCHEM* and press Enter.

5 If you decide to update to A.04.02, insert the A.04.02 CD-ROM and select SETUP on the CD-ROM using File Manager or Explorer. Select Yes to continue with the update.

6 After you have updated your system, insert the 3.5 inch floppy labeled Driver update Disk (A.04.03) and open a DOS prompt by selecting Start->RUN and typing *command*. At the DOS prompt type *A:* and press Enter and then *HPUPDATE*.

Press Enter only if your Agilent ChemStation is installed in the directory C:\HPCHEM. If your Agilent ChemStation is installed in a different directory, e.g. D:\HPCHEM, you need to type *HPUPDATE D:\HPCHEM* and press Enter.

Starting from revision A.05.01 of the Agilent ChemStation

If you already have the Agilent ChemStation A.05.01 installed, you only need to install the update to A.05.02 Beta. This update comprises only the driver for the thermostatted autosampler, no other changes are made.

1 Insert the 3.5” floppy labeled Driver update Disk (A.05.02 Beta).

2 Open a DOS prompt by selecting Start->RUN and typing *command*.

3 At the DOS prompt type *A:*.

4 Press Enter and then *HPUPDATE*.

5 Press Enter only if your Agilent ChemStation is installed in the directory C:\HPCHEM.

If your Agilent ChemStation is installed in a different directory, e.g. D:\HPCHEM, you need to type *HPUPDATE D:\HPCHEM* and press Enter.

Transporting the Thermostatted Autosampler

When moving the autosampler around the laboratory, make sure that any condensed water inside the thermostat is removed. Tilt the module to the front, so that the water inside the thermostat can safely flow into the leak funnel. Otherwise no special precautions are needed for the modules.

NOTE The autosampler thermostat is heavy (20.7 kg, 45.6 lbs). Carry the module by putting your hands under the side covers in a central position of the unit.

If the autosampler needs to be shipped to another location via carrier, ensure:

- The two modules are shipped in separate boxes.
- The transport assembly of the autosampler is parked, see “Park Arm (Park Gripper)” in your respective Service Manual.
- The vial tray is secured.

If the autosampler is to be shipped to another location, the transport assembly of the autosampler must be moved to the park position to prevent mechanical damage should the shipping container be subjected to excessive shock. Also, ensure the vial tray is secured in place with suitable packaging, otherwise the tray may become loose and damage internal components.

4
Optimizing Performance

Controller Requirements

Agilent 1200 Series control module and Agilent ChemStation must have the latest revision firmware/software loaded to allow optimum operation with the thermostattable autosamplers. Older revisions might not recognize or have full functionality with the thermostattable autosampler.

Control Module Firmware requirements

The control module requires firmware revision A.01.30 or higher to control the thermostatted autosampler. Previous firmware revisions of the control module will not run with the thermostatted autosampler. If the control module was shipped together with the thermostatted autosampler the control module firmware does not require updating. The firmware update must be done with a PCMCIA card that has the newest revision loaded. The firmware is not part of the shipment of the thermostatted autosampler. Contact your local Agilent Technologies sales and service office for the firmware update of the control module. For the update procedure see "Stage 7: Update of Control Module Firmware" on page 38.

Agilent ChemStation Software requirements

To control the thermostatted autosampler from a PC, the Agilent ChemStation software version A.04.03, or A.05.02beta, or A.05.02 or higher is required. These software revision might however not support all autosampler modules. The thermostatted autosampler will not run with any previous version of the Agilent ChemStation software. The software updates are part of the thermostatted autosampler shipment. For the update procedure see "Stage 8: Update of the Agilent ChemStation Software" on page 39.

5 Maintenance

Introduction into Repairing the Thermostat

Simple Repairs - Maintenance

The ALS thermostat is designed for easy repair.

Exchanging Internal Parts - Repairs

Some repairs may require exchange of defective internal parts. Exchange of these parts requires removing the ALS thermostat from the stack, removing the covers, and disassembling the ALS thermostat. The security lever at the power input socket prevents that the Thermostat cover is taken off when line power is still connected.

Warnings and Cautions

WARNING

Instrument is partially energized when switched off, as long as the power cord is plugged in.

Risk of stroke and other personal injury. Repair work at the module can lead to personal injuries, e. g. shock hazard, when the module cover is opened and the instrument is connected to power.

➔ Never perform any adjustment, maintenance or repair of the module with the top cover removed and with the power cord plugged in.

➔ The security lever at the power input socket prevents that the module cover is taken off when line power is still connected. Never plug the power line back in when cover is removed.

WARNING

Damaged electronics

Disconnecting or reconnecting the autosampler to autosampler thermostat cable when the power cords are connected to either of the two modules will damage the electronics of the modules. In such a case, mainboards of both instruments must be exchanged, otherwise they can damage the other instrument.

➔ Make sure the power cords are unplugged before disconnecting or reconnecting the autosampler to autosampler thermostat cable.

CAUTION

Electrostatic discharge at electronic boards and components

Electronic boards and components are sensitive to electrostatic discharge (ESD).

➔ In order to prevent damage always use an ESD protection (for example, an ESD wrist strap) when handling electronic boards and components.

Using the ESD Strap

Electronic boards are sensitive to electronic discharge (ESD). In order to prevent damage, always use an ESD strap supplied in the standard accessory kit (see "Accessory Kit G1330-68705" on page 57) when handling electronic boards and components.

1. Unwrap the first two folds of the band and wrap the exposed adhesive side firmly around your wrist.
2. Unroll the rest of the band and peel the liner from the copper foil at the opposite end.
3. Attach the copper foil to a convenient and exposed electrical ground.

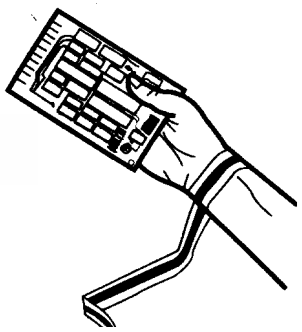


Figure 16 Using the ESD Strap

Cleaning the Thermostat

The thermostat covers should be kept clean. Cleaning should be done with a soft cloth slightly dampened with water or a solution of water and a mild detergent. Do not use an excessively damp cloth that liquid can drip into the autosampler.

Exchanging the Power Supply Fuses

The fuse holders are located on the rear panel of the autosampler thermostat.

When If wrong fuses are installed. Required is 2.5A fuses.

Tools required
- Flat head screwdriver

Parts required

#	Description
2110-0015	Fuses T2.5 A/250V (CSA, UL listed)

WARNING

Damaged electronics

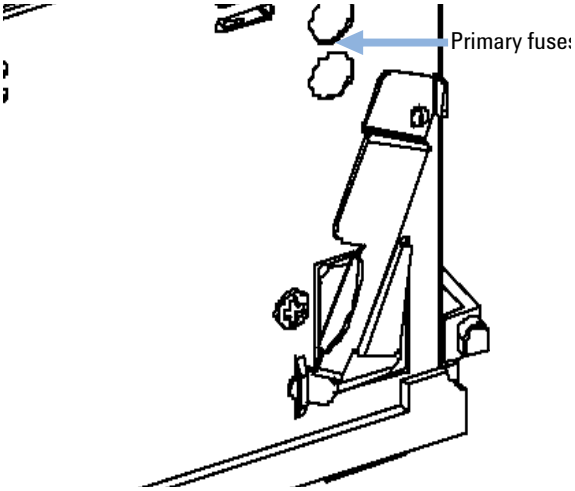
Disconnecting or reconnecting the autosampler to autosampler thermostat cable when the power cords are connected to either of the two modules will damage the electronics of the modules. In such a case, mainboards of both instruments must be exchanged, otherwise they can damage the other instrument.

➔ Make sure the power cords are unplugged before disconnecting or reconnecting the autosampler to autosampler thermostat cable.

1 Switch OFF the power switch at the front of the thermostatted autosampler.

2 Remove the power cable from the two modules.

3 Insert the flat head screwdriver in the fuse holder, slightly press and turn counter clockwise to release the fuse holder from the socket.



4 Pull the fuse holder out of the socket.

5 Remove the fuse from the fuse holder.

6 Insert a new fuse in the fuse holder.

7 Reinsert the fuse holder and fix with the screwdriver.

8 Reinsert the power cables.

9 Switch ON the power switch.

Removing the Top Cover and Foam

Tools required
- Screwdriver Pozidriv #1

Preparations
- Switch off autosampler at the main power switch. Disconnect autosampler and autosampler thermostat power cords. Remove autosampler to autosampler thermostat cable, and remove thermostat from stack.

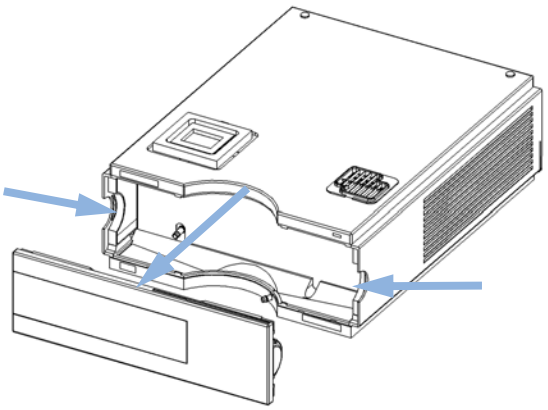
WARNING

Damaged electronics

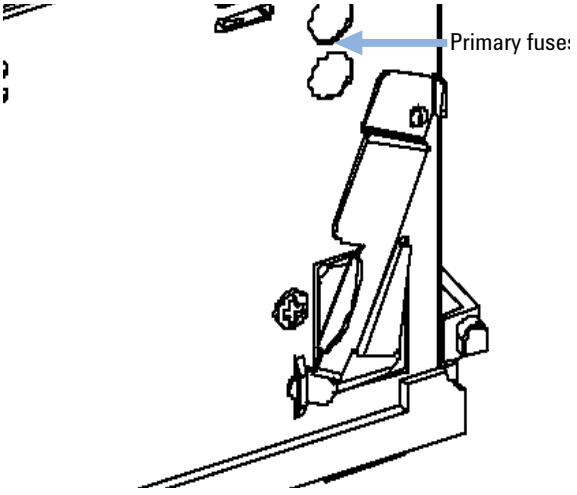
Disconnecting or reconnecting the autosampler to autosampler thermostat cable when the power cords are connected to either of the two modules will damage the electronics of the modules. In such a case, mainboards of both instruments must be exchanged, otherwise they can damage the other instrument.

➔ Make sure the power cords are unplugged before disconnecting or reconnecting the autosampler to autosampler thermostat cable.

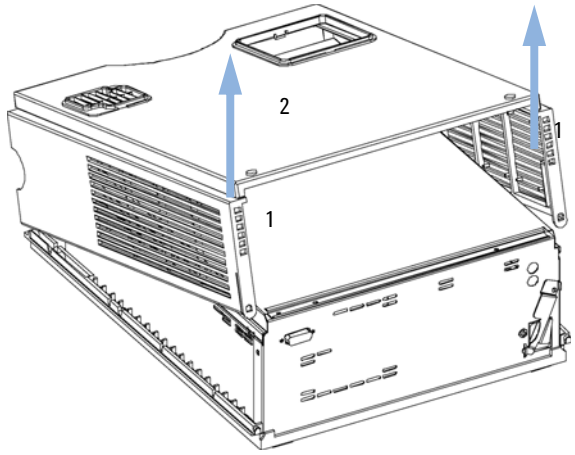
1 Remove the front cover by pressing the both clip fasteners on both sides of the cover.



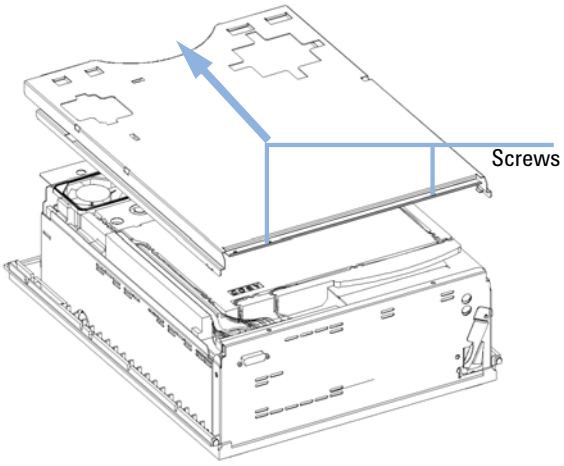
2 Move the lever towards the power socket.



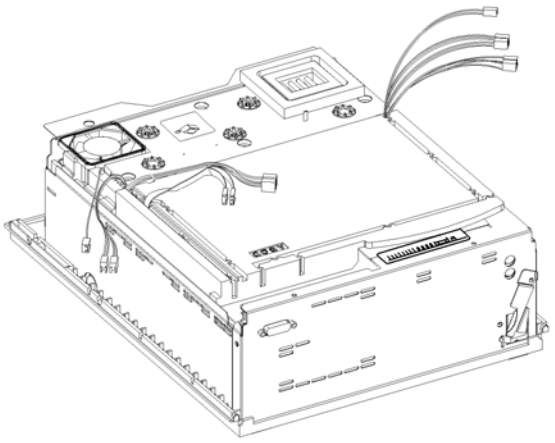
3 Lift the clips on both sides of the top cover (1). Remove the top cover (2).



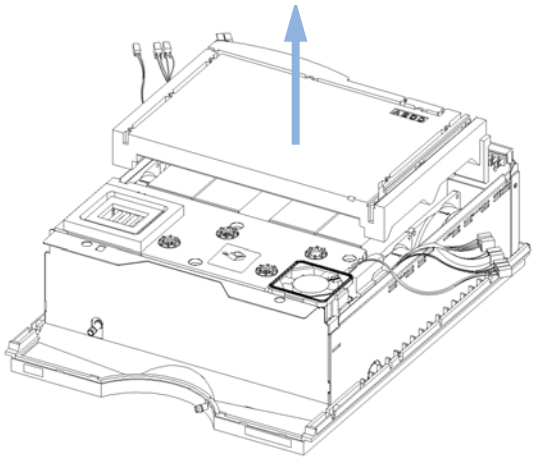
4 Unscrew the screws on the top plate and remove the plate by lifting its back first and then sliding to the front.



5 Unplug all wires at the TCA Board and remove them from top foam.



6 Remove the top foam.



Assembling the Main Cover

When

- If cover is broken

Parts required

#	Part number	Description
1	G1330-68723	Cover kit (includes base, top, left and right)

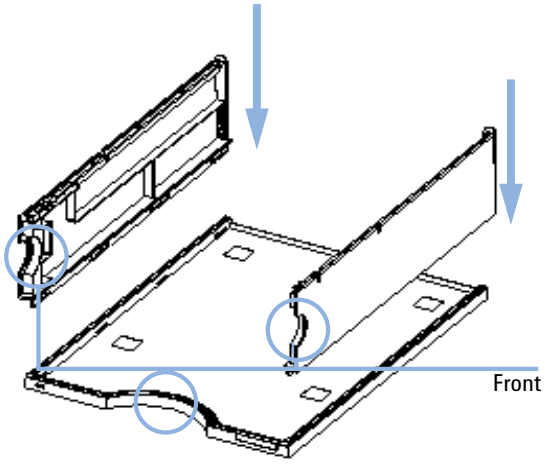
NOTE The cover kit contains all parts, but it is not assembled.

WARNING **Wrong assembly**

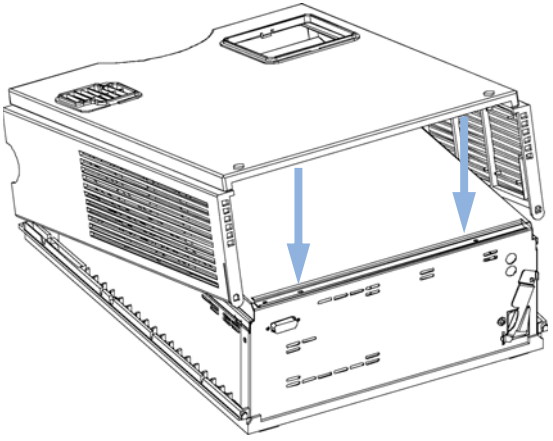
You may not be able to remove the side from the top part.

➔ Make sure to install the side parts in the right direction.

1 Place the top part on the bench and insert the left and right side into the top part.



2 Replace the cover.



Next Steps:

3 Replace the ALS thermostat into the stack and reconnect the cables and capillaries.

4 Turn ON the ALS thermostat.

6
Parts and Materials for Maintenance

Main Assemblies (External Parts)

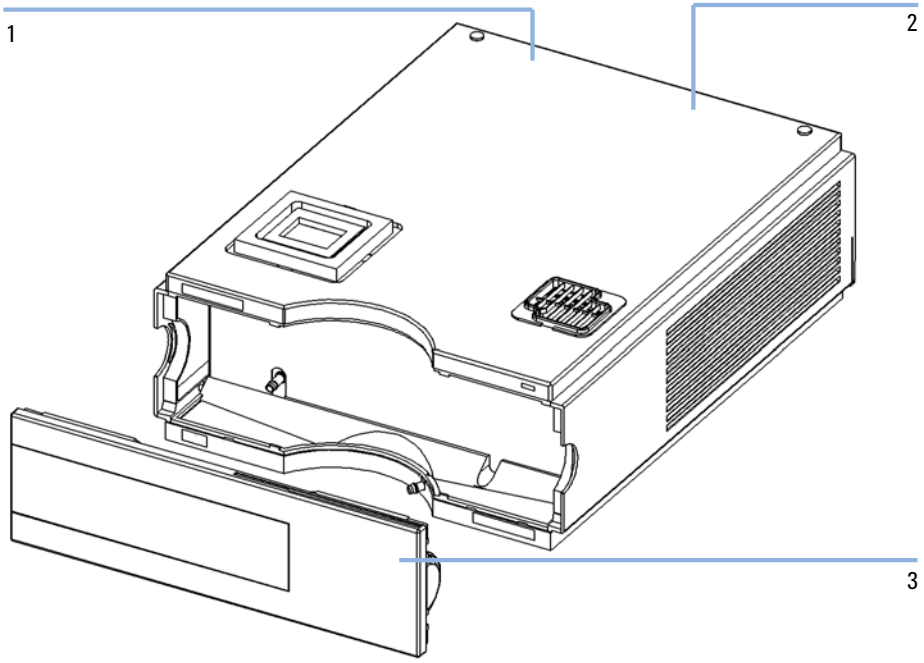


Figure 17 Main Assemblies

Table 5 Main Assemblies

Item	Description	Part Number
1	Fuse - Power Supply (T2.5A/250V; CSA, UL listed)	**2110-0015**
2	Fuse TCA - Board (T3A/250V; CSA, UL listed)	**2110-0029**
3	Front Cover	**5065-9982**
	Cable, autosampler - autosampler thermostat	**G1330-81600**

Accessory Kit G1330-68705

Table 6 Accessory Kit

Item	Description	Part Number
1	Waste Tube[1]	5062-2463
2	Waste Tube Assembly	G1330-67300

[1] Reorder Number (5 m)

Foam Parts

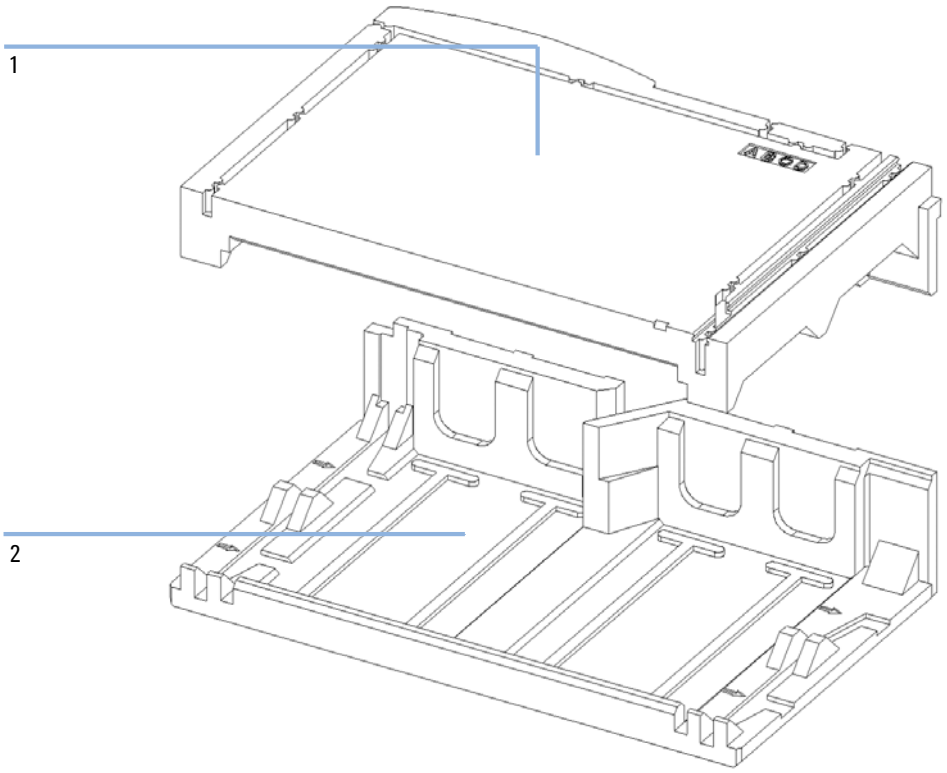


Figure 18 Foam Parts

Table 7 Main Assemblies

Item	Description	Part Number
1	Top Foam	**G1330-40102**
2	Bottom Foam	**G1330-40103**

Plastic Parts

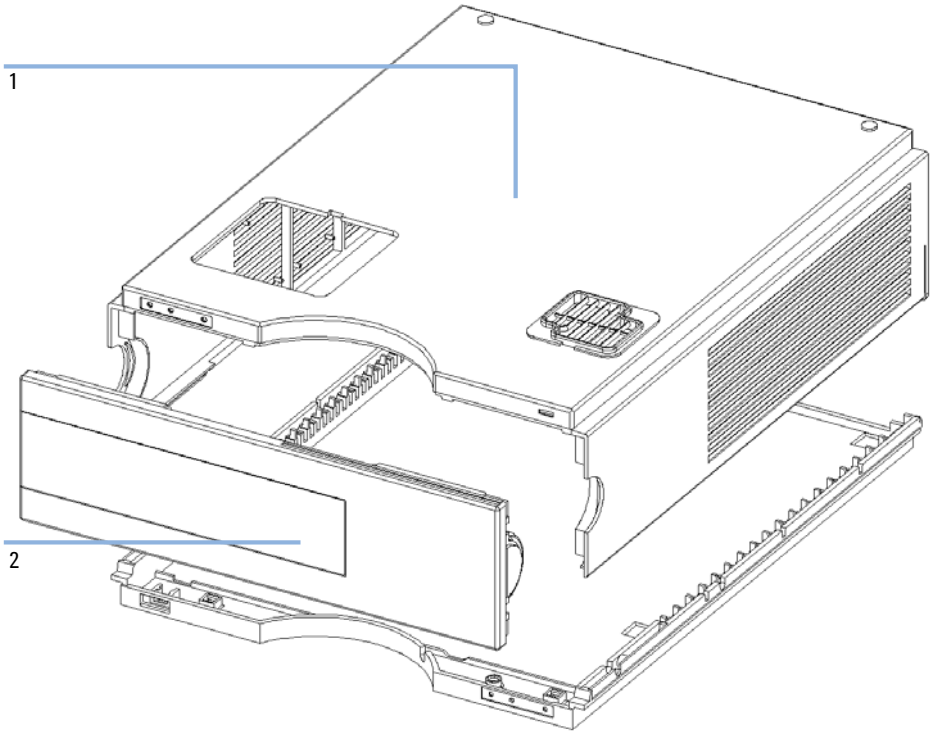


Figure 19 Plastic Parts (1)

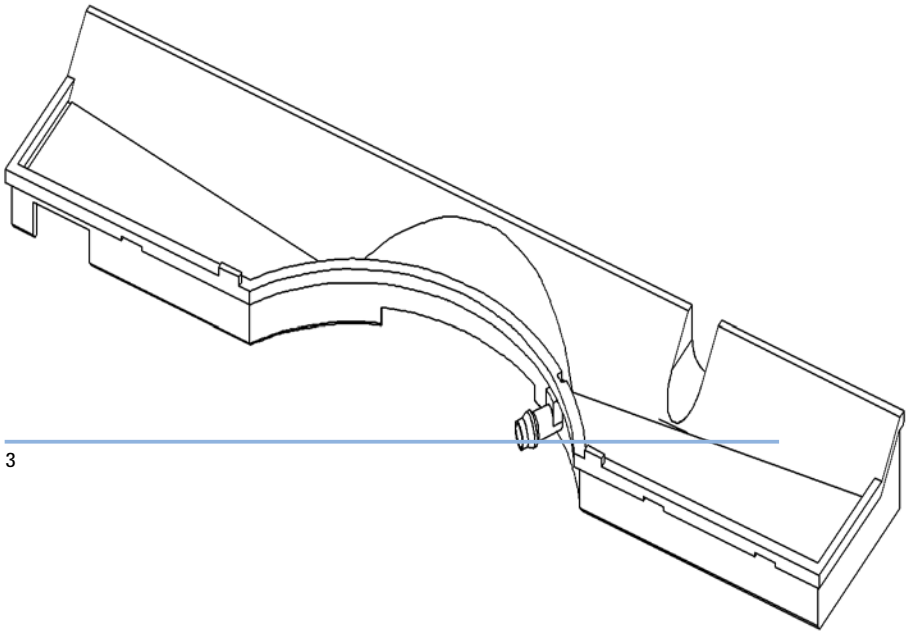


Figure 20 Plastic Parts (2)

Table 8 Main Assemblies

Item	Description	Part Number
1	Cabinet Kit, includes base, top and sides	**G1330-68723**
2	Front Cover	**5065-9982**
3	Leak Pan	**5042-8567**

7
Cable Overview

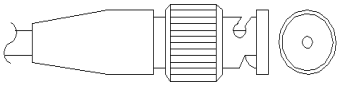
Cable Overview

NOTE Never use cables other than the ones supplied by Agilent Technologies to ensure proper functionality and compliance with safety or EMC regulations.

Type	Description	Part Number
Analog cables	3390/2/3 integrators	**01040-60101**
	3394/6 integrators	**35900-60750**
	Agilent **35900A** A/D converter	**35900-60750**
	General purpose (spade lugs)	**01046-60105**
Remote cables	3390 integrator	**01046-60203**
	3392/3 integrators	**01046-60206**
	3394 integrator	**01046-60210**
	3396A (Series I) integrator	**03394-60600**
	3396 Series II / 3395A integrator, see details in section "Remote Cables" on page 67	
	3396 Series III / 3395B integrator	**03396-61010**
	HP 1050 modules / HP 1046A FLD	**5061-3378**
	HP 1046A FLD	**5061-3378**
	Agilent **35900A** A/D converter	**5061-3378**
	HP 1040 diode-array detector	**01046-60202**
	HP 1090 liquid chromatographs	**01046-60202**
	Signal distribution module	**01046-60202**
BCD cables	3396 integrator	**03396-60560**
	General purpose (spade Lugs)	**G1351-81600**
Auxiliary	Agilent 1100 Series vacuum degasser	**G1322-61600**

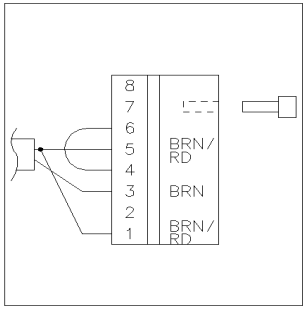
Type	Description	Part Number
CAN cables	Agilent 1100/1200 module to module,0.5m lg Agilent 1100/1200 module to module, 1m lg	**5181-1516** **5181-1519**
External contacts	Agilent 1100/1200 Series interface board to general purpose	**G1103-61611**
GPIB cable	Agilent 1100/1200 module to ChemStation, 1 m Agilent 1100/1200 module to ChemStation, 2 m	**10833A** **10833B**
RS-232 cable	Agilent 1100/1200 module to a computer This kit contains a 9-pin female to 9-pin female Null Modem (printer) cable and one adapter.	**34398A**
LAN cable	Twisted pair cross over LAN cable, (shielded 3m long) (for point to point connection)	**5023-0203**
	Twisted pair cross over LAN cable, (shielded 7m long) (for point to point connection)	**5023-0202**

Analog Cables

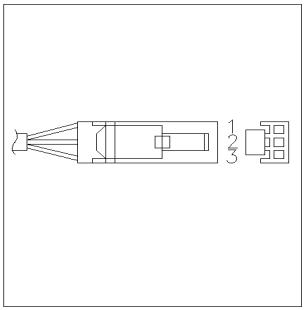


One end of these cables provides a BNC connector to be connected to Agilent 1100/1200 Series modules. The other end depends on the instrument to which connection is being made.

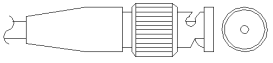
Agilent 1100/1200 to 3390/2/3 Integrators

Connector01040-60101	Pin 3390/2/3	Pin Agilent 1100/1200	Signal Name
	1	Shield	Ground
	2		Not connected
	3	Center	Signal +
	4		Connected to pin 6
	5	Shield	Analog -
	6		Connected to pin 4
	7		Key
	8		Not connected

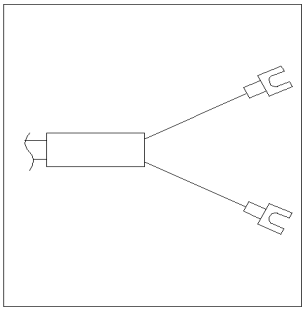
Agilent 1100/1200 to 3394/6 Integrators

Connector35900-60750	Pin 3394/6	Pin Agilent 1100/1200	Signal Name
	1		Not connected
	2	Shield	Analog -
	3	Center	Analog +

Agilent 1100/1200 to BNC Connector

Connector8120-1840	Pin BNC	Pin Agilent 1100/1200	Signal Name
	Shield	Shield	Analog -
	Center	Center	Analog +

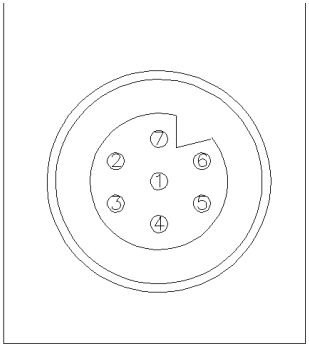
Agilent 1100/1200 to General Purpose

Connector01046-60105	Pin 3394/6	Pin Agilent 1100/1200	Signal Name
	1		Not connected
	2	Black	Analog -
	3	Red	Analog +

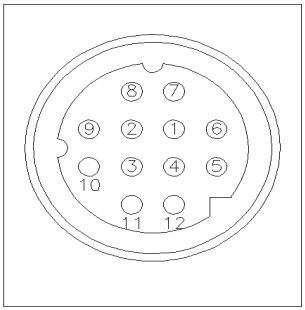
Remote Cables

One end of these cables provides a Agilent Technologies APG (Analytical Products Group) remote connector to be connected to Agilent 1100/1200 Series modules. The other end depends on the instrument to be connected to.

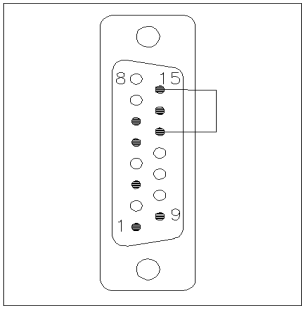
Agilent 1100/1200 to 3390 Integrators

Connector01046-60203	Pin 3390	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	2	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	7	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	NC	7 - Red	Ready	High
	NC	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low

Agilent 1100/1200 to 3392/3 Integrators

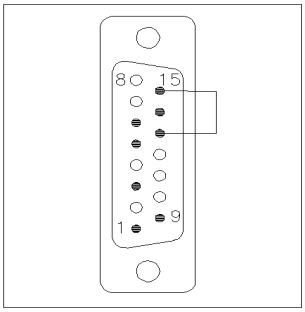
Connector01046-60206	Pin 3392/3	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	3	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	11	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	9	7 - Red	Ready	High
	1	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low

Agilent 1100/1200 to 3394 Integrators

Connector01046-60210	Pin 3394	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	9	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	3	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	5,14	7 - Red	Ready	High
	6	8 - Green	Stop	Low
	1	9 - Black	Start request	Low
	13, 15		Not connected	

NOTE START and STOP are connected via diodes to pin 3 of the 3394 connector.

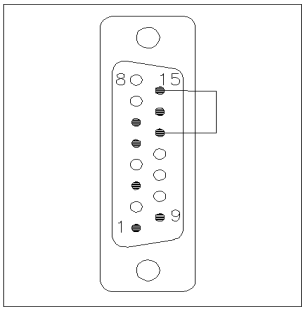
Agilent 1100/1200 to 3396A Integrators

Connector03394-60600	Pin 3394	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	9	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	3	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	5,14	7 - Red	Ready	High
	1	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low
	13, 15		Not connected	

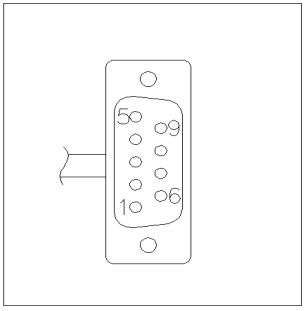
Agilent 1100/1200 to 3396 Series II / 3395A Integrators

Use the cable **part number: 03394-60600** and cut pin #5 on the integrator side. Otherwise the integrator prints START; not ready.

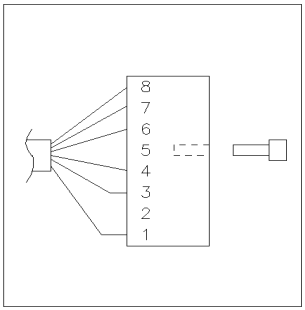
Agilent 1100/1200 to 3396 Series III / 3395B Integrators

Connector03396-61010	Pin 33XX	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	9	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	3	3 - Gray	Start	Low
	NC	4 - Blue	Shut down	Low
	NC	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	14	7 - Red	Ready	High
	4	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low
	13, 15		Not connected	

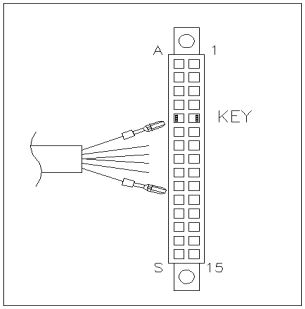
Agilent 1100/1200 to HP 1050, HP 1046A or Agilent 35900 A/D Converters

Connector5061-3378	Pin HP 1050/....	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	1 - White	1 - White	Digital ground	
	2 - Brown	2 - Brown	Prepare run	Low
	3 - Gray	3 - Gray	Start	Low
	4 - Blue	4 - Blue	Shut down	Low
	5 - Pink	5 - Pink	Not connected	
	6 - Yellow	6 - Yellow	Power on	High
	7 - Red	7 - Red	Ready	High
	8 - Green	8 - Green	Stop	Low
	9 - Black	9 - Black	Start request	Low

Agilent 1100/1200 to HP 1090 LC or Signal Distribution Module

Connector01046-60202	Pin HP 1090	Pin Agilent 1100/1200	Signal Name	Active (TTL)
	1	1 - White	Digital ground	
	NC	2 - Brown	Prepare run	Low
	4	3 - Gray	Start	Low
	7	4 - Blue	Shut down	Low
	8	5 - Pink	Not connected	
	NC	6 - Yellow	Power on	High
	3	7 - Red	Ready	High
	6	8 - Green	Stop	Low
	NC	9 - Black	Start request	Low

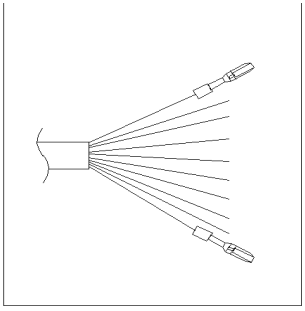
Agilent 1100/1200 to General Purpose

Connector01046-60201	Pin Universal	Pin Agilent 1100/1200	Signal Name	Active (TTL)
		1 - White	Digital ground	
		2 - Brown	Prepare run	Low
		3 - Gray	Start	Low
		4 - Blue	Shut down	Low
		5 - Pink	Not connected	
		6 - Yellow	Power on	High
		7 - Red	Ready	High
		8 - Green	Stop	Low
		9 - Black	Start request	Low

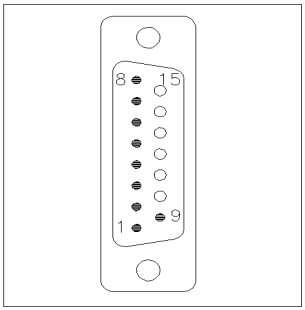
BCD Cables

One end of these cables provides a 15-pin BCD connector to be connected to the Agilent 1200 Series modules. The other end depends on the instrument to be connected to

Agilent 1200 to General Purpose

ConnectorG1351-81600	Wire Color	Pin Agilent 1200	Signal Name	BCD Digit
	Green	1	BCD 5	20
	Violet	2	BCD 7	80
	Blue	3	BCD 6	40
	Yellow	4	BCD 4	10
	Black	5	BCD 0	1
	Orange	6	BCD 3	8
	Red	7	BCD 2	4
	Brown	8	BCD 1	2
	Gray	9	Digital ground	Gray
	Gray/pink	10	BCD 11	800
	Red/blue	11	BCD 10	400
	White/green	12	BCD 9	200
	Brown/green	13	BCD 8	100
	not connected	14		
	not connected	15	+ 5 V	Low

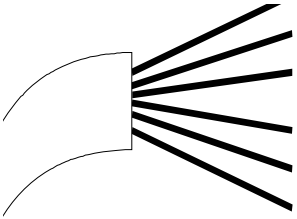
Agilent 1200 to 3396 Integrators

Connector03396-60560	Pin 3392/3	Pin Agilent 1200	Signal Name	BCD Digit
	1	1	BCD 5	20
	2	2	BCD 7	80
	3	3	BCD 6	40
	4	4	BCD 4	10
	5	5	BCD0	1
	6	6	BCD 3	8
	7	7	BCD 2	4
	8	8	BCD 1	2
	9	9	Digital ground	
	NC	15	+ 5 V	Low

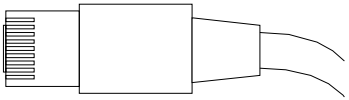
Auxiliary Cable

One end of this cable provides a modular plug to be connected to the Agilent 1100 Series vacuum degasser. The other end is for general purpose.

Agilent 1100 Series Degasser to general purposes

ConnectorG1322-81600	Color	Pin Agilent 1100	Signal Name
	White	1	Ground
	Brown	2	Pressure signal
	Green	3	
	Yellow	4	
	Grey	5	DC + 5 V IN
	Pink	6	Vent

CAN/LAN Cables



Both ends of this cable provide a modular plug to be connected to Agilent 1200 Series module's CAN or LAN connectors.

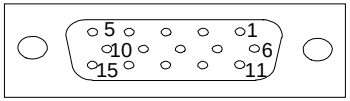
CAN Cables

Agilent 1200 module to module, 0.5 m	**5181-1516**
Agilent 1200 module to module, 1 m	**5181-1519**
Agilent 1200 module to control module	**G1323-81600**

LAN Cables

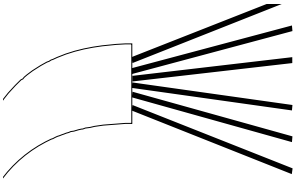
Description	Part number
Cross-over network cable (shielded, 3 m long), (for point to point connection)	**5023-0203**
Twisted pair network cable (shielded, 7 m long) (for hub connections)	**5023-0202**

External Contact Cable



One end of this cable provides a 15-pin plug to be connected to Agilent 1200 Series module's interface board. The other end is for general purpose.

Agilent 1200 Series Interface Board to general purposes

ConnectorG1103-61611	Color	Pin Agilent 1200	Signal Name
	White	1	EXT 1
	Brown	2	EXT 1
	Green	3	EXT 2
	Yellow	4	EXT 2
	Grey	5	EXT 3
	Pink	6	EXT 3
	Blue	7	EXT 4
	Red	8	EXT 4
	Black	9	Not connected
	Violet	10	Not connected
	Grey/pink	11	Not connected
	Red/blue	12	Not connected
	White/green	13	Not connected
	Brown/green	14	Not connected
	White/yellow	15	Not connected

RS-232 Cables

Description	Part number
RS-232 cable, instrument to PC, 9-to-9 pin (female) This cable has special pin-out, and is not compatible with connecting printers and plotters.	**24542U** **G1530-60600**
RS-232 cable kit, 9-to-9 pin (female) and one adapter 9-pin (male) 25-pin female. Suited for instrument to PC.	**34398A**
Cable Printer Serial & Parallel, is a SUB-D 9 pin female vs. Centronics connector on the other end (NOT FOR FW UPDATE).	**5181-1529**
This kit contains a 9-pin female to 9-pin female Null Modem (printer) cable and one adapter. Use the cable and adapter to connect Agilent Technologies instruments with 9-pin male RS-232 connectors to most PCs or printers.	**34398A**

8
Appendix

General Safety Information

General Safety Information

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

General

This is a Safety Class I instrument (provided with terminal for protective earthing) and 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. Before the instrument is switched on, all protective earth terminals, extension cords, auto-transformers, and devices connected to it must be connected to a protective earth via a ground socket. Any interruption of the protective earth grounding will cause a potential shock hazard that could result in serious personal injury. Whenever it is likely that the protection has been impaired, the instrument must be made inoperative and be secured against any intended operation.

Make sure that only fuses with the required rated current and of the specified type (normal blow, time delay, and so on) are used for replacement. The use of repaired fuses and the short-circuiting of fuse holders must be avoided.

CAUTION

Ensure the proper usage of the equipment.

The protection provided by the equipment may be impaired.

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

Some adjustments described in the manual, are made with power supplied to the instrument, and protective covers removed. Energy available at many points may, if contacted, result in personal injury.

Any adjustment, 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.

When working with solvents please observe appropriate safety procedures (e.g. goggles, safety gloves and protective clothing) as described in the material handling and safety data sheet by the solvent vendor, especially when toxic or hazardous solvents are used.

Safety Symbols

Table 9 Safety Symbols

Symbol	Description
	The apparatus is marked with this symbol when the user should refer to the instruction manual in order to protect risk of harm to the operator and to protect the apparatus against damage.
	Indicates dangerous voltages.
	Indicates a protected ground terminal.
	Indicates eye damage may result from directly viewing the light produced by the deuterium lamp used in this product.
	The apparatus is marked with this symbol when hot surfaces are available and the user should not touch it when heated up.

WARNING

A WARNING

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

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

CAUTION

A CAUTION

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

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

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 starting with 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.

NOTE

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.

Radio Interference

Cables supplied by Agilent Technoligies are screened to provide opitimized protection against radio interference. All cables are in compliance with safety or EMC regulations.

Test and Measurement

If test and measurement equipment is operated with unscreened cables, 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.

Sound Emission

Manufacturer's Declaration

This statement is provided to comply with the requirements of the German Sound Emission Directive of 18 January 1991.

This product has a sound pressure emission (at the operator position) < 70 dB.

- Sound Pressure Lp < 70 dB (A)
- At Operator Position
- Normal Operation
- According to ISO 7779:1988/EN 27779/1991 (Type Test)

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

Select Products/Chemical Analysis

It will provide also the latest firmware of the Agilent 1200 Series modules for download.

Index

P

R

S

T

U

V

W

Index

www.agilent.com

In This Book

This manual contains information about the Agilent 1200 Series thermostatted autosampler. This manual describes the following:

- introduction,
- site requirements and specifications,
- installing the thermostatted autosampler,
- optimizing performance,
- troubleshooting and diagnostics,
- maintenance,
- parts and materials for maintenance,
- cable identification,
- appendix.

Printed in Germany
11/08

G1330-90011

Agilent Technologies