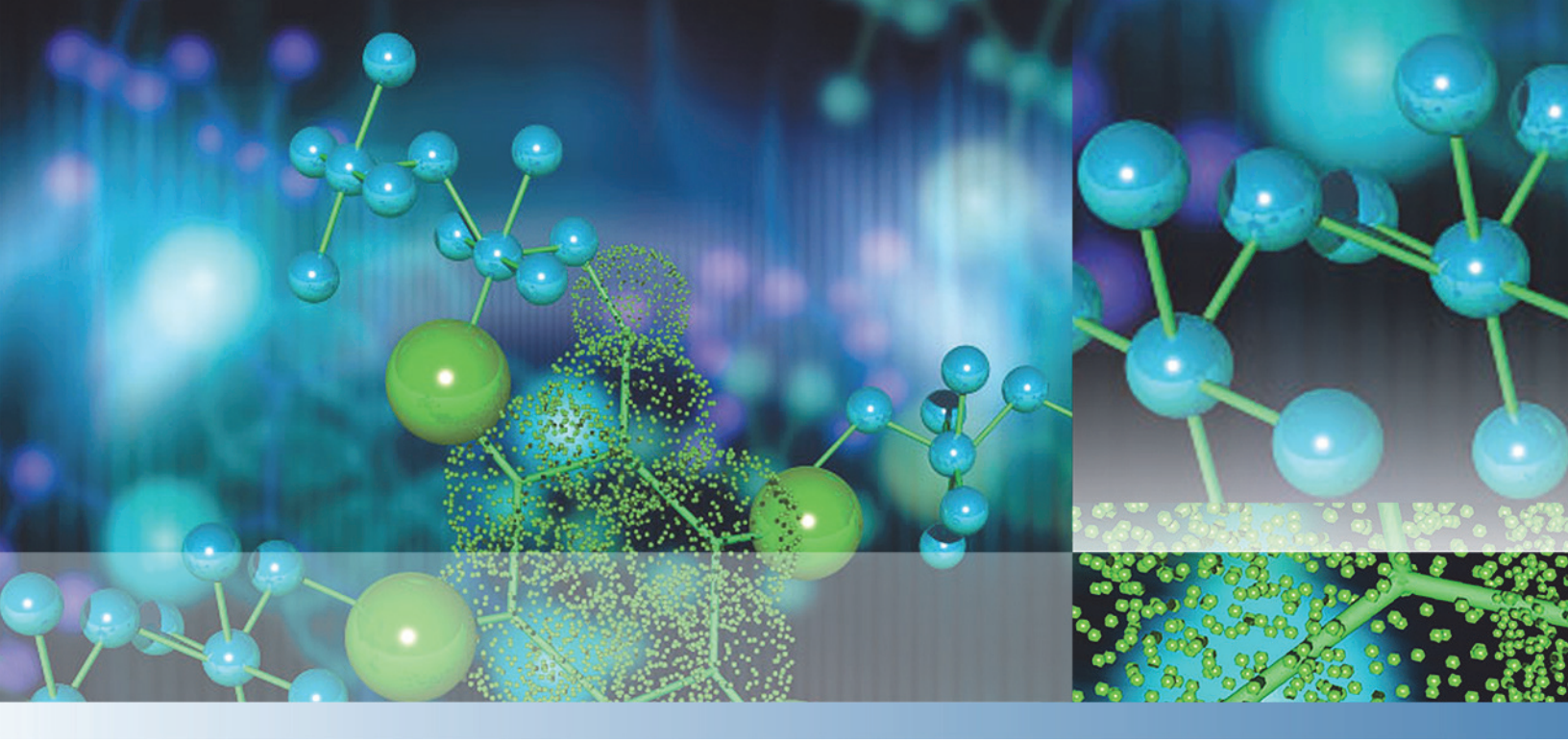

Thermo

Agilent 1260 Series

Getting Connected Guide for LC Devices

XCALI-97475 Revison D April 2014

DOCUMENTATION SURVEY

Thermo SCIENTIFIC

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Software version: Thermo Foundation (see page vii), Thermo LC Devices 2.7 or later

For Research Use Only. Not for use in diagnostic procedures.

Contents

Preface

This guide describes how to connect an Agilent™ 1260 Series liquid chromatograph (LC) system to a Thermo Scientific™ mass spectrometer (MS) and the data system computer, and how to establish communication between the LC system and a Thermo Scientific™ MS data system, such as Thermo Xcalibur™.

Contents

❖ **To suggest changes to the documentation or to the Help**

Complete a brief survey about this document by clicking the button below. Thank you in advance for your help.

Related Documentation

In addition to this guide, you can also access the following documents as PDF files from the data system computer.

❖ To view the product manuals

From the Microsoft™ Windows™ taskbar, do the following:

- For an LC instrument controlled by a Thermo software application, choose **Start > All Programs > Thermo Instruments > Manuals > LC Devices > Agilent**.
- For a Thermo Scientific MS, choose **Start > All Programs > Thermo Instruments > *Instrument-name***.
- For the Xcalibur application, choose **Start > All Programs > Thermo Xcalibur > Manuals > Xcalibur**.

For access to the Xcalibur application Help, follow this procedure.

❖ To view application-specific Help

- From the Xcalibur Instrument Setup window, choose **Help > Agilent 1260 Help** and select a topic.
- If information about setting parameters is available for a specific view, page, or dialog box, click **Help** or press the F1 key for information about setting parameters.

System Requirements

Your system must meet the minimum requirements as stated in the following table.

IMPORTANT Before you install the device drivers, ensure that the data system computer has a compatible version of the Thermo Foundation™ platform as noted in the *Thermo LC Devices x.x.x Release Notes*, where *x.x* is the version that you want to install.

System	Minimum requirements
Computer	• 2 GHz processor with 1 GB RAM • DVD drive • 80 GB or greater available on drive C • Video card and monitor capable of 1280 × 1024 resolution • Network interface cards, two • NTFS format
Software	• Adobe™ Reader™ 10 • Microsoft Windows operating system: – Windows 7 Professional (32-bit and 64-bit[a]) – Windows XP Workstation SP3 • Thermo Scientific software: **LC Devices** — **Foundation** 2.6.0 and later — 1.0.2 SP2 and later

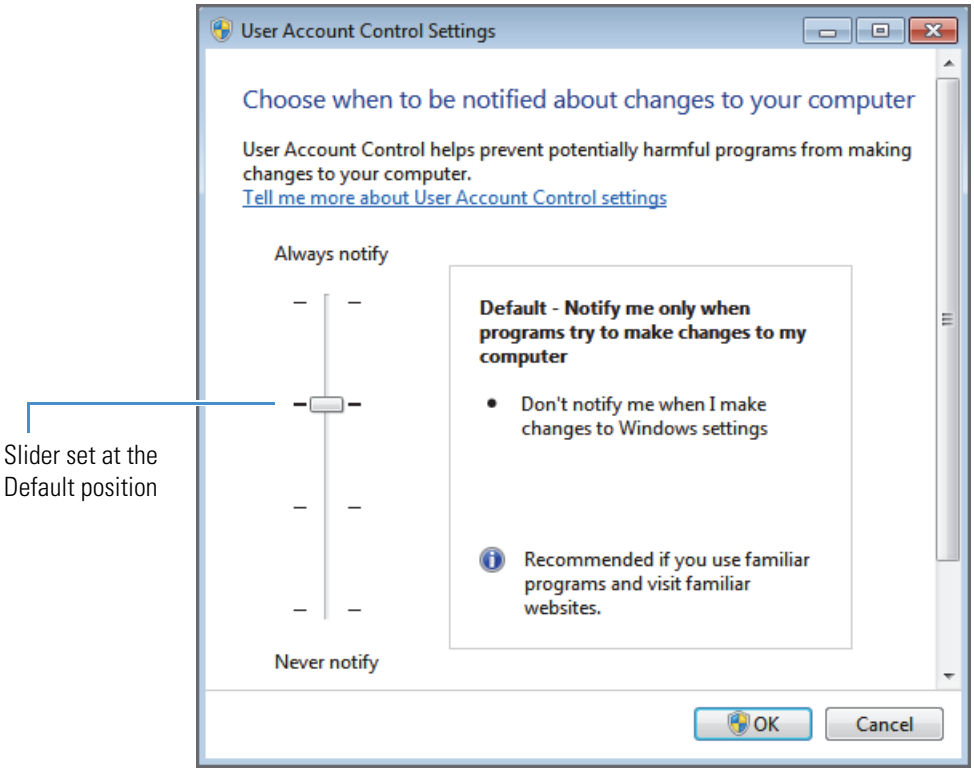
[a] LC Devices 2.8.0 and later are compatible with Windows 7, 32-bit and 64-bit

(Windows 7 only) If you receive a server failure error when you try to open the Xcalibur Instrument Setup window, follow the next procedure.

❖ To resolve a server failure for the Xcalibur data system

1. Verify that the installed versions of Thermo Foundation and LC Devices are compatible (see page vii).
2. If the installed LC Devices software is compatible with Foundation, go to step 3. If it is not compatible, do the following:
   a. Use the Windows Control Panel to uninstall all of the modules from LC Devices.
   b. Install the compatible version of LC Devices.
   c. Restart the data system computer.
3. If the installed LC Devices software is compatible with Foundation, do the following:
   a. Open the Windows Control Panel.
   b. In the top Search box, type **Change User Account Control Settings**, and then select this link to open the User Account Control Settings dialog box.
   c. Move the slider to the **Default** position (Figure 1).
   d. Click **OK**.

Figure 1. User Account Control Settings dialog box



Supported Firmware Versions

LC Devices supports the model numbers and firmware versions of the Agilent 1260 Series modules listed in Table 1. For instructions on how to check the firmware version, see Chapter 1, "Checking the Agilent Firmware Versions."

Table 1. Supported firmware versions for the Agilent 1260 Series LC system

Module	Model number	Firmware version
High Performance Well Plate Autosampler (and Thermostat)	G1367E (G1330B)	A.06.54
Micro Well Plate Autosampler (and Thermostat)	G1377A (G1330B)	A.06.37
Thermostatted Column Compartment	G1316A, G1316B	A.06.32
Capillary Pump	G1376A	A.06.34
Quaternary Pump	G1311B	A.06.50
Diode Array Detector (DAD)	G4212B	B.06.33

Cautions and Special Notices

Make sure you follow the cautions and special notices presented in this guide. Cautions and special notices appear in boxes; those concerning safety or possible system damage also have corresponding caution symbols.

This guide uses the following types of cautions and special notices.

CAUTION Highlights hazards to humans, property, or the environment. Each CAUTION notice is accompanied by an appropriate CAUTION symbol.

IMPORTANT Highlights information necessary to prevent damage to software, loss of data, or invalid test results; or might contain information that is critical for optimal performance of the system.

Note Highlights information of general interest.

Tip Highlights helpful information that can make a task easier.

The following additional caution-specific symbol appears in the *Agilent 1260 Series Getting Connected Guide for LC Devices*.

CAUTION Highlights electric shock-related hazards to human beings. Each electric shock notice is accompanied by the international High Voltage symbol.

Contacting Us

There are several ways to contact Thermo Fisher Scientific for the information you need.

For Thermo Scientific™ products	Access by phone, fax, email, or website
Technical Support	(U.S.) Phone: 1 (800) 532-4752 Fax: 1 (561) 688-8736 Email: us.techsupport.analyze@thermofisher.com Web—for product support, technical documentation, and knowledge bases: www.thermoscientific.com/support
Customer Service (Sales and service)	(U.S.) Phone: 1 (800) 532-4752 Fax: 1 (561) 688-8731 Email: us.customer-support.analyze@thermofisher.com Web—for product information: www.thermoscientific.com/lc-ms Web—for customizing your service request: 1. From any Products & Services web page, click **Contact Us**. 2. In the Contact Us box, complete the information requested, scroll to the bottom, and click **Send**.
User Documentation	Web—for downloading documents: mssupport.thermo.com 1. On the Terms and Conditions web page, click **I Agree**. 2. In the left pane, click **Customer Manuals**. 3. To locate the document, click **Search** and enter your search criteria. For Document Type, select **Manual**. Email—to send feedback directly to Technical Publications: techpubs-lcms@thermofisher.com Web—to complete a survey about this Thermo Scientific document: www.surveymonkey.com/s/PQM6P62

1

Checking the Agilent Firmware Versions

This chapter describes how to check the compatibility of the Agilent 1260 Series LC system with the device drivers provided on the Thermo Scientific LC Devices software DVD.

Contents

Checking the Firmware Versions with the Agilent Instant Pilot

You can use the Agilent Instant Pilot™ handheld controller to check the firmware versions of the Agilent LC modules to ensure their compatibility with the device drivers provided with LC Devices.

❖ **To check the firmware version of the LC modules**

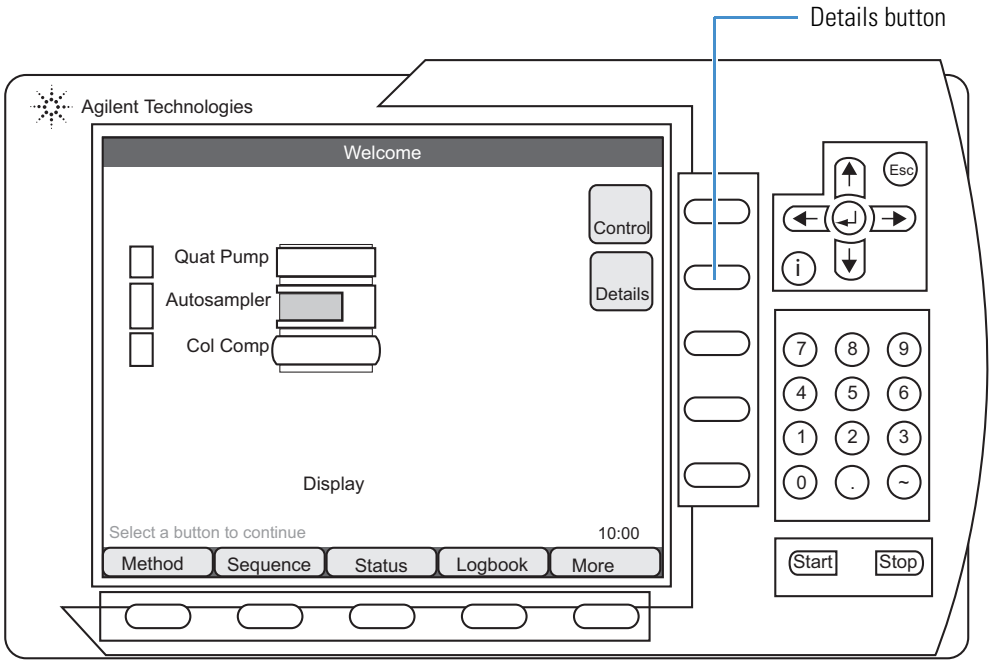
1. Make sure that the modules are connected by controller area network (CAN) communication cables, that all the modules are turned on, and that the Agilent Instant Pilot is connected.

   For instructions on how to connect the CAN cables, refer to the Agilent 1260 Series LC reference manuals.

2. From the Welcome screen of the Instant Pilot, press the Details button (Figure 2).

   The System Info screen appears. The System Info screen contains information about the firmware versions of the configured system modules.

Figure 2. Welcome screen on the Agilent Instant Pilot



3. Compare the firmware versions to those in Table 1 on page ix.

IMPORTANT When you are done, to prevent data system failure, disconnect the Instant Pilot cable from the LC stack.

Checking the Firmware Versions from the Xcalibur Data System

Before you can check the firmware versions of the Agilent LC modules from the Xcalibur data system, you must first establish communication between the modules and the Xcalibur data system.

You can monitor the status of the Agilent modules from the Xcalibur Information view. To open or close the Information view, choose **View > Info View**.

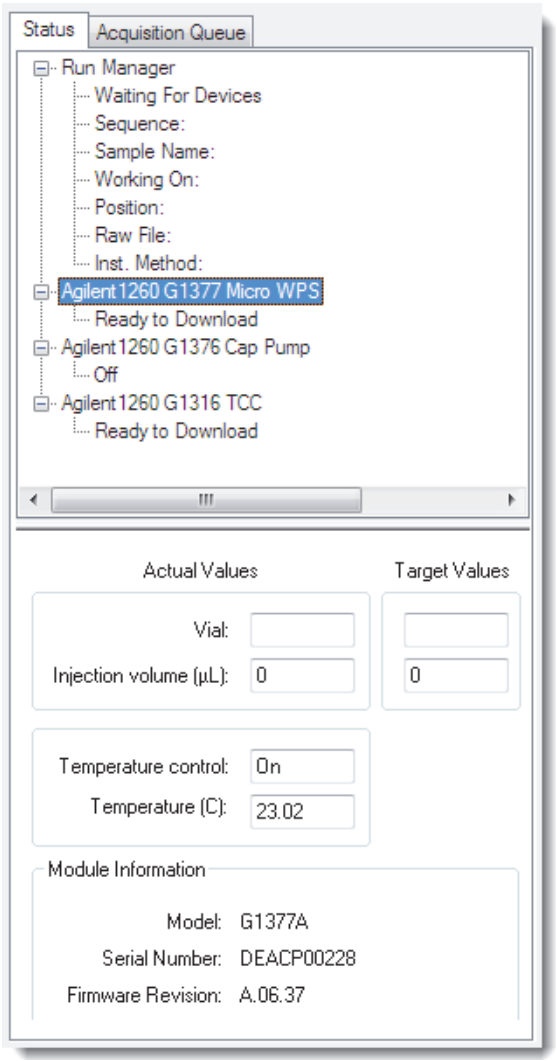
❖ To check the firmware versions of the LC modules from the Xcalibur data system

1. Establish communication with the Agilent LC system as follows:
   a. Connect the Agilent local area network (LAN) interface to the data system computer. See "Connecting the Ethernet Cables" on page 34.
   b. Configure the Agilent LAN interface to use a stored IP address. See Chapter 2, "Setting Up the LAN Interface."
   c. Specify the instrument configuration options for the LC modules in the Xcalibur Instrument Configuration window. See "Configuring the Agilent LC System's Modules" on page 20.

2. Choose **Start > All Programs > Thermo Xcalibur > Xcalibur** to open the Xcalibur application.
3. From the Xcalibur Roadmap view, choose **View > Info View** to open the Information view, and then click the **Status** tab.
4. On the Status page, click the module name to view its status (Figure 3).

Note To trigger data acquisition from a Thermo Scientific mass spectrometer, you must install a contact closure board in one of the Agilent modules and connect the board to the Start In pins on the mass spectrometer power panel. See "Installing the External Contact Interface Board" on page 29 and "Connecting the Contact Closure Cable" on page 35.

Figure 3. Status page of the Xcalibur Roadmap View (example)



2

Setting Up the LAN Interface

This chapter describes how to configure the local area network (LAN) interface for the Agilent 1260 Series LC system. For stable communication with the Xcalibur data system, one of the modules in the Agilent LC system must contain either an on-board LAN interface or an Agilent G1369 LAN card.

Note For more information, refer to the user manual for the Agilent LAN card.

Contents

Determining the LAN Interface Type and Location

Agilent provides two options for the LAN interfaces:

- On-board LAN interface, which might be the standard configuration or you can order as part of a module
- Agilent G1369 LAN card, which you can order separately

IMPORTANT Do not install more than one LAN card in the Agilent LC system. If one of the modules in the LC stack includes an on-board LAN interface, do not install a LAN card.

❖ To determine which module contains the LAN interface

Check the back panels of the modules for either an on-board LAN interface (Figure 4) or a LAN card (Figure 5).

Note If the LC stack does not have a built-in LAN interface, Agilent recommends that you install the Agilent G1369 LAN card in the detector, if part of the system. If an Agilent detector is not part of the system, install the LAN card in the pump or autosampler module. For instructions, refer to the manuals that came with the Agilent 1260 Series LC system.

Figure 4. Location of the on-board LAN interface (example)

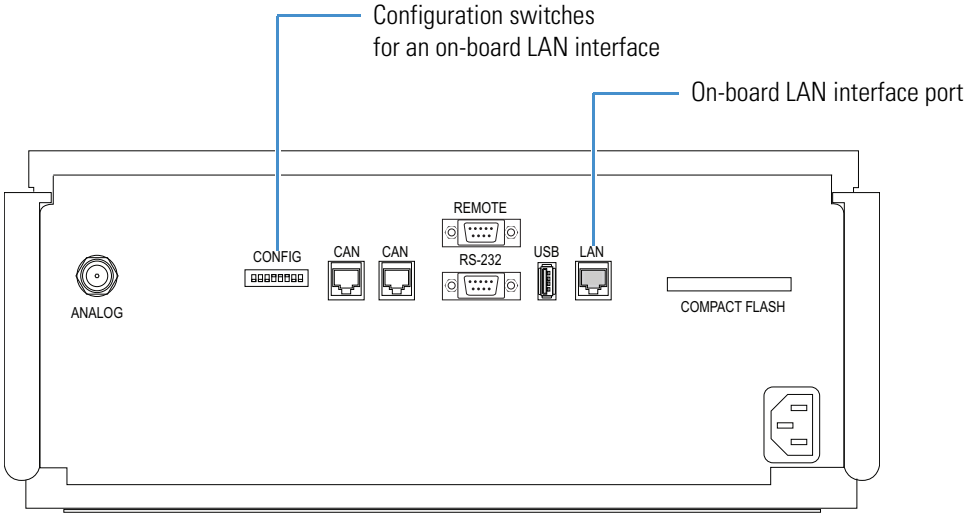
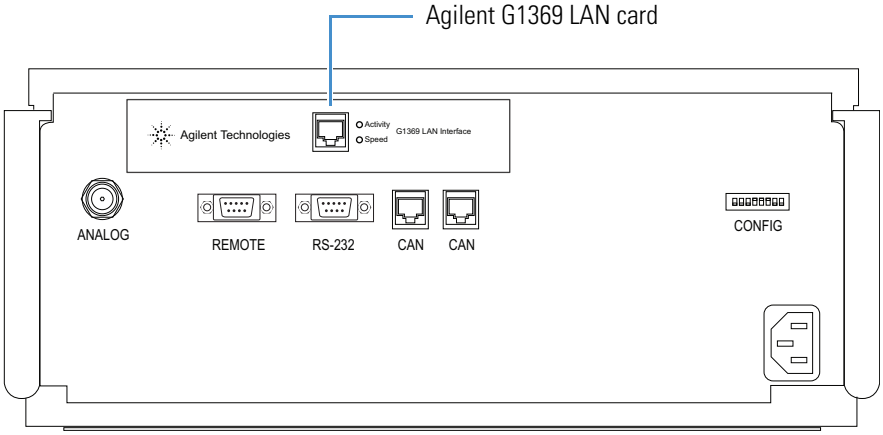


Figure 5. Location of the LAN card (pump module, example)



Setting the LAN Initialization Mode to "Using Default"

Before you configure the LAN interface parameters, set the LAN initialization mode to use the default IP address. The initialization mode is set with three of the eight configuration switches located on the LAN board.

- On-board LAN interface—Use switches 6, 7, and 8 located on the back of the module that has the LAN connector.
- Agilent G1369 LAN card—Use switches 4, 5, and 6 located on the LAN card.

Follow one of these procedures:

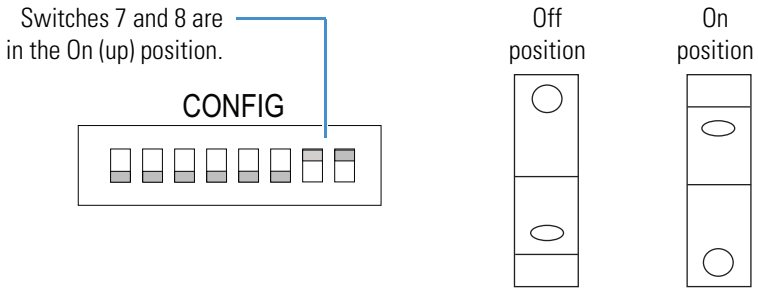
- To set the on-board LAN interface's initialization mode to use the default IP address
- To set the LAN card's initialization mode to use the default IP address

❖ To set the on-board LAN interface's initialization mode to use the default IP address

Set the initialization switches on the back panel (Figure 6) as follows:

Switch #	6	7	8
Position	Off	On	On

Figure 6. Back panel on-board LAN configuration switches set to the default IP address



❖ To set the LAN card's initialization mode to use the default IP address

1. For the module that contains the LAN card, turn off the power switch and unplug its power supply cord.

CAUTION To prevent personal injury caused by an electric shock, always turn off the module and unplug the power supply cord from the electrical outlet before removing the cover.

2. If an Ethernet cable connects to the Ethernet port (LAN), disconnect the cable.
3. Ensure that you wear electrostatic discharge (ESD) protection.

   Refer to the LC modules' manuals for additional safety information and for information about preventing ESD damage caused by an electrical discharge.

CAUTION To prevent damage to an instrument, always use ESD protection when handling electronic boards and components.

4. Remove the LAN card from the module.

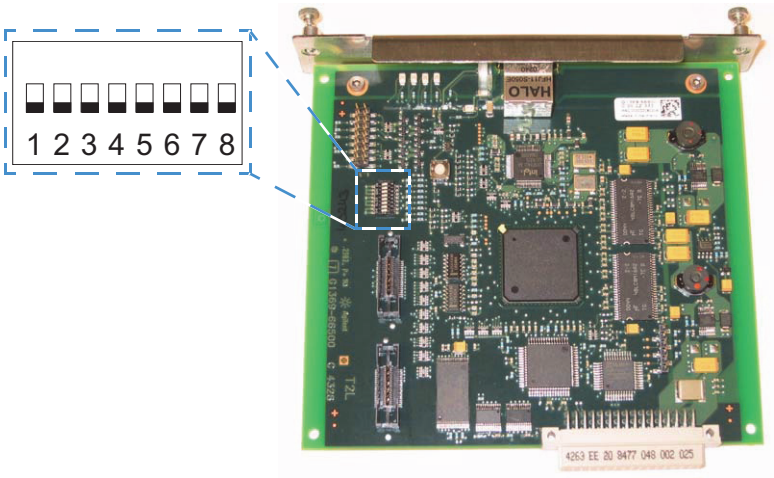
   For instructions, refer to the manual for the Agilent G1369 LAN card. This LAN card has a configuration switch that you can configure for the initialization modes. The card ships with all eight switches set to the Off (down) position, which is the "Bootp" initialization mode.

5. Set the initialization switches on the LAN card (Figure 7) as follows:

Switch #	4	5	6
Position	Off	On	On

   The On position for the toggle switch is up and the Off position is down. With these switch settings, the LAN card uses the factory default settings to enable a Transmission Control/Internet Protocol (TCP/IP) connection to the LAN interface with a Telnet session.

Figure 7. Configuration switches on the Agilent G1369 LAN card



Note The Agilent default settings are IP address 192.168.254.11 and subnet mask 255.255.0.0.

6. Reinstall the LAN card.
7. Using the Category 5 Ethernet cable, connect the LAN card directly to the dedicated Ethernet port in the data system computer.
8. Plug in the disconnected power supply cord, and then turn on the LC modules.

Setting the Stored TCP/IP Address for the LAN Interface

For an LC/MS system that includes an Agilent LC stack and a Thermo Scientific mass spectrometer, set the IP address for the Agilent LAN interface to 172.16.0.102.

IMPORTANT If your LC/MS setup includes only one network card, use the mass spectrometer's IP address.

❖ To set the stored TCP/IP address for the LAN interface

1. Follow the procedure "Setting the LAN Initialization Mode to "Using Default"" on page 7.
2. Ensure that the LAN interface connects to the data system computer network card labeled Surveyor MS.
3. Open the Internet Protocol Properties dialog box as follows:

   Note During this procedure, the mass spectrometer temporarily loses communication with the Xcalibur data system.

   a. Depending on the operating system, open the Local Area Connection Status dialog box as follows (Figure 8):

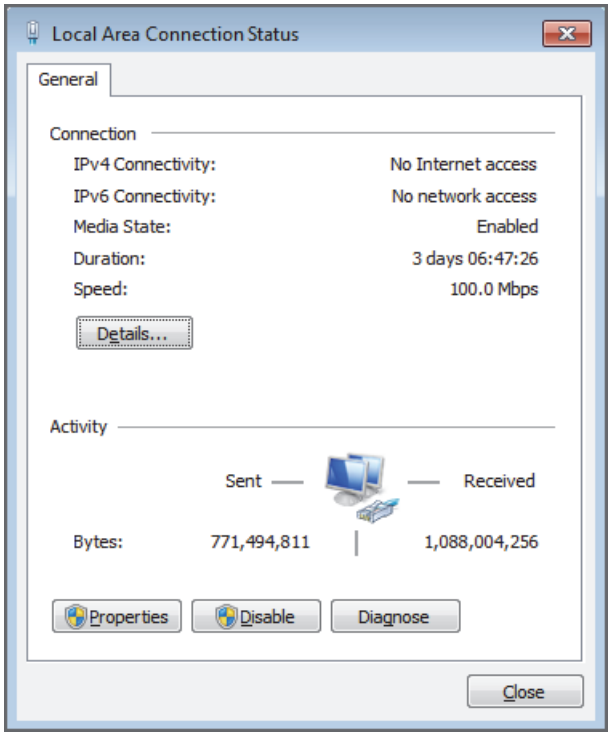
      - (Microsoft™ Windows™ 7 or later) Choose **Start > Control Panel > Network and Internet** (or **Networking and Sharing Center** if set to the Icon view), and then click **Local Area Connection *number***.

      –or–

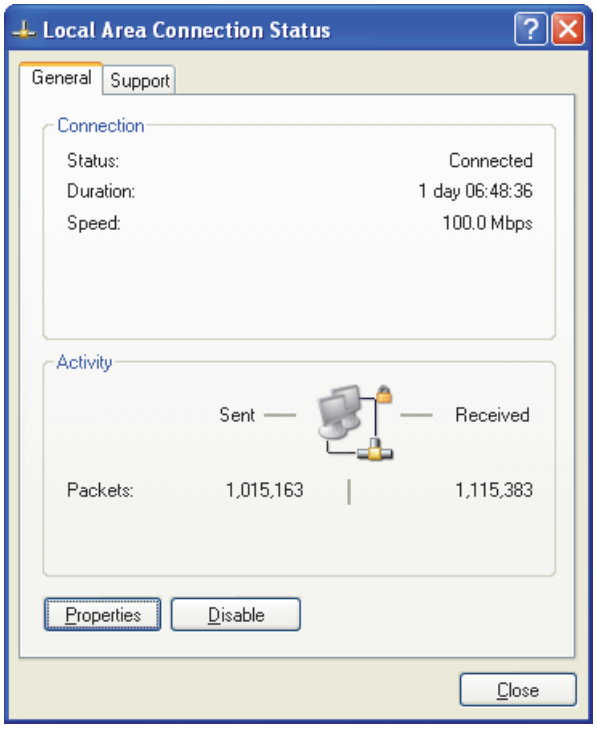
      - (Windows XP) Choose **Start > Settings > Control Panel > Network Connections > Local Area Connection**.

Figure 8. Local Area Connection Status dialog box (Windows 7 and XP)

Windows 7



Windows XP



b. Click **Properties** to open the Local Area Connection Properties dialog box.

c. Do one of the following (Figure 9):

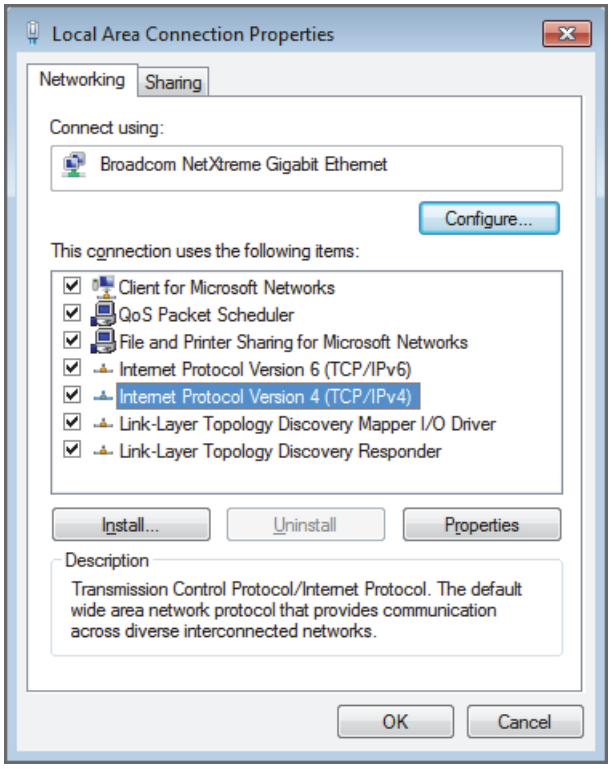
- (Windows 7 or later) On the Networking page, select the **Internet Protocol Version 4 (TCP/IPv4)** check box.

–or–

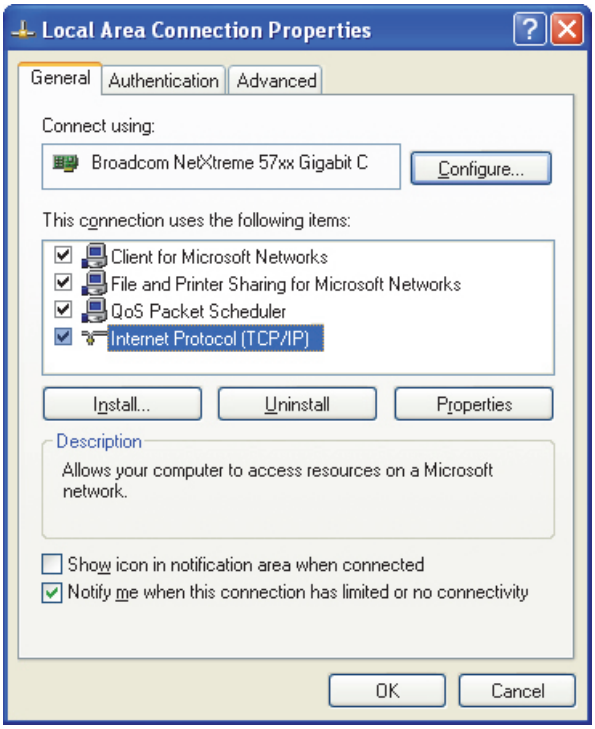
- (Windows XP) On the General page, select the **Internet Protocol (TCP/IP)** check box.

Figure 9. Local Area Connection Properties dialog box

Windows 7



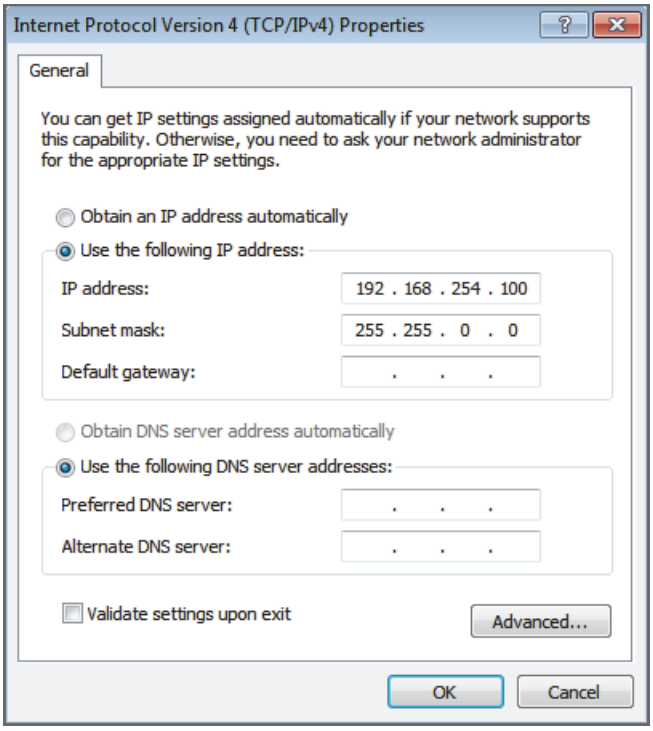
Windows XP



d. Click **Properties** to open the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box (Figure 10).

"Version 4" and "IPv4" appear only in the dialog box for Windows 7 or later.

Figure 10. Internet Protocol Version 4 (TCP/IPv4) Properties dialog box with the IP address for the dedicated Ethernet card



4. Set the IP address as follows:
   a. Select the **Use the Following IP Address** option.
   b. In the IP Address box, type **192.168.254.100**.
   c. In the Subnet Mask box, type **255.255.0.0**.
   d. Click **OK**.
5. (Windows 7 or later) Enable Telnet as follows:
   a. Choose **Start > Control Panel > Programs and Features** (Icon view), and then click **Turn Windows Features On or Off** to open the Windows Features dialog box.
   b. Select the **Telnet Client** check box, and then click **OK**.

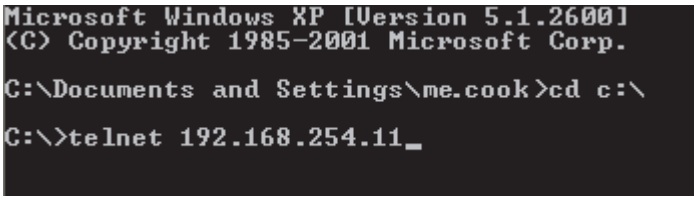
6. Start a Telnet session with the Agilent LAN interface as follows:
   a. Open the MS-DOS Command window as appropriate for your operating system:
      - (Windows 7 or later) Choose **Start**, type **cmd** in the search box, and then press ENTER.

      –or–

      - (Windows XP) Choose **Start > Run**, type **cmd**, and then click **OK**.

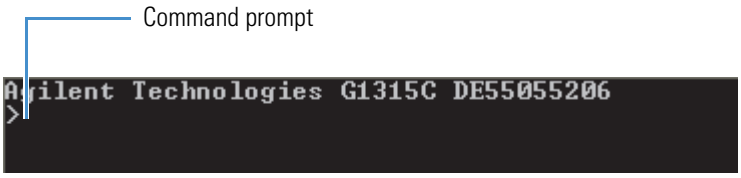
   b. At the MS-DOS prompt, type **cd c:**, and then press ENTER.
   c. Type **telnet 192.168.254.11**, and then press ENTER (Figure 11).

      Figure 11. Command Prompt window with the default IP address

      The Telnet session with the Agilent LAN interface begins (Figure 12).

      Figure 12. Beginning of a Telnet session with the Agilent LAN interface

7. Set the IP address for the Agilent LAN interface as follows:
   a. At the command prompt (Figure 12), type a slash (/), and then press ENTER to display the LAN interface's current settings.

      Table 2 lists the Telnet commands. Figure 13 shows a Telnet session with the LAN Status Page displayed.

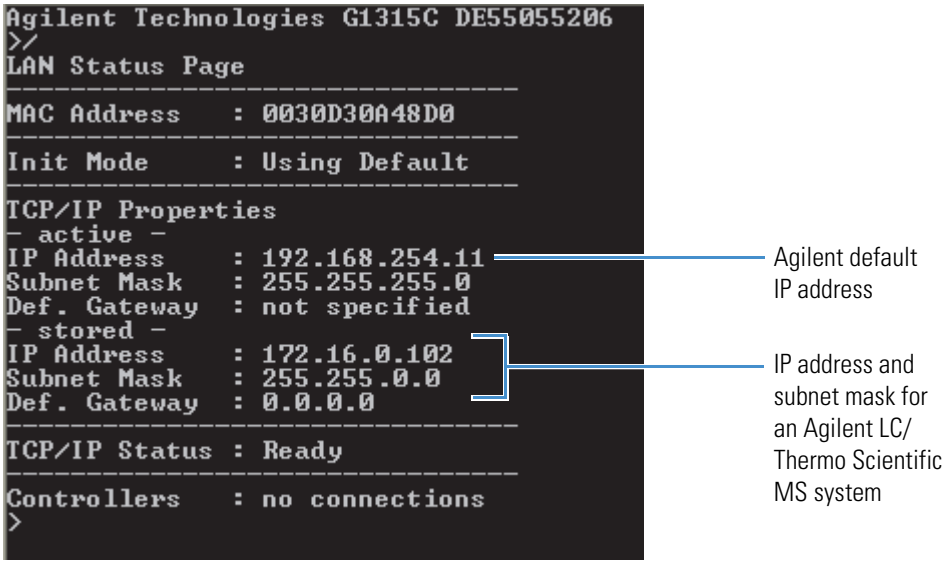
      Table 2. Telnet commands (Sheet 1 of 2)

Value	Description
/	Displays current settings.
ip <x.x.x.x>	Sets a new IP address.
sm <x.x.x.x>	Sets a new subnet mask address.
gw <x.x.x.x>	Sets a new gateway address.

Table 2. Telnet commands (Sheet 2 of 2)

Value	Description
quit	Saves changes and exits the shell (for the G1369 LAN card).
exit	(Model G1369 LAN card) Exits the Windows command line without saving the changes. (On-board LAN interface) Saves the changes and exits the Windows command line.

Figure 13. Telnet session with the LAN Status Page



b. If the stored IP address is not set to 172.16.0.102, type **ip 172.16.0.102**, and then press ENTER.

c. If the stored subnet mask is not set to 255.255.0.0, type **sm 255.255.0.0**, and then press ENTER.

d. To verify the IP address and subnet mask settings, type a slash (/), and then press ENTER to display the current settings of the LAN interface.

8. To exit the Telnet session, do one of the following:

   - For the on-board LAN interface, type **exit** at the prompt.

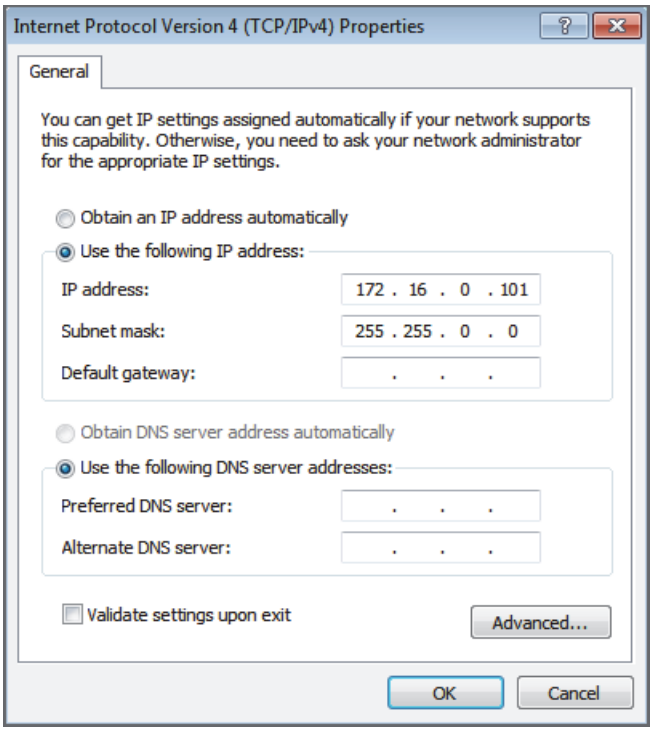
   –or–

   - For the LAN card, type **quit** at the prompt.

9. After exiting the Telnet session, restore the TCP/IP address for the data system computer network card (labeled Surveyor MS) to the original settings as follows (Figure 14):

   a. Open the Internet Protocol Version 4 (TCP/IPv4) Properties dialog box (see step 3 on page 9).

   Figure 14. Internet Protocol Version 4 (TCP/IPv4) Properties dialog box



   b. In the IP Address box, type **172.16.0.101**.

   c. In the Subnet Mask box, type **255.255.0.0**.

   d. Click **OK**.

   e. Exit the Control Panel.

After setting the stored IP address and subnet mask for the Agilent LAN interface, you are ready to change the LAN interface initialization switches so that the LAN interface uses the stored IP address. See Setting the LAN Initialization Mode to "Using Stored".

Setting the LAN Initialization Mode to "Using Stored"

After you configure the IP address by using the Telnet session, set the initialization mode to use the stored IP address setting. The initialization mode is set with three of the eight configuration switches located on the LAN board.

- On-board LAN interface—Use switches 6, 7, and 8 located on the back of the module that has the LAN connector.
- Agilent G1369 LAN card—Use switches 4, 5, and 6 located on the LAN card.

Follow one of these procedures:

- To set the on-board LAN interface's initialization mode to use the stored IP address
- To set the LAN card's initialization mode to use the stored IP address

❖ To set the on-board LAN interface's initialization mode to use the stored IP address

Set the initialization switches on the back panel (Figure 6 on page 7) as follows:

Switch #	6	7	8
Position	Off	On	Off

The On position for the toggle switch is up and the Off position is down.

❖ To set the LAN card's initialization mode to use the stored IP address

1. For the module that contains the LAN card, turn off the power switch and unplug its power supply cord.

CAUTION To prevent personal injury caused by an electric shock, always turn off the module and unplug the power supply cord from the electrical outlet before removing the cover.

2. If an Ethernet cable connects to the Ethernet (LAN) port, disconnect the cable.
3. Ensure that you wear ESD protection.

CAUTION To prevent damage to an instrument, always use ESD protection when handling electronic boards and components.

4. Remove the LAN card from the module.

5. Set the initialization switches on the LAN card (Figure 7 on page 8) as follows:

Switch #	4	5	6
Position	Off	On	Off

   The On position for the toggle switch is up and the Off position is down.

6. Reinstall the LAN card.
7. Using the Category 5 Ethernet cable, connect the LAN card directly to the dedicated Ethernet port in the data system computer.
8. Plug in the disconnected power supply cord, and then turn on the LC modules.

3

Setting Up the Thermo Foundation Instrument Configuration

This chapter describes how to add the Agilent 1260 Series modules to the Thermo Foundation Instrument Configuration window and specify their configuration options.

Contents

Agilent 1260 Series LC System IP Address

You enter the stack IP address (172.16.0.102) for the Agilent LC system when you configure the modules. After you enter the stack IP address for one module, this IP address appears in the configuration dialog box for each connected device.

IMPORTANT To maintain stable communication with the Thermo Scientific data system, you must set the Agilent LAN interface to use a stored IP address. For information about configuring the Agilent LAN interface to use a stored IP address, see Chapter 2, "Setting Up the LAN Interface."

Contact Interface Board

The LC Devices DVD contains device drivers for the following Agilent 1260 Series modules:

- Agilent Micro Well Plate (autosampler)
- Agilent Thermostatted Column Compartment (TCC)
- Agilent Capillary Pump
- Agilent Variable Wavelength Detector (VWD)

❖ **To trigger data acquisition during a sequence run**

1. Install the external contact interface (closure) board in one of the modules (typically the autosampler).

   For instructions, see Chapter 4, "Installing the External Contact Interface Board."

2. When you specify the configuration options for the LC system, select the **Contact Board Installed** check box for the module that contains this board.

Configuring the Agilent LC System's Modules

To specify the configuration options for the LC modules, follow these procedures:

- Adding the Agilent 1260 Series Modules to the Foundation Instrument Configuration
- Setting the Configuration Options for the LC Modules
- Closing Foundation Instrument Configuration

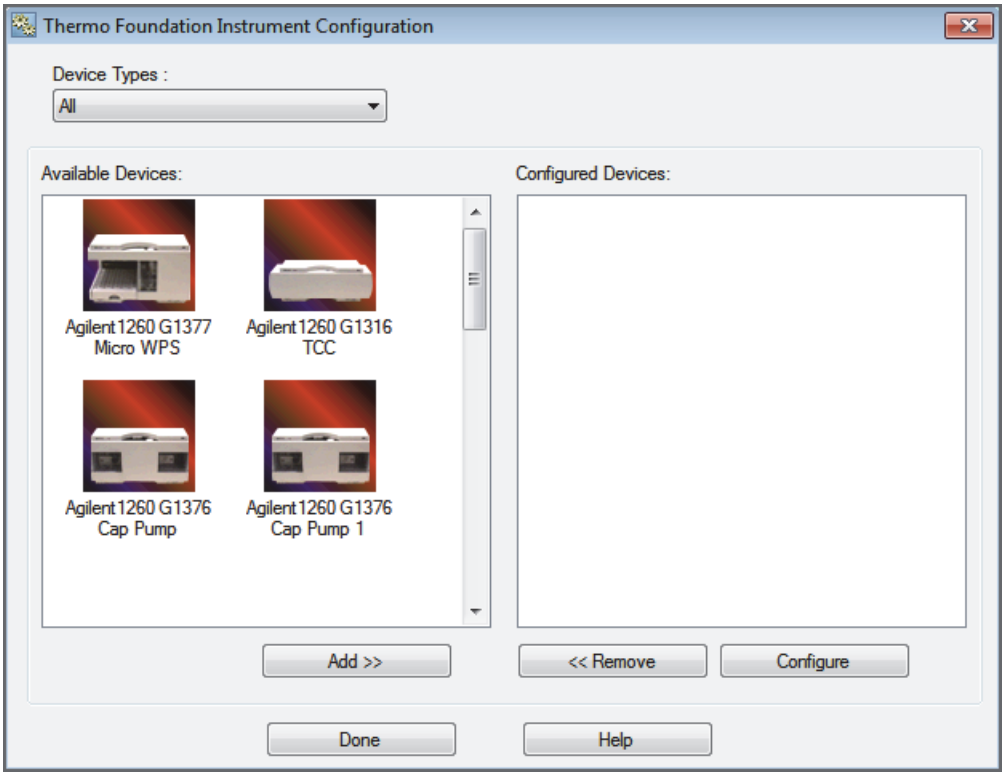
Adding the Agilent 1260 Series Modules to the Foundation Instrument Configuration

❖ **To add the LC modules to the Foundation instrument configuration**

IMPORTANT The Thermo Scientific data system does not support the simultaneous control of Agilent LC modules from different LC series.

1. Turn on the modules in the Agilent LC stack.
2. Choose **Start > All Programs > Thermo Foundation *x.x* > Instrument Configuration** to open the Thermo Foundation Instrument Configuration window (Figure 15).

Figure 15. Thermo Foundation Instrument Configuration window



3. Under Available Devices, double-click the icon for each module that you want to add to the Configured Devices area.
4. Configure the selected modules. See the next section.

Setting the Configuration Options for the LC Modules

To set the configuration options for the Agilent LC modules that the Foundation platform supports, follow these procedures:

- Configuring the Agilent 1260 Series Autosampler
- Configuring the Agilent 1260 Series Pump
- Configuring the Agilent 1260 Series Thermostatted Column Compartment
- Configuring the Agilent 1260 Series Detector

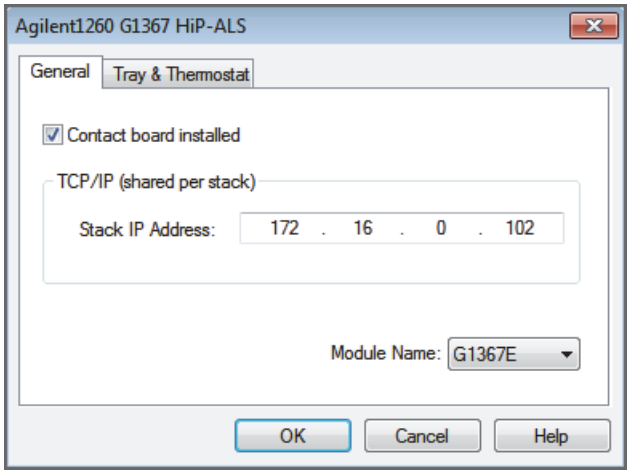
Configuring the Agilent 1260 Series Autosampler

Use the autosampler's configuration dialog box to specify its module name; the stack IP address; configurable instrument options such as the size of the syringe, seat capillary, and loop capillary; the tray type you are using; and whether the system has an optional thermostat unit.

❖ To specify the configuration options for the autosampler

1. Follow the procedure "To add the LC modules to the Foundation instrument configuration" on page 20.
2. In the Instrument Configuration window, under Configured Devices, double-click the **autosampler** icon, and then do the following on the General page (Figure 16):

Figure 16. General page of the Agilent 1260 G1367 HiP ALS dialog box (example)



- If you installed the contact interface board in the autosampler, select the **Contact Board Installed** check box.

  Note When you select the Contact Board Installed check box, the Timed Events page appears in the Instrument Setup view for the autosampler. See Chapter 6, "Triggering Data Acquisition."

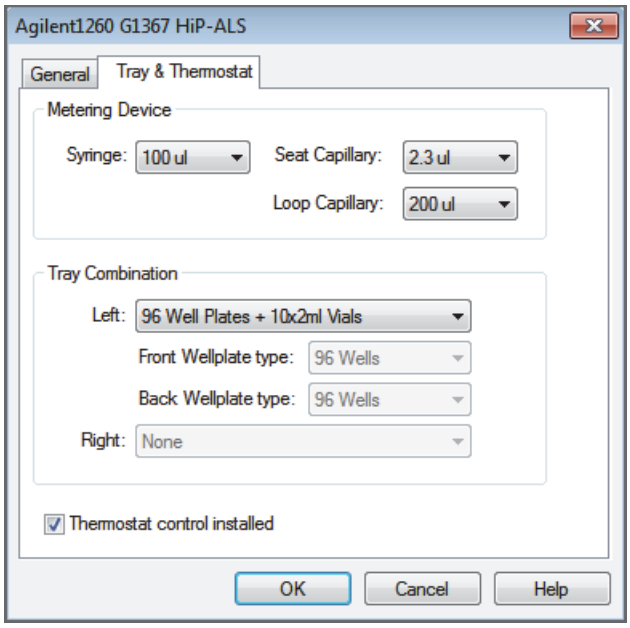
- In the Stack IP Address box, make sure that the IP address is **172.16.0.102**.

  All of the Agilent LC modules in the stack share the TCP/IP settings. Changing the value of a setting for one module in the Instrument Configuration window changes the value of that setting for all modules in the stack.

- If there is more than one model number in the Module Name list, select the model number located on the front, lower-right corner of the module.

3. Click the **Tray & Thermostat** tab (Figure 17), and then do the following:

Figure 17. Tray & Thermostat page of the Agilent 1260 G1367 HiP-ALS dialog box (example)



- Under Metering Device, select options from the Syringe, the Seat Capillary, and the Loop Capillary lists.
- Under Tray Combination, select the tray type.

  For information about the vial and tray locations, see Chapter 7, "Vial and Well Locations for the Available Tray Types."
- If the Agilent stack has an autosampler thermostat module (G1330B), select the **Thermostat Control Installed** check box.

4. Click **OK**.

Configuring the Agilent 1260 Series Pump

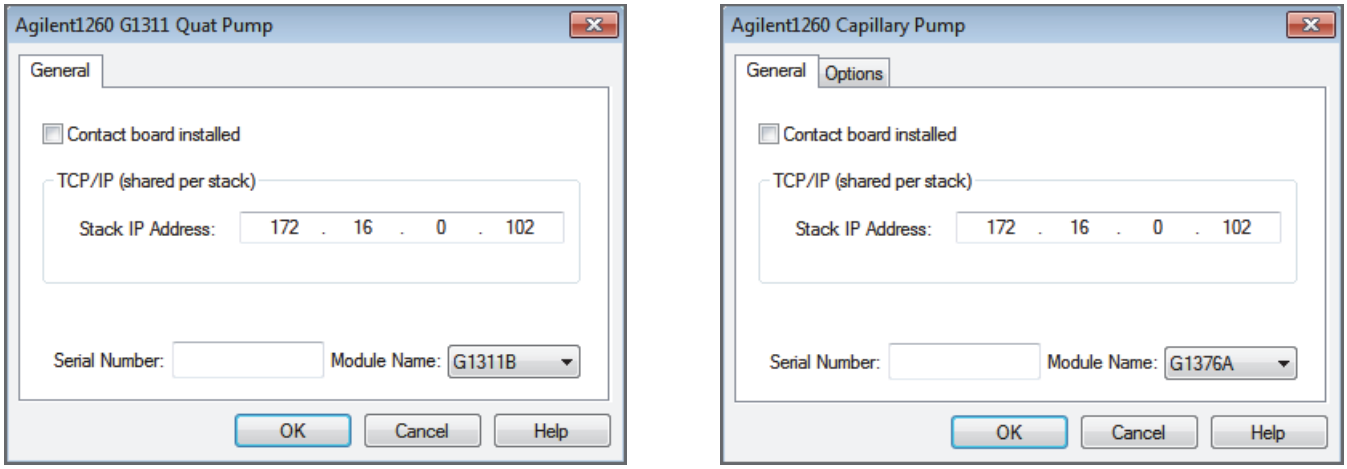
Use the pump's configuration dialog box to specify its serial number and model number.

IMPORTANT Be sure to enter the correct serial number when you configure the pump. Otherwise, the Thermo Scientific data system cannot communicate with the pump.

❖ To specify the configuration options for the pump

1. Follow the procedure "To add the LC modules to the Foundation instrument configuration" on page 20.
2. In the Instrument Configuration window, under Configured Devices, double-click the **pump** icon, and then do the following on the General page (Figure 18):

Figure 18. General pages of the Agilent 1260 G1311 Quat Pump and Agilent 1260 Capillary Pump dialog boxes



- If you installed the contact interface board in the pump, select the **Contact Board Installed** check box.

  Note When you select the Contact Board Installed check box, the Timed Events page appears in the Instrument Setup view for the pump. See Chapter 6, "Triggering Data Acquisition."

- In the Stack IP Address box, make sure that the IP address is **172.16.0.102**.

  All Agilent 1260 LC modules in the stack share the TCP/IP settings. Changing the value of a setting for one module in the Instrument Configuration window changes the value of that setting for all modules in the stack.

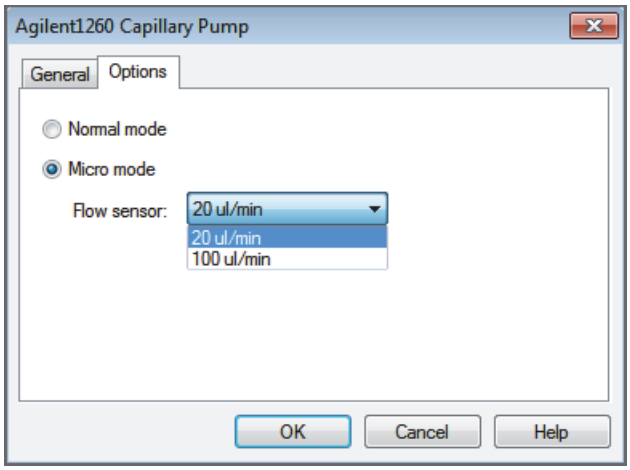
- In the Serial Number box, type the serial number that is located on the front, lower-right corner of the Agilent module.

  Because you can configure two pumps per stack, you must type the correct serial number to initiate communication between the pump and the Thermo Scientific data system.

- If there is more than one model number in the Module Name list, select the model number located on the front, lower-right corner of the module.

3. For the capillary pump, click the **Options** tab, and then select the **Normal Mode** or **Micro Mode** option. If you select the Micro Mode option, select the flow sensor rate (Figure 19).

Figure 19. Options page of the Agilent 1260 Capillary Pump dialog box



4. Click **OK**.

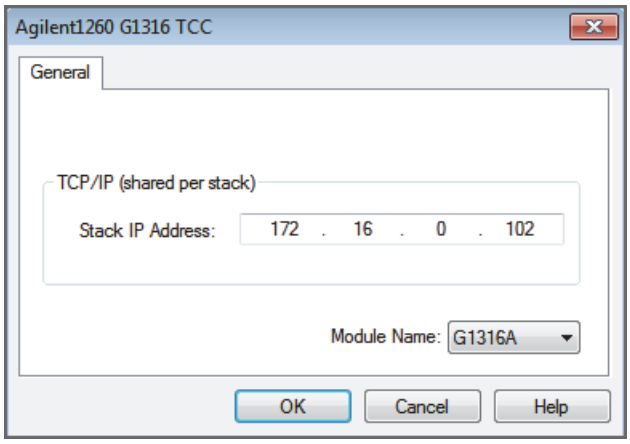
Configuring the Agilent 1260 Series Thermostatted Column Compartment

Use the thermostatted column compartment (TCC) configuration dialog box to specify its model number.

❖ To specify the configuration options for the TCC

1. Follow the procedure "To add the LC modules to the Foundation instrument configuration" on page 20.
2. In the Instrument Configuration window, under Configured Devices, double-click the **TCC** icon, and then do the following on the General page (Figure 20):

   Figure 20. General page of the Agilent 1260 G1316 TCC dialog box

   - In the Stack IP Address box, make sure that the IP address is **172.16.0.102**.

     Note All Agilent LC modules in the stack share the TCP/IP settings. Changing the value of a setting for one module in the Instrument Configuration window changes the value of that setting for all modules in the stack.

   - In the Module Name list, select the model number located on the front, lower-right corner of the module.
3. Click **OK**.

Configuring the Agilent 1260 Series Detector

Use the VWD instrument configuration window to specify the detector model number.

❖ **To specify the configuration options for the detector**

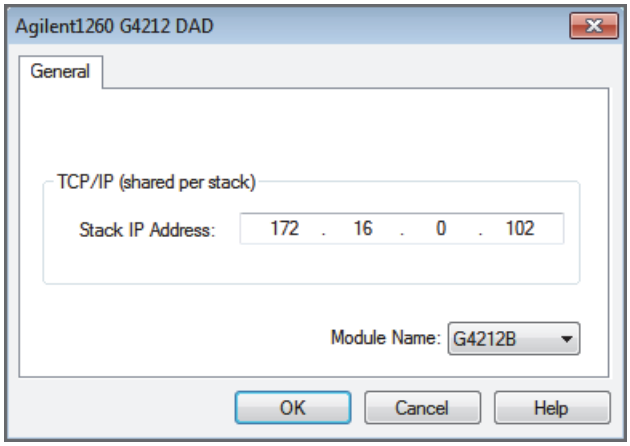
1. Follow the procedure "To add the LC modules to the Foundation instrument configuration" on page 20.
2. In the Instrument Configuration window, under Configured Devices, double-click the detector icon, and then do the following on the General page (Figure 21):

   In the Stack IP Address box, make sure that the IP address is **172.16.0.102**.

   Note All modules in the Agilent LC stack share the TCP/IP settings. Changing the value of a setting for one module in the Instrument Configuration window changes the value of that setting for all modules in the stack.

   The model number for the VWD is already selected in the Module Name list.

   Figure 21. General page of the Agilent 1260 G4212 DAD dialog box



3. Click **OK**.

Closing Foundation Instrument Configuration

Before opening the Thermo Scientific data system, close the Foundation Instrument Configuration window. You cannot have both applications open at the same time.

❖ **To close the Foundation Instrument Configuration window**

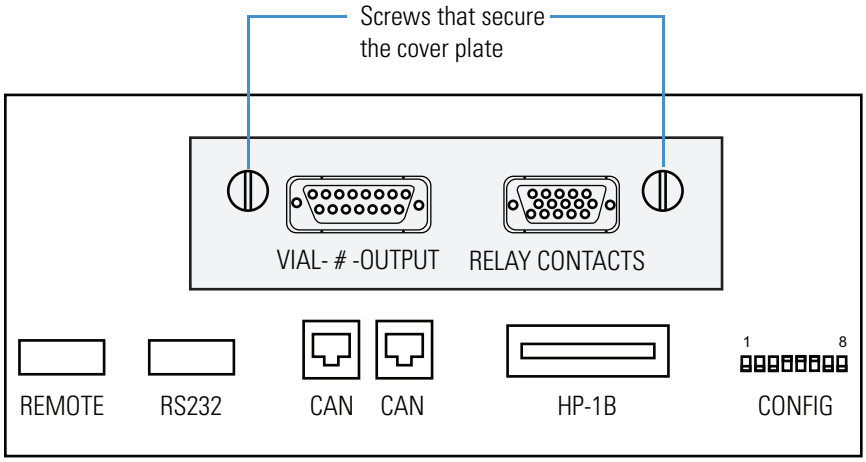
After you configure all of the Agilent LC modules, click **Done**.

Installing the External Contact Interface Board

To send a trigger signal from the Agilent LC system to a Thermo Scientific mass spectrometer, the Agilent 1260 Series autosampler or pump must have an external contact binary-coded decimal (BCD) interface board (Figure 22).

For information about ordering the BCD board, refer to the manuals supplied with the Agilent LC modules.

Figure 22. External contact interface board (BCD board) installed in an Agilent pump

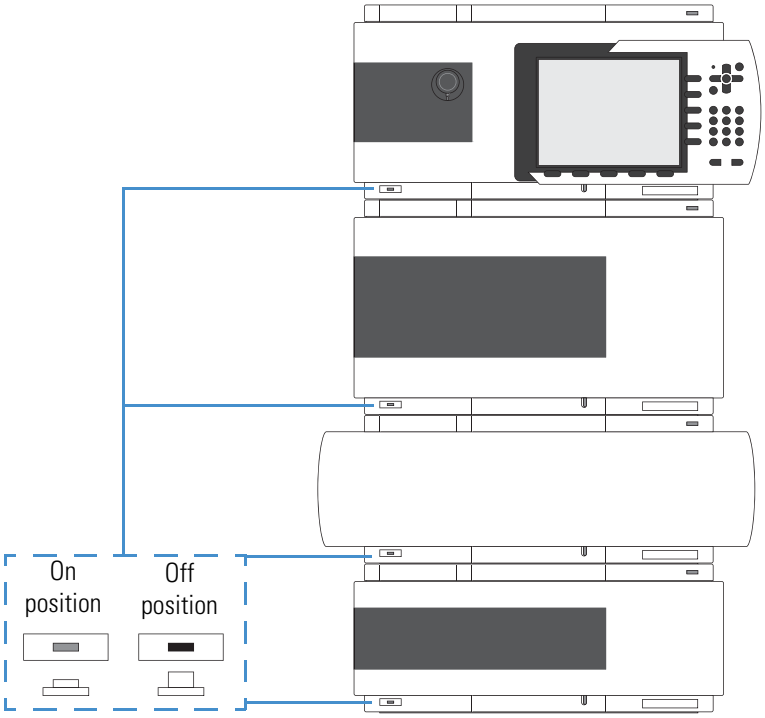


❖ To install the external contact interface board

1. For the selected module (autosampler or pump), turn off the power switch and unplug the power supply cord (Figure 23).

CAUTION To prevent personal injury caused by an electric shock, always turn off the Agilent module and unplug its power supply cord from the electrical outlet before removing the cover.

Figure 23. Power switches on the front of the Agilent 1260 Series modules



2. Ensure that you wear ESD protection.

   Refer to the LC modules' manuals for additional safety information and for information about preventing ESD damage caused by an electrical discharge.

CAUTION To prevent damage to an instrument, always use ESD protection when handling electronic boards and components.

3. Using a slotted screwdriver, remove the back cover plate over the empty board slot.
4. Insert the contact interface board into the slot, and then tighten the two screws to secure the board to the enclosure (Figure 22 on page 29).

   This completes the installation of the contact interface board.

5. Trigger data acquisition from the Thermo Scientific mass spectrometer as follows:
   a. Connect the external contact trigger cable.
   b. When you configure the module with the contact interface board (see "Configuring the Agilent LC System's Modules" on page 20), make sure that you select the **Contact Board Installed** check box.
   c. When you create an instrument method for the LC/MS system, make sure that you create an appropriate time program for the trigger signal. See Chapter 6, "Triggering Data Acquisition."

5

Connecting the Communication Cables

This chapter describes how to connect the Agilent 1260 Series LC modules to the data system computer and how to make the contact closure connection between the LC stack and a Thermo Scientific mass spectrometer.

Contents

Ethernet Communication Kit

To connect the Agilent LC system to a Thermo Scientific mass spectrometer, you must have the following parts:

- Ethernet Communication Kit (Table 3)
- Agilent LAN card, Model G1369
- Agilent BCD board for contact closure

Table 3. Ethernet Communication Kit (P/N OPTON 30012)

Description	Part number
Agilent BCD (contact interface) board	00012-27714
Contact closure cable with 15-pin connector[a]	00012-27716
Ethernet cable, straight shielded Cat5, 3 m (10 ft)	00012-70008
Fast Ethernet switch, 10T/100Base-TX, 5-port	00825-01-00024

[a] Instead of using the contact closure (trigger) cable, you can use the contact closure cable supplied by Agilent Technologies Inc. (P/N G1103-61611)

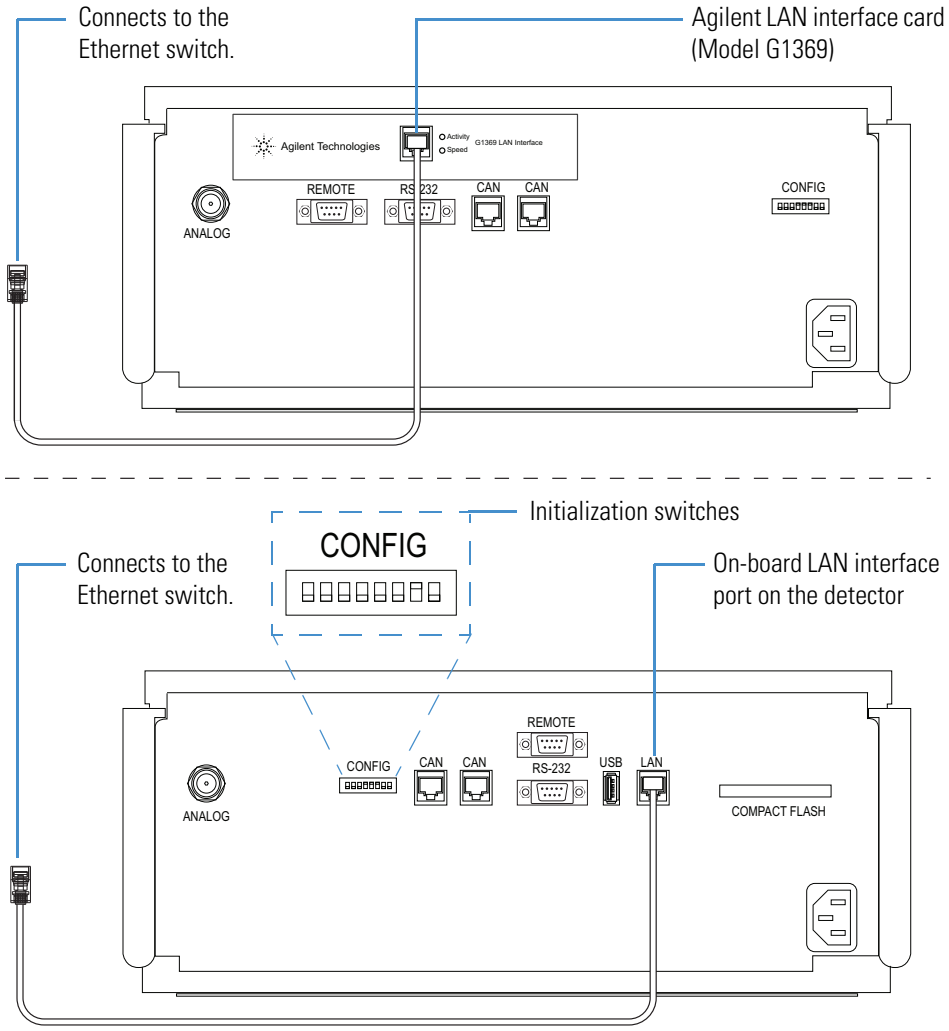
Connecting the Ethernet Cables

CAUTION Safety and EMC regulations require the use of Category 5 shielded Ethernet communication cables, maximum 3 m (10 ft) long.

❖ To connect the Ethernet communication cable to an Agilent LC stack

1. Connect one Ethernet cable from the LAN interface port (Figure 24) to the Ethernet switch.

Figure 24. Ethernet connection to the two types of LAN interfaces



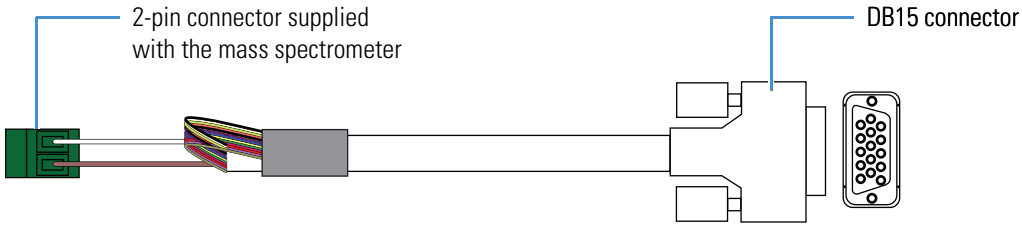
2. Connect the second Ethernet cable from the Ethernet switch to the Ethernet network card in the data system computer that is dedicated to the LC/MS system (typically network interface card number 3).

Connecting the Contact Closure Cable

An external contact closure (trigger) cable relays the start signal from the Agilent LC module to the Thermo Scientific mass spectrometer. One end of the cable has a DB15 connector and the other end has a set of exposed wires.

Figure 25 shows the contact closure cable set up for a Thermo Scientific TSQ™ Series mass spectrometer with a 2-pin connector. For ordering information, see "Ethernet Communication Kit" on page 33.

Figure 25. Contact closure cable set up with a 2-pin connector

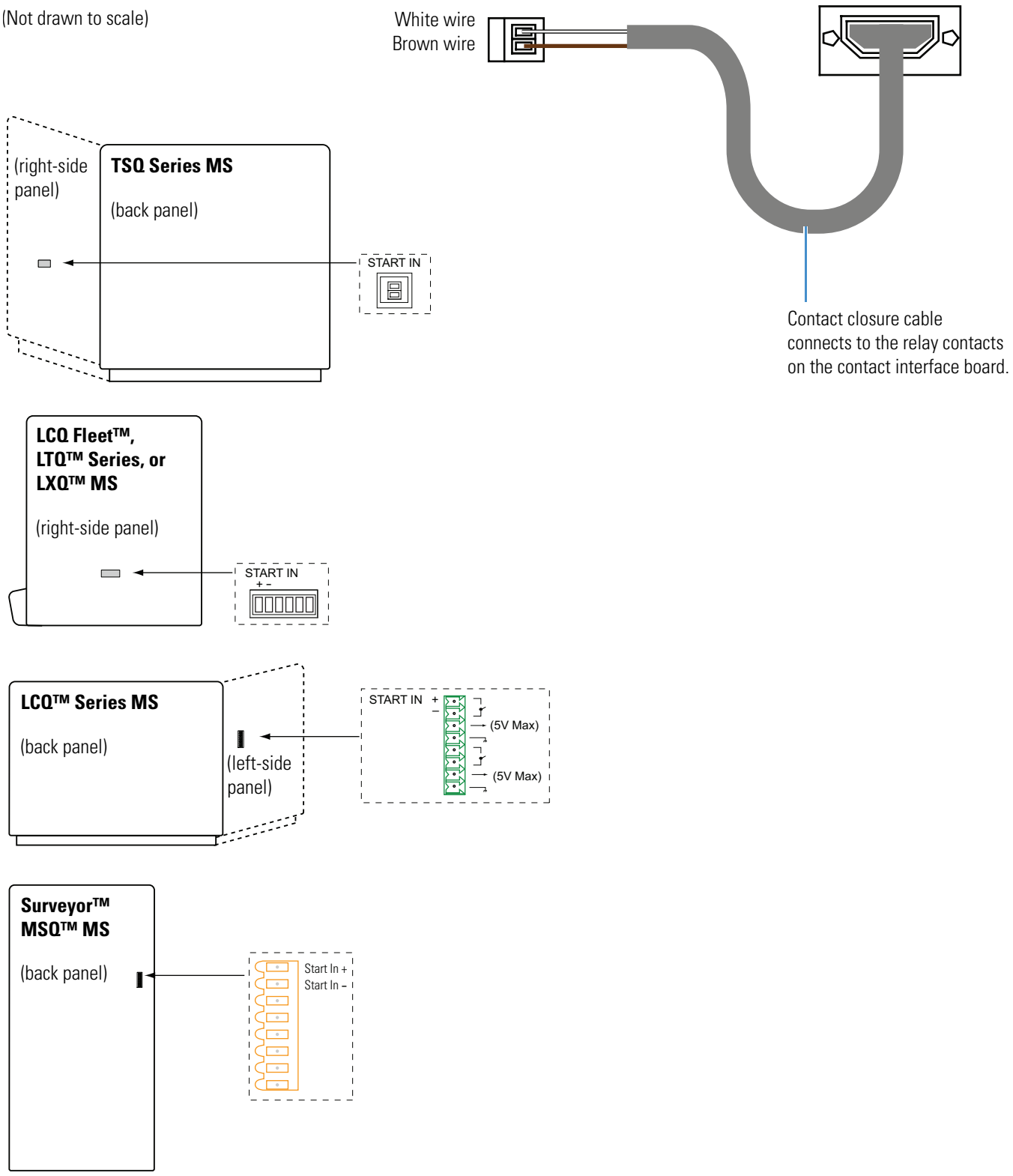


Note The instrument control platform for the Thermo Scientific mass spectrometer must be compatible with the LC Devices instrument control application, and the instrument control applications must be compatible with the Thermo Scientific application installed on your data system computer. See the LC Devices Release Notes.

❖ To connect the contact closure cable to the mass spectrometer

1. Follow the procedure "To install the external contact interface board" on page 30.
2. Using an appropriate connector for the mass spectrometer, connect the white wire from the contact closure cable to the Start In+ pin and the brown wire to the Start In– pin on the mass spectrometer's input/output (I/O) panel (Figure 26).
3. Connect the cable's DB15 plug to the RELAY CONTACTS socket located on the LC module's installed contact interface board (Figure 26).

Figure 26. Example contact closure connections between the Agilent contact interface board and the Thermo Scientific MS



Triggering Data Acquisition

This chapter describes how to set up the LC/MS system so that the Agilent 1260 module with the external contact interface board triggers the Thermo Scientific mass spectrometer (MS) to start data acquisition.

CAUTION To prevent a data system failure, make sure that you disconnect the Agilent Instant Pilot cable from the LC stack before you run data acquisitions or use the direct control commands.

Note Instrument methods contain the contact closure signals (to trigger data acquisition), the chromatographic conditions, and the mass spectrometer settings for an LC/MS application.

If you have not already installed the contact interface board, start with these procedures:

- "Installing the External Contact Interface Board" on page 29
- "Connecting the Contact Closure Cable" on page 35

❖ To trigger data acquisition during a run

1. Choose **Start > All Programs > Thermo Xcalibur > Xcalibur**, and then click the **Instrument Setup** icon.

   Note The Instrument Setup window might take several seconds to open. If you receive a server failure error, follow the instructions on page viii.

2. Click the icon for the LC module that contains the contact interface board (typically the autosampler) to open its Instrument Setup window.
3. Click the **Timed Events** tab.

   Note If the Timed Events tab is not shown, close the Xcalibur data system and follow the instructions in "Setting the Configuration Options for the LC Modules" on page 21.

4. In the Timed Events table, do the following:
   a. In row 1, select the Contact A cell, and then select **Closed** from the list (Figure 27).
   b. In row 2, do the following:
      i. Select the Time (min) cell, and then type **0.10**.
      ii. Select the Contact A cell, and then select **Open** from the list.
   c. Make sure that all the other Contact cells display **Open**.

Figure 27. Table on the Timed Events page

	Time(min)	Contact A	Contact B	Contact C	Contact D
1	0.00	Closed	Open	Open	Open
2	0.10	Open	Open	Open	Open
*	1.10	Open	Open	Open	Open

5. Make the appropriate entries and selections for the rest of the instrument method.
6. Save the instrument method with an appropriate name.

7

Vial and Well Locations for the Available Tray Types

This chapter describes the vial and well locations for the tray types available from the Xcalibur data system.

Note Left/Back is the factory default setting for the orientation of plates (plate rotation setting). For the Left/Back plate rotation, the A1 well location is to the left and at the back of the plate.

You can change the plate rotation to Right/Front by using the Agilent Instant Pilot controller. For instructions, refer to the reference manual for the Agilent LC stack.

Contents

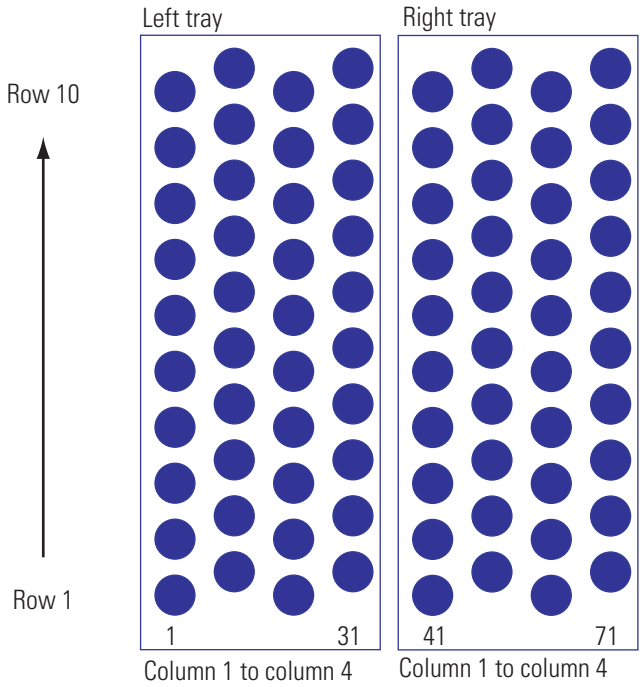
40-Vial Trays

You can load two 40-vial trays into the autosampler's tray compartment. The Xcalibur data system recognizes these trays as the left and right trays.

Figure 28 shows the vial locations for the 40-vial trays. When you create a sequence, you can type a vial location from 1 to 40 for a single tray or 1 to 80 for two trays.

If you turn on the wash option for an instrument method, you can specify a wash vial from 1 to 40 or 1 to 80, depending on whether you load one or two trays into the tray compartment.

Figure 28. Two 40-vial trays



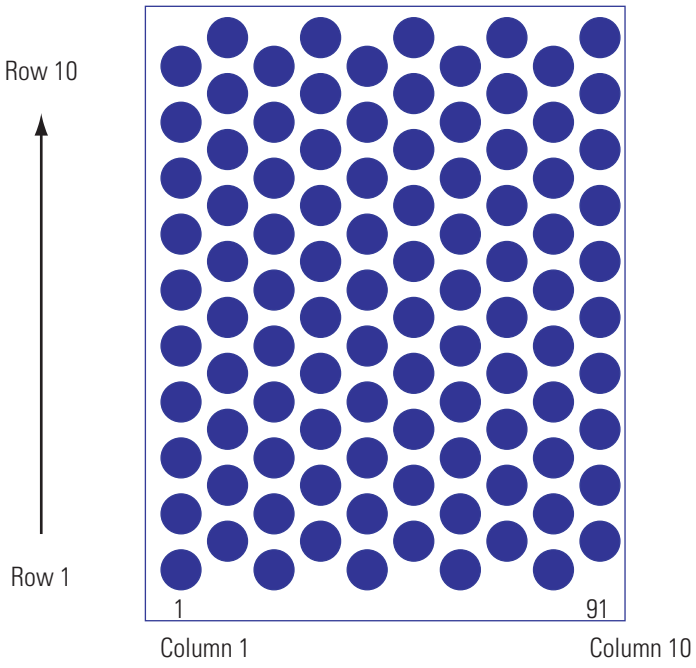
100-Vial Tray

You can load one 100-vial tray into the autosampler's tray compartment. The Xcalibur data system recognizes this tray as the left tray.

Figure 29 shows the vial locations for the 100-vial tray. When you create a sequence, you can type a vial location from 1 to 100.

If you turn on the wash option for an instrument method, you can specify a wash vial from 1 to 100.

Figure 29. 100-vial tray



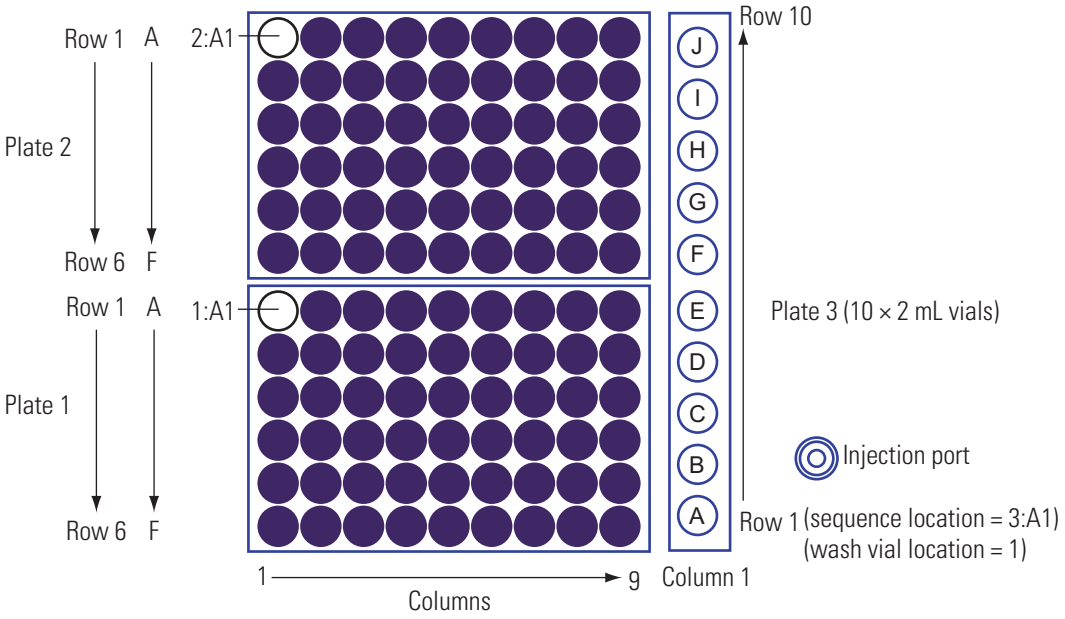
54-Vial Plates

You can load two 54-vial plates into the autosampler's tray compartment. The Xcalibur data system recognizes these plates as the front and back vial plates.

Figure 30 shows the vial locations for the "54-vial plate + 10 × 2 mL" tray option (three plates) with the factory default setting of Left/Back for the plate rotation. When you create a sequence, you can type a vial location from 1:A1 to 1:F9 for the front plate, from 2:A1 to 2:F9 for the back plate, and from 3:A1 to 3:J1 for the vials.

If you turn on the wash option for an instrument method, you can specify a "well" location from 1:A1 to 2:F9 or a reservoir location from 1 to 10.

Figure 30. Two 54-vial plates and one vial column with Left/Back for the plate rotation selection



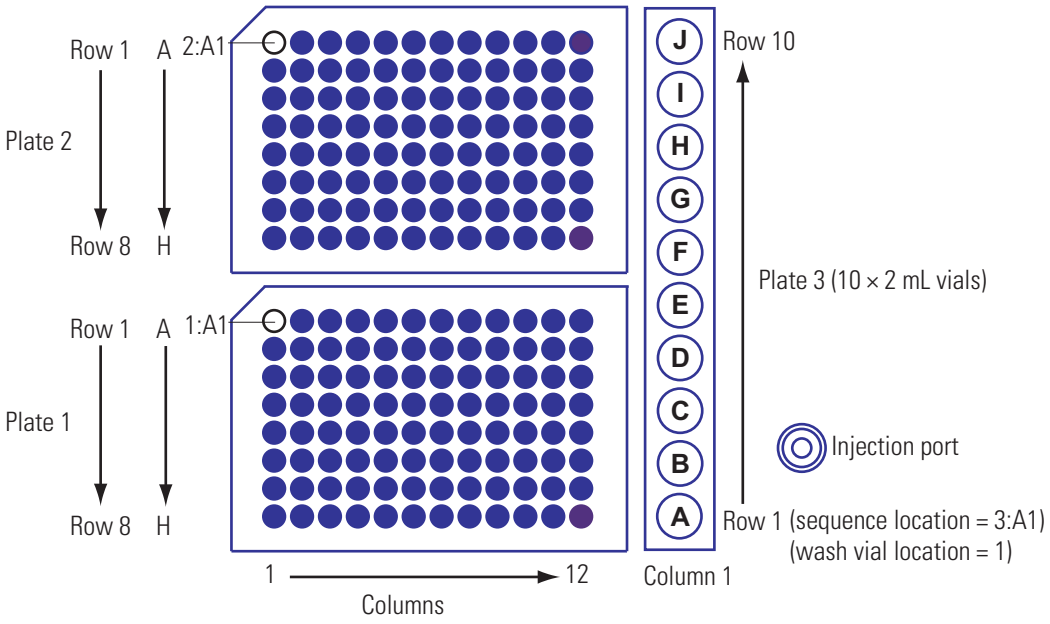
96-Well Plates or 96-Deep Well Plates

You can load two 96-well plates or 96-deep well plates into the autosampler's tray compartment. The Xcalibur data system recognizes these plates as the front and back well plates.

Figure 31 shows the well locations with the factory default setting of Left/Back for the plate rotation. When you create a sequence, you can type a well location from 1:A1 to 1:H12 for the front well plate, from 2:A1 to 2:H12 for the back well plate, and from 3:A1 to 3:J1 for the vials.

If you turn on the wash option for an instrument method, you can specify a well location from 1:A1 to 2:H12 or a reservoir location from 1 to 10.

Figure 31. Two 96-well plates and one vial column with Left/Back for the plate rotation selection



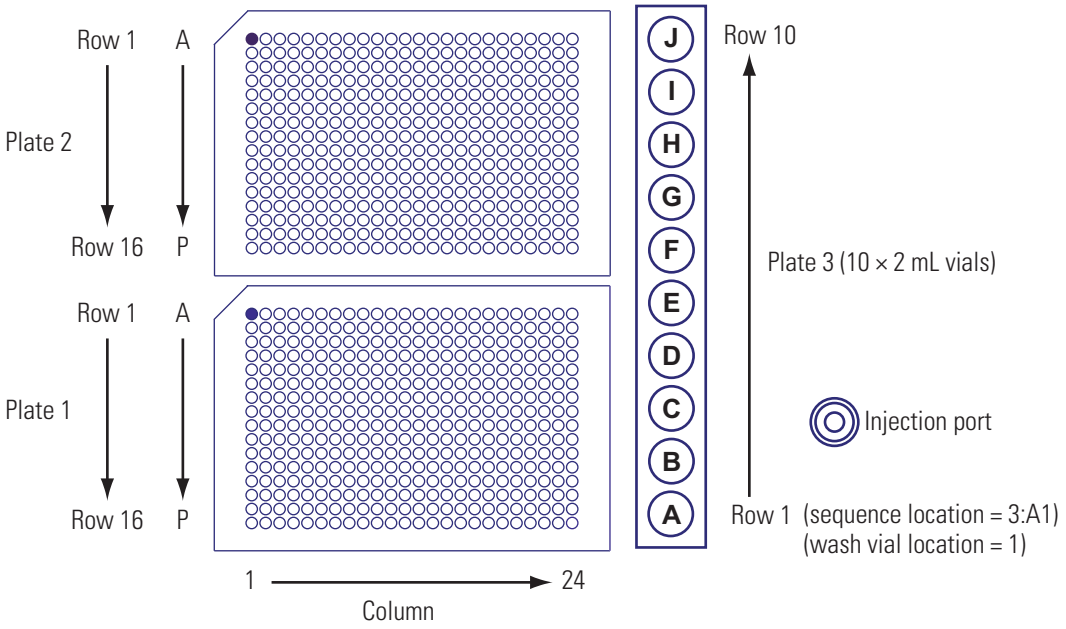
384-Well Plates

You can load two 384-well plates into the autosampler's tray compartment. The Xcalibur data system recognizes these plates as the front and back well plates.

Figure 32 shows the well locations for the 384-well plates (factory default setting of Left/Back) and the vial locations for the 2 mL vials. When you create a sequence, you can type a well location from 1:A1 to 1:P24 for the front well plate, from 2:A1 to 2:P24 for the back well plate, and from 3:A1 to 3:J1 for the vials.

If you turn on the wash option for an instrument method, you can specify a well location from 1:A1 to 2:P24 or a reservoir location from 1 to 10.

Figure 32. Two 384-well plates and one vial column with Left/Back for the plate rotation selection



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