# Devices Setup Guide

## SCIEX OS Software


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# Introduction 1

This guide is intended for customers and Field Service Employees (FSEs) who are responsible for configuring devices to work with the mass spectrometer. Devices are controlled automatically during LC-MS/MS data acquisition through the SCIEX OS software.

Some hardware setup and configuration is required so that the supported devices and the mass spectrometer can communicate properly. Use the procedures in this guide to connect and configure the devices and the system.

**Note:** After upgrading the firmware on the LC system, use the **Test Device** feature in the Devices workspace to verify that the device is configured correctly and available for use. Refer to the *Edit Devices* procedure in the document: *Software User Guide.*

**Note:** For instructions to connect Waters ACQUITY UPLC systems, contact Waters support.

**Note:** For instructions to connect Thermo multichannel LC systems, contact Thermo support.

**Note:** For instructions to connect Evosep[1] LC systems, contact Evosep Support.

[1] SCIEX is authorized to use Evosep's trademark with Evosep's explicit consent.

# ExionLC 2.0 Systems 2

**WARNING! Electrical Shock Hazard. Before any mains-powered equipment is configured, refer to the documentation that comes with the LC system.**

For information about the ExionLC 2.0 system modules supported by the SCIEX OS software, and the latest tested firmware version, refer to the most current version of the document: *Software Installation Guide*.

## ExionLC 2.0 System Configuration

The ExionLC 2.0 modules are connected to an Ethernet switch. This switch is, in turn, connected to the acquisition computer.

There is no cable connection between the LC system and the mass spectrometer. All communication is managed by the SCIEX OS software.

## Connect the Computer to the Ethernet Switch

1. Connect the mains supply cable for the switch to the mains supply outlet.
2. Connect a LAN cable from the computer to port 1 on the switch.

## Connect Modules to the Ethernet Switch

The autosampler, pump, column oven, detector, wash system, and valve drives are connected to the Ethernet switch.

1. Press the power button on each module to turn off the module.
2. Connect the LAN cable from the modules to the appropriate ports at the back of the switch.
    - Connect the pump to port 2 on the switch.
    - Connect the autosampler to port 3 on the switch.
    - Connect the column oven to port 4 on the switch.
    - (Optional) Connect LAN 1 port on the valve drive to port 5 on the switch.
    - (Optional) Connect the detector to port 6 on the switch.
    - (Optional) Connect the second pump to port 7 on the switch.
    - (Optional) Connect the wash system to port 8 on the switch.

**Note:** This is the recommended configuration, for consistency and optimal serviceability. However, alternate port connections can be used, if required.

# Configure the Software

1. Make sure that the Ethernet port of the LC system on the computer has the IP address 192.168.150.100, with a subnet mask of 255.255.255.0.
2. After connecting and turning on the system, configure the device in the SCIEX OS software. Refer to the document: *ExionLC 2.0 System Software User Guide*.

   After the automatic configuration is complete, make sure that the modules have the IP addresses listed in the following table. If the IP addresses do not match the ones in the table, then contact the local SCIEX representative.

**Table 2-1 ExionLC 2.0 Modules and IP Addresses**

| Module | Model | IP Address |
|---|---|---|
| Pump | LPGP-200 | 192.168.150.101 |
| Pump | BP-200 | 192.168.150.101 |
| Pump | BP-200+ | 192.168.150.101 |
| Second pump | BP-200, BP-200+ or LPGP-200 | 192.168.150.107 |
| Wash System | WS-200 | 192.168.150.109 |
| Autosampler | AS-200 | 192.168.150.102 |
| Autosampler | AS-200+ | 192.168.150.102 |
| Valve drive | DR-200 | 192.168.150.106 |
| Second valve drive | DR-200 | 192.168.150.108 |
| Column oven | CO-200 | 192.168.150.103 |
| Detector | MWD-200 | 192.168.150.105 |
| Diode Array Detector | DAD-200 or DADHS-200 | 192.168.150.104 |

# Fault Recovery Guidelines

The following guidelines are provided so that some fault conditions can be avoided.

## Warnings

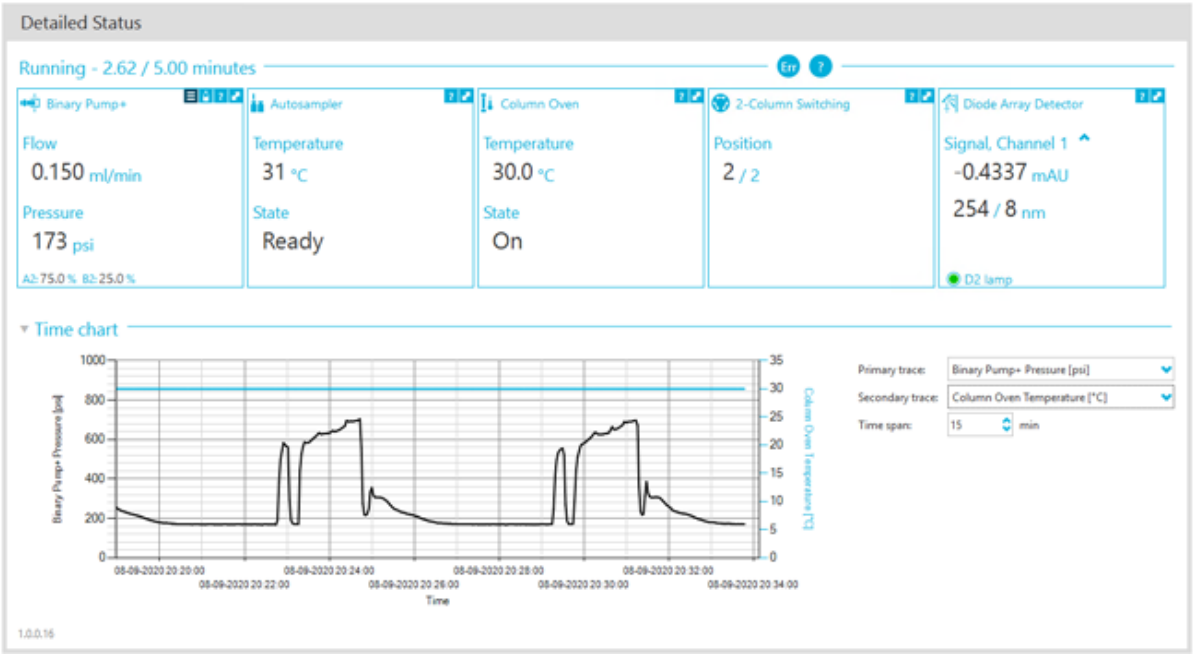
A warning is an informational notification of conditions such as an open door on a temperature controlled module, a low solvent level, or temperature not ready. These conditions do not prevent the system from operating properly. However, the software treats some of the warnings as error conditions, generates an error, and then stops the batch. Contact SCIEX for more information on how these conditions might be minimized.

## Errors

Any error condition on the system stops the batch. To view the reason for the error that caused the batch to stop follow these steps.

1. Open the Device Details dialog. Refer to the document: *ExionLC 2.0 System Software User Guide*.

**Figure 2-1 Detailed Status in the Device Details Dialog**




2. Click **Err** to show the last error.
3. Fix the issue that caused the error. For example, a solvent leak has occurred or one or more solvent levels has dropped below the shutdown level.
4. Deactivate the devices and then activate them again.

# Fatal Errors

The final level of error generated by the LC system is a fatal error. Fatal errors are usually generated by a mechanical failure, such as the failure of the autosampler injection mechanism. However, fatal errors can occur with any of the modules.

To recover from a fatal error, perform the following steps, in order, as required.

1. Click **Standby** ( ) in the Device Control dialog to turn off the modules, and then click it again to turn them on.
2. If the error persists, then deactivate and activate the device.
3. If the error occurs again, then perform these steps:
    a. Deactivate the device.
    b. Shut down the computer.
    c. Turn on the computer.
    d. Turn off the LC system, wait 5 seconds, and then turn it back on.
    e. Open the SCIEX OS software.
    f. Activate the device.
4. If the error occurs after the system is restarted, then contact the local SCIEX representative for assistance.

# ExionLC AC/ExionLC AD Systems 3

**WARNING! Electrical Shock Hazard. Before any mains-powered equipment is configured, refer to the documentation that comes with the LC system.**

For information about the ExionLC AC/ExionLC AD system modules supported by the SCIEX OS software, and the latest tested firmware version, refer to the most current version of the document: *Software Installation Guide*.

# ExionLC AC/ExionLC AD System Configuration

Use the ExionLC Controller to connect to and control ExionLC AC/ExionLC AD systems using the software.

LAN (Ethernet) cables are required to connect the controller and PDA detector to the acquisition computer. The PDA detector is an optional component. Optical cables are also required to connect the remaining modules to the controller.

# Configure the ExionLC Controller

Use the following procedures to configure the ExionLC controller.

## Connect Modules to the Controller

The autosampler, pump, column oven, or UV detector can be connected to the controller.

**Note:** The PDA Detector requires a switching hub to connect to the controller and the acquisition computer.

Refer to the documentation that comes with the devices.

1. Press the power button on each module to turn off the module.
2. Press the power button to turn off the controller.
3. Connect the fiber optic cable from the device to the back of the controller.
    - Connect the autosampler to fiber optic port 1.
    - Connect pump A to fiber optic port 3.
    - Connect pump B to fiber optic port 4.
    - Connect the column oven to fiber optic port 5.
    - Connect the UV detector to fiber optic port 6.

## Connect the Valve Interface Unit to the Controller

1. Press the power button to turn off the controller.
2. Connect the valves to the valve interface unit (Option Box-L, or Subcontroller VP).
3. Connect the fiber-optic cable from the valve interface unit to an address connector at the back of the controller.

   Use Address Connectors 3 through 8.
4. Use the information supplied at the back of the unit to set the DIP switches at the back of the valve interface unit. The DIP switch setting must be the same as the pump address number that is used to connect the valve interface unit to the controller.

## Restart the Controller

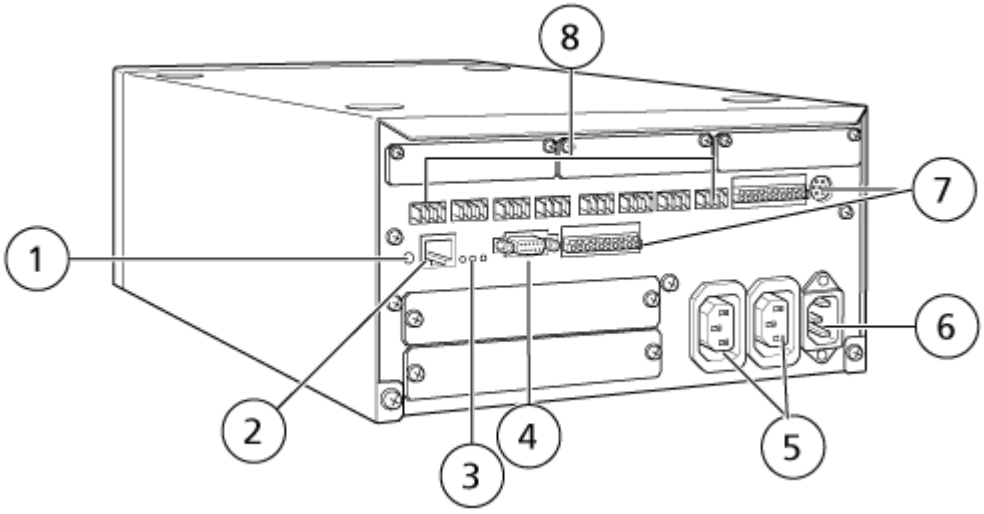
- To enable the controller to detect the connected modules, turn off the controller and other modules, wait two seconds, and then turn on all of the modules, turning on the controller last.

**Note:** The model number for each connected module is shown on the System Configuration screen. The message Remote is shown on any connected pump.

## Connect the Controller to the Computer

1. Press the power button to turn off the controller.
2. Connect the Ethernet cable from the Ethernet port at the back of the controller to the Ethernet port on the computer.

**Figure 3-1 Back of the Controller**



| Item | Description |
|---|---|
| 1 | Initialization button. Press to initialize the system controller or clear errors. |
| 2 | Ethernet port (**ETHERNET**). Connects to the network. |
| 3 | Network LEDs. Show the status of the connection to the network.<br>• **100M**: Turns on when operating at 100 Mbps.<br>• **ACT**: Turns on when exchanging data.<br>• **LINK**: Turns on when linked to the network. |
| 4 | RS-232C port. Connector for exchanging data with a computer. Not supported. |
| 5 | AC output connectors. These connectors are for AC power output and are operationally linked to the power switch. They can be used to supply power to ExionLC AC/ExionLC AD systems. Do not use them for any other application. |
| 6 | Power cord connector. Connects to the mains supply. |
| 7 | External Input/Output terminals. |
| 8 | Remote connectors 1 to 8. Connect to ExionLC AC/ExionLC AD system components. |

3. For the network connection that is used for the LC system, configure these settings:
   - **IP address**: 192.168.200.90
   - **Subnet mask**: 255.255.255.0

## Connect the ExionLC Controller to the Mass Spectrometer

- Use the AUX I/O cable (PN 5056591) to connect the system controller to the mass spectrometer.

# Set the ExionLC Device Communications for the ExionLC Controller and the ExionLC CBM/CBM Lite

This method is the most reliable way to communicate with the ExionLC series LC systems. To have network access with the computer for data back-up, then install a second network card into the computer. This additional network card is then configured to communicate exclusively with the ExionLC controller interface.

From the front panel of the autosampler or any pump that is properly connected (fiber optic cable installed, proper address set, and REMOTE LED lit) to the CBM or from the front panel of the unit in which the CBM/CBM Lite is installed, do the following:

1. Press **VP** key 4 times to show **CALIBRATION**.
2. Press **FUNC** to show **INPUT PASSWORD**.
3. Type **00000** (five zeros) and then press **ENTER** to show **FLOW COMP**.
4. Press **BACK** to show **CBM PARAMETER**.
5. Press **ENTER** and the Serial Number is shown (or serial number of the installed CBM lite).
6. Press **FUNC** 2 times to show **INTERFACE** and do the following:
    a. Press **2** for Ethernet (preferred) and then press **ENTER**.
    b. Ethernet Speed: Press **0** (zero) for auto-detect and then press **ENTER**.
7. Set the following parameters. The parameters are needed to set up the peer-to-peer network with the computer:
    - **USE GATEWAY: 0** (zero) for NO and then press **ENTER**.
    - **IP ADDRESS: 192.168.200.99** (default) and then press **ENTER**.
    - **SUBNET MASK: 255.255.255.0** (default) and then press **ENTER**.
    - **DEFAULT GATEWAY: ---.---.---.---** (default) and then press **ENTER**.
8. Use the **TRS MODE** to set the communications protocol parameters to CLASS-VP. Press **2** and then press **ENTER**.
9. **POWER OFF** the unit to accept and save the changes.
10. On the computer desktop, right-click **My Network Places** and then click **Properties**.
11. Right-click the network connection that will be dedicated to ExionLC Controller communications and then click **Properties**.
12. Click **Internet Protocol (TCP/IP)** and then click **Properties**.
13. Click **Use the following IP** address and then type the following:
    - **IP ADDRESS: 192.168.200.90**
    - **SUBNET MASK: 255.255.255.0**
    - **DEFAULT GATEWAY**: Leave blank
14. Click **OK** to accept the changes.
15. Click **CLOSE**.
16. Shut down the computer.

17. Using a CAT 5 network cable, connect the ExionLC CBM/CBM Lite to the computer using the network card that was configured for use with the ExionLC series LC system.

    **Note:** If using a PDA, then connect the network cable from the CBM/CBM Lite to a network switch. The PDA will also be connected to the network switch that is connected to the computer.

18. Turn on the computer and the ExionLC CBM/CBM Lite and wait for them to complete their respective boot-up routines.
19. To determine whether proper communications have been established between the computer and ExionLC CBM/CBM Lite, start Microsoft Edge, other browsers might not be shown properly, type the ExionLC CBM/CBM Lite IP address in the address bar (**192.168.200.99**), and then click **GO**.

    **Note:** Make sure that all pop-up blockers are turned off.

    The ExionLC Controller screen is shown for a few seconds followed by the Status screen.
20. Make sure that the serial number listed for the LC system under the **System Name** matches that of the unit to which it is connected and that its status is Ready.
21. Close Microsoft Edge.
22. Start the SCIEX OS software and then configure the LC system.

# Fault Recovery Guidelines

The following guidelines are provided so that some fault conditions can be avoided.

- Make sure that the modules attached to the controller are identical to those configured in the Devices workspace. Differences between the two configurations can result in communication issues between the software, the controller, and the attached devices.
- Make sure that the needle height in the method matches that of the current tray. The preset value is not valid for all trays.

The LC equipment can generate three different error conditions that cause the software to stop: warning, error, and fatal error.

Errors from controller modules are shown in the event logs for the Windows or SCIEX OS software as VI*xxxx* errors, for example: VIRUN.

## Warnings

A warning is an informational notification of conditions such as an open door on a temperature controlled module, a low solvent level, or temperature not ready. These conditions do not prevent the system from operating properly. However, the software treats some of the warnings

as error conditions, generates an error, and then stops the batch. Contact SCIEX for more information on how these conditions might be minimized.

**Note:** For some events acquisition will continue. For example, if the autosampler door is opened after a sample injection is completed but before the next sample injection starts, then acquisition and batch processing continues.

## Errors

Any error condition on the system stops the software batch.

When an error occurs, the system typically sounds an alarm until the error is acknowledged. Some errors that might be encountered and the SCIEX suggested action include the following:

- ERR LEAK DETECT: Press **CE** to stop the alarm. Find and then address the issue. Thoroughly dry the area around the leak sensor of the affected module. If necessary, dry any modules stacked below the affected module.
- ERROR P-MAX: Press **CE** to stop the alarm. Correct the issue.

To view the reason the error that caused the batch to stop, open the Device Details dialog. Refer to the document: *System User Guide*.

## Fatal Errors

The final level of error generated by the LC system is a fatal error. Fatal errors are normally generated by a mechanical failure, such as the failure of the autosampler injection mechanism. However, fatal errors can occur with any of the modules. The only way to recover from a fatal error is to restart the entire system. If, after restarting, the error occurs again, contact the local SCIEX representative for assistance.

## Recover from a Fault for ExionLC AC/ExionLC AD Systems Equipped with the ExionLC Controller

1. To stop the alarm and clear the error, on the operation panel of the applicable module, push **CE**.

   For errors such as leaks, the alarm stops when the cause of the error is corrected.

2. Correct the cause of the error.
3. Press the black **INIT** button at the back of the ExionLC Controller or ExionLC CBM/CBM Lite for no longer than five seconds.

   The ExionLC controller or ExionLC CBM/CBM Lite LED status bar changes to green and the connect LED illuminates, thus confirming that the communication with the SCIEX OS software has been restored.

If either the status LED does not change to green or the connect LED fails to illuminate, then proceed with the following steps.

**Note:** In the event of a device fault, either within the SCIEX OS software or at the module itself, it might be difficult to reactivate or run the modules. If this occurs, then perform the following reboot sequence to regain control.

4. Deactivate the hardware profile.
5. Turn off the power to the modules. Include the system controller.
6. Turn on the power to the modules, but not the system controller.
7. Turn on the power to the system controller.
8. Activate the hardware profile.
9. (Optional) If the hardware profile fails to activate, then close the software and restart the computer. Re-configure the LC devices in the hardware profile setup and then try to activate the hardware profile again.
10. Press **Standby** to recover from the following faults:

    - Leak detected
    - Missing rack
    - Pressure is out of range

    Missing vials do not cause a fault. The queue stops and automatically proceeds to the next sample.

# ExionLC AE Systems 4

**WARNING! Electrical Shock Hazard. Before any mains-powered equipment is configured, refer to the documentation that comes with the LC system.**

For a list of the ExionLC AE modules supported by the SCIEX OS software, refer to the document: *Software Installation Guide*.

## ExionLC AE System Configuration

LAN (Ethernet) cables are required to connect the system controller and PDA detector to the acquisition computer.

**Note:** The PDA detector is an optional component.

Optical cables are required to connect the modules to the controller. One optical cable is required per module.

## Configure the ExionLC AE System Controller

Use the procedures in this section to configure the system controller.

### Connect Modules to the ExionLC AE System Controller

The autosampler, multiplatesampler, column oven, pump, and UV detector must be connected directly to the system controller.

**Note:** A maximum of four pumps can be controlled by the system controller.

**Note:** The PDA detector must be connected indirectly to the acquisition computer through a switching hub. Refer to the section: Connect the ExionLC AE System to the Computer.

1. To turn off the modules, push the power button on each module.
2. To turn off the system controller, push the power button.
3. Connect the fiber-optic cable from each module to the applicable port at the back of the system controller.
    - Connect the autosampler to fiber-optic port 1/SIL.
    - Connect each pump to one of fiber-optic ports 3 to 8.
    - Connect the UV detector to one of fiber-optic ports 3 to 8.

- Connect the column oven to one of fiber-optic ports 3 to 8.

## Start the System Controller Again

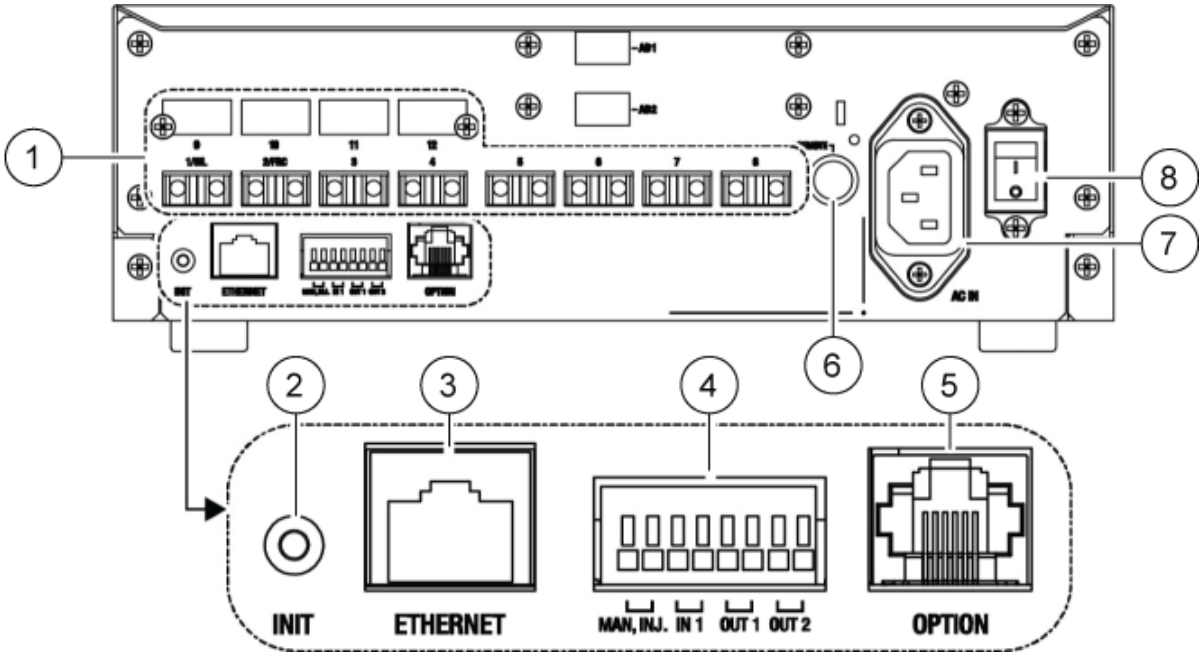
- To let the system controller detect the connected modules, turn off the system controller and other modules that are on, wait 2 seconds, and then turn on all of the modules. Turn on the system controller last.

**Note:** The model number for each connected module is shown on the Configuration tab of the web interface. The Status message `Remote` is shown for the pumps that are connected.

## Connect the ExionLC AE System to the Computer

1. To turn off the system controller, push the power button.
2. If the system does not include a PDA detector, then connect the LAN cable from the Ethernet port at the back of the system controller to the Ethernet port for the LC system on the computer. Make a note of the port number. Refer to the figure that follows.

**Figure 4-1 Back of the System Controller**

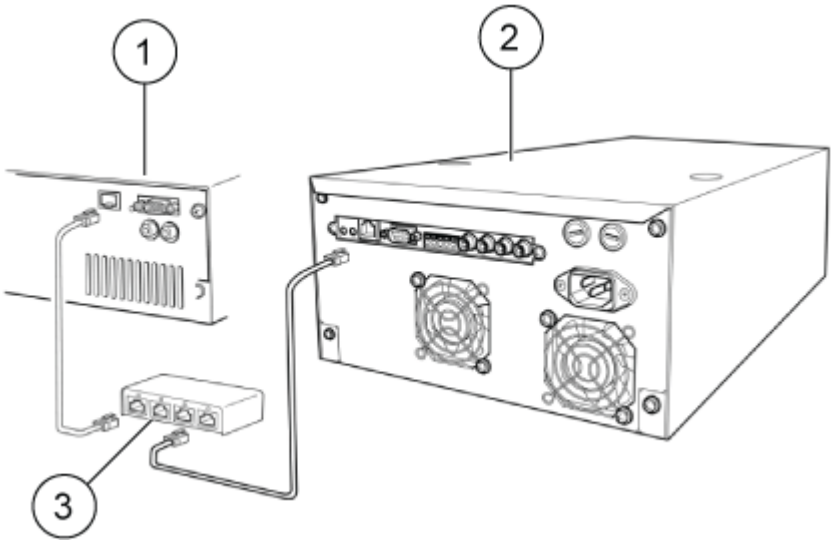



| Item | Description |
|---|---|
| 1 | Remote ports. 1/SIL, 2/FRC, and Channel 3 to 8 (fiber-optic ports). |
| 2 | **INIT** (Initialization) button. Changes all of the settings back to the default factory values. Method, device log, and network settings are included. |

| Item | Description |
|---|---|
| 3 | **ETHERNET** port. Connects to a network. |
| 4 | External input/output terminals. Connect external devices. |
| 5 | **OPTION** connector. Connects an optional module. |
| 6 | **AC REMOTE** port. Connects a power outlet box for the Japan/North America region. |
| 7 | **AC IN** port: Connects the power cable |
| .8 | Main power switch: Turns on and off the power to the module. |

3. If the system includes a PDA detector, then do this:
   a. Connect the LAN cable from the Ethernet port at the back of the system controller to the switching hub.
   b. Connect the LAN cable from the Ethernet port at the back of the PDA detector to the switching hub.
   c. Connect the LAN cable from the Ethernet port on the computer that controls the LC system to the switching hub.

**Figure 4-2 PDA Detector Connected to the Acquisition Computer**




| Item | Description |
|---|---|
| 1 | Acquisition computer |
| 2 | PDA detector |

| Item | Description |
|---|---|
| 3 | Switching hub |

4. Set the IP address in Microsoft Windows to 192.168.200.97 for the network connection that is used for the LC system.
   The subnet mask is 255.255.255.0.

## Configure the Network Settings for the ExionLC AE PDA Detector

Use this procedure to configure the IP address and subnet mask. These settings can be also configured with the SPD-M40 Utility software.

1. Open Microsoft Edge.
2. Make sure that the pop-up blocker is turned off.
3. Enable Internet Explorer compatiblity mode.
4. In the browser address field, type `192.168.200.98`, the default IP address for the module, and then press **Enter**.

   If the IP address has changed, then use the new IP address. The URL must be in the format: http://*device IP address*/.
5. Type a user ID and password, and then click **Login**.

   The default user ID and password are `Admin`.
6. Open the Configuration tab.
7. Type values in the **IP Address** and **Subnet Mask** fields, and then click **Register**.
   The new settings are registered, and the connection is closed.
8. In the address field of the web browser, type the newly set IP address, press **Enter**, and then log on.
9. Open the Configuration tab.
10. In the **Group Name** field for the system controller and PDA detector, type the same name.

    **Note:** Do not use the default value for the **Group Name** field: `ShimadzuHPLC`. A different value, for example ExionAE1, must be used.

11. In the **Master Server Name** field for the PDA detector, type the value that shows in the **System Name** field for the system controller.

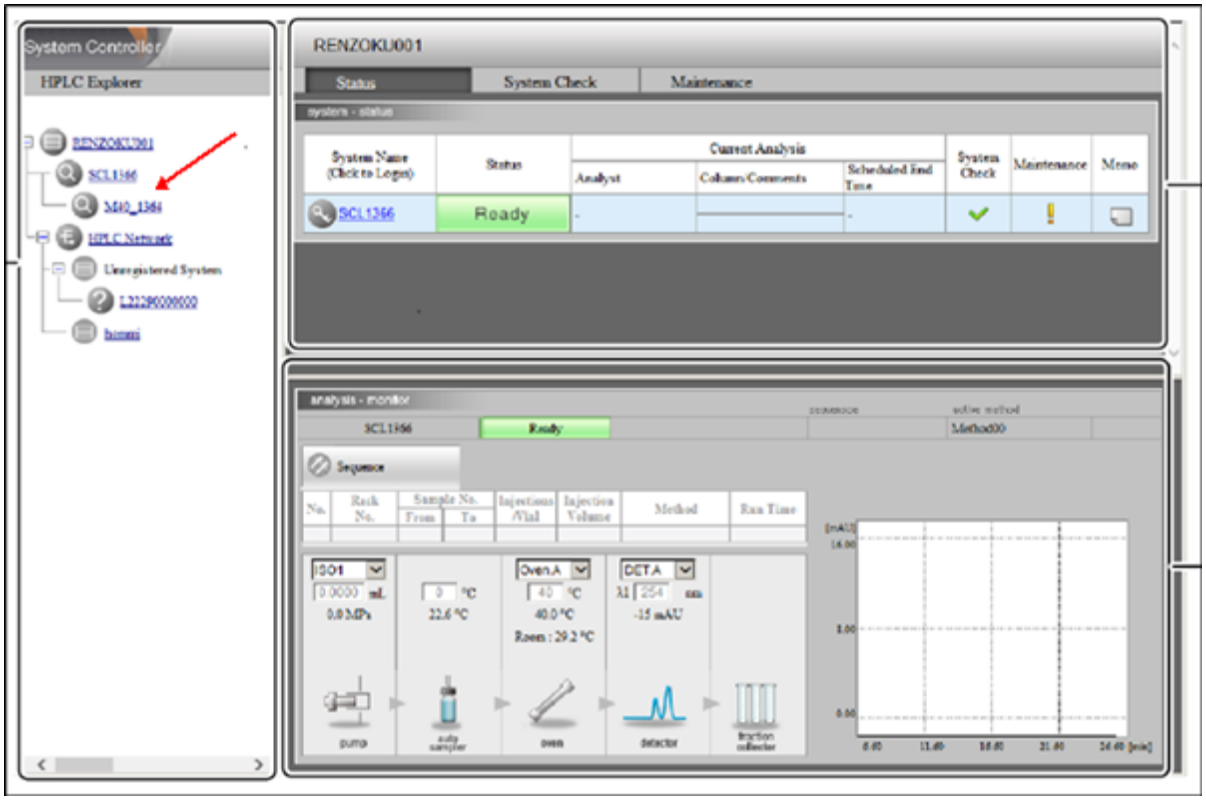
    **Note:** The serial number of the system controller can be used as the value for the **Master Server Name** field.

**Table 4-1 System Name**

| Name | System Controller | PDA Detector |
|---|---|---|
| **System Name** | CBM_01 | PDA_01 |
| **Master Server Name** | — | CBM_01 |

12. Click **Apply**.
13. Start the PDA detector and system controller again.
14. Use the Group Monitor Window for the system controller to make sure that the system controller and the PDA detector are connected:
    a. Open a web browser.
    b. In the browser address field, type the IP address for the system controller and then press **Enter**.

**Figure 4-3 Group Monitor Window for the System Controller**



# Connect the ExionLC AE System Controller to the Mass Spectrometer

- Use the AUX I/O cable (PN 5056591) to connect the system controller to the mass spectrometer.

# Connect an ExionLC AE Valve Interface Unit to the ExionLC AE System Controller

Follow the procedures in this section in the order given.

## Connect the Valve Interface Unit to the Controller

1. Press the power button to turn off the controller.
2. Connect the valves to the valve interface unit (Option Box-L, or Subcontroller VP).
3. Connect the fiber-optic cable from the valve interface unit to an address connector at the back of the controller.

   Use Address Connectors 3 through 8.
4. Use the information supplied at the back of the unit to set the DIP switches at the back of the valve interface unit. The DIP switch setting must be the same as the pump address number that is used to connect the valve interface unit to the controller.

## Configure the System Controller for the Valve Interface Unit

- If the system controller is not already turned on, then press the power button to turn it on.

**Note:** The model number for each connected module is shown on the System Configuration screen. The message Remote is shown on any connected valve.

# Configure ExionLC AE Module Communications for Use with the ExionLC AE System Controller

Use the operation panel of the autosampler or pump that is connected correctly to the system controller to do this procedure. Make sure that each module is connected correctly with fiber-optic cable, the IP address is correctly configured and the Remote LED is on.

1. To activate the operation panel, touch it.
2. To go to the VP function screens, push the right arrow, then the down arrow, and then the right arrow again.
3. To go to the CALIBRATION settings group, push the down arrow.
4. To go to the **INPUT PASSWORD** option, push the right arrow. Type the password, and then push **ENTER**.

**Note:** The default password is `00000` (five zeros).

5. To go to **OPERATION MODE** option, push the down arrow. Select the applicable operation mode.
6. To configure the **CBM PARAMETER** settings, do this:
   a. To go to the **CBM PARAMETER** option, push the down arrow.
   b. To show the serial number of the installed system controller, push the right arrow.
   c. To go to the **INTERFACE** option, push the down arrow. Select one of the options that follow, and then push **ENTER**:
      - **0: OPT**: Optical cable connection.
      - **1: RS**: Serial communication (RS-232C) connection. Use this option only to do an update or troubleshoot.

        **Note:** This function is reserved for service.
      - **2: ETH**: Ethernet (preferred) connection.
7. To configure the system for remote monitoring, configure the network parameters:
   a. To go to the **USE GATEWAY** option, push the down arrow. Type `0` (zero) for NO, and then push **ENTER**.
   b. To go to the **IP ADDRESS** option, push the down arrow. Type `192.168.200.99` (default), and then push **ENTER**.
   c. To go to the **SUBNET MASK** option, push the down arrow. Type `255.255.255.0` (default), and then push **ENTER**.
   d. To go to the **DEFAULT GATEWAY** option, push the down arrow. Type `---.---.---.---` (default), and then push **ENTER**.
8. Turn each module off and then on to accept and save the changes.
9. On the computer, in the **Type here to search** field that is adjacent to the **Start** menu, type `View network connections`.
10. Right-click the network connection for the LC system, and then click **Properties**.
11. Click **Internet Protocol (TCP/IP)**, and then click **Properties**.
12. Click **Use the following IP address**, and then make sure that these settings are configured:
    - **IP address**: 192.168.200.97
    - **Subnet mask**: 255.255.255.0
    - **Default gateway**: Keep empty
13. Click **OK**.

14. Click **Close**.
15. To find if the computer and system controller are in communication, do this:
    a. Open Microsoft Edge.

    **Note:** Make sure that all pop-up blockers are turned off.

    b. Enable Internet Explorer mode.
    c. In the address bar, type the IP address of the system controller (`192.168.200.99`).
    d. Click **GO**.
    The Group Monitor window opens.
    e. Make sure that the serial number in the **System Name** column is the same as the serial number of the connected system, and that the **Status** column shows `Ready`.
    f. Close Microsoft Edge.
16. To configure the ExionLC AE system, start the SCIEX OS software, and then add a device with the **Type** set to **Integrated System** and the **Model** set to **ExionLC AE**.

# Fault Recovery

The manufacturer recommends that the modules connected to the system controller be the same as the modules configured in the device in the SCIEX OS software. Differences between the two configurations can result in communication issues between the software, the system controller, and the attached modules.

If the vial detection sensor is ON, fault conditions occur if an autosampler vial is missing or a run is aborted during an autosampler rinse. To correct these errors, intervene manually to let the SCIEX OS software continue functioning normally. To recover control by the SCIEX OS software, do the task indicated on the device screen. Alternatively, follow the Fault Recovery procedure to clear all of the conditions.

**Note:** The needle height in the method must match that of the current tray. The preset value is not valid for all of the trays.

Three different error conditions on the LC system cause the SCIEX OS software to stop: warning, error, and fatal error.

Errors from the system controller are shown in the Windows event logs as VI*xxxx* errors, for example: VIRUN.

## Warnings

A warning is an informational notification of conditions such as a door open on a temperature controlled module, low solvent level, or temperature becomes not ready during a sample run after the acquisition has started. These conditions do not prevent the LC system from operating

correctly. However, the SCIEX OS software does not recognize these warnings, so it will not show an error, or stop the batch. Contact SCIEX for information on how to minimize these conditions.

## Errors

Any error condition on the LC system stops the SCIEX OS software batch. The LC system typically sounds an audible alarm until the user acknowledges the error. Some errors that might be encountered and the recommended actions include the following:

- LEAK DETECT: Press **CE** to stop the alarm. Find and address the problem. Thoroughly dry the area around the leak sensor of the affected module (and, if required, any module below it in the stack). Recover according to the procedures below.
- PRESSURE OVER PMAX: Press **CE** to stop the alarm. Correct the problem.
- MISSING VIAL: This error appears on the autosampler if it does not find a vial it is asked to inject.

**Note:** There is no missing vial setup option in the hardware profile configuration for ExionLC AE systems. The setup for the system is done on the autosampler module.

Vial detection is set on the LC hardware with the **VIAL/PLATE SENSOR** setting on the autosampler.

The system setting is enabled by default, which lets the LC detailed status window show error messages when an error occurs.

## Fatal Errors

The final level of error shown by the system is a fatal error. Fatal errors are usually caused by a mechanical failure, such as the failure of the autosampler injection mechanism. However, fatal errors can occur with any of the modules. The only way to recover from a fatal error is to restart the entire system. If, after restarting, the error occurs again, contact SCIEX for assistance.

## Recover from a Fault for ExionLC AE Systems Equipped with the ExionLC AE System Controller

1. To stop the alarm and clear the error, on the operation panel of the applicable module, push **CE**.

   For errors such as leaks, the alarm stops when the cause of the error is corrected.
2. Correct the cause of the error.
3. Press the black **INIT** button at the back of the system controller for 5 seconds.

   The color of the status LED on the system controller changes to green and the connect LED illuminates. Communication with the SCIEX OS software has been restored.

If the color of the status LED does not change to green or the connect LED fails to illuminate, then continue with these steps.

**Note:** If a device fault occurs, either in the SCIEX OS software or at the module itself, then it might be difficult to reactivate or run the modules. If this occurs, then do the reboot sequence to get control.

4. Deactivate the devices.
5. Turn off the power to the modules. Include the system controller.
6. Turn on the power to the modules, but not the system controller.
7. Turn on the power to the system controller.
8. Activate the device.
9. (Optional) If the device does not activate, then close the software and start the computer again. Configure the LC module, and then try to activate the devices again.
10. Press **Standby** to recover from the these faults:
    - Leak detected
    - Missing rack
    - Pressure is out of range

    The autosampler and the software do not always show a fault when vials are missing.

# Shimadzu Systems 5

**WARNING! Electrical Shock Hazard. Refer to the safety instructions for the Shimadzu modules before configuring any mains-powered equipment.**

For a list of the Shimadzu LC modules supported by the SCIEX OS software, refer to the document: *Software Installation Guide*.

**Note:** For Shimadzu LC-40 autosamplers, plate 3 on the 3-plate rack cannot be used for sample acquisition if a plate changer is installed with the system. This plate position is reserved for moving sample trays to and from the plate changer. For Shimadzu LC-40 pumps, if the Mobile Phase Monitor is used, then make sure to configure it properly. However, it is not supported by the SCIEX OS software.

## Shimadzu System Configuration

Use the following system controllers to connect to and control a Shimadzu LC system using the SCIEX OS software:

- CBM-20A
- CBM-20A Lite
- CBM-40 or CBM-40 Lite
- SCL-40

LAN (Ethernet) cables are required to connect the system controller and PDA detector to the acquisition computer. The PDA detector is an optional component. Optical cables are also required to connect the remaining modules to the controller.

The following table lists the required hardware.

**Table 5-1 Required Hardware for Shimadzu Modules**

| Cable | Other Parts Needed |
|---|---|
| LAN cable | • Shimadzu fiber optic cables (one for each module connected) |

## Configure the Shimadzu System Controller

Use the following procedures to configure the Shimadzu system controller.

# Connect Modules to the Shimadzu System Controller

The Shimadzu autosampler, column oven, pump, fluorescence detector, and UV detector can be connected to the Shimadzu system controller.

**Note:** Up to four pumps can be controlled by the Shimadzu system controller.

**Note:** A switching hub is required to connect a PDA detector to the system controller and the acquisition computer. Refer to the section: Connect the Shimadzu CBM/CBM Lite to the Computer.

## Connect the Modules

1. Press the power button on each module to turn off the modules.
2. Press the power button to turn off the controller.
3. Connect the fiber optic cable from each module to an appropriate connection at the back of the system controller.
   - Connect the autosampler to fiber optic port 1/SIL.
   - Connect pumps to any fiber optic ports 3 to 8.
   - Connect detectors (excluding the PDA detector) to any fiber optic ports 3 to 8.
   - Connect any other accessories to any fiber optic ports 3 to 8.

# Connect a Shimadzu Valve Interface Unit to the Shimadzu System Controller

Follow the procedures in this section in the order given.

## Connect the Valve Interface Unit to the Controller

1. Press the power button to turn off the controller.
2. Connect the valves to the valve interface unit (Option Box-L, or Subcontroller VP).
3. Connect the fiber-optic cable from the valve interface unit to an address connector at the back of the controller.

   Use Address Connectors 3 through 8.
4. Use the information supplied at the back of the unit to set the DIP switches at the back of the valve interface unit. The DIP switch setting must be the same as the pump address number that is used to connect the valve interface unit to the controller.

## Configure the System Controller for the Valve Interface Unit

- If the system controller is not already turned on, then press the power button to turn it on.

**Note:** The model number for each connected module is shown on the System Configuration screen. The message Remote is shown on any connected valve.

## Restart the System Controller

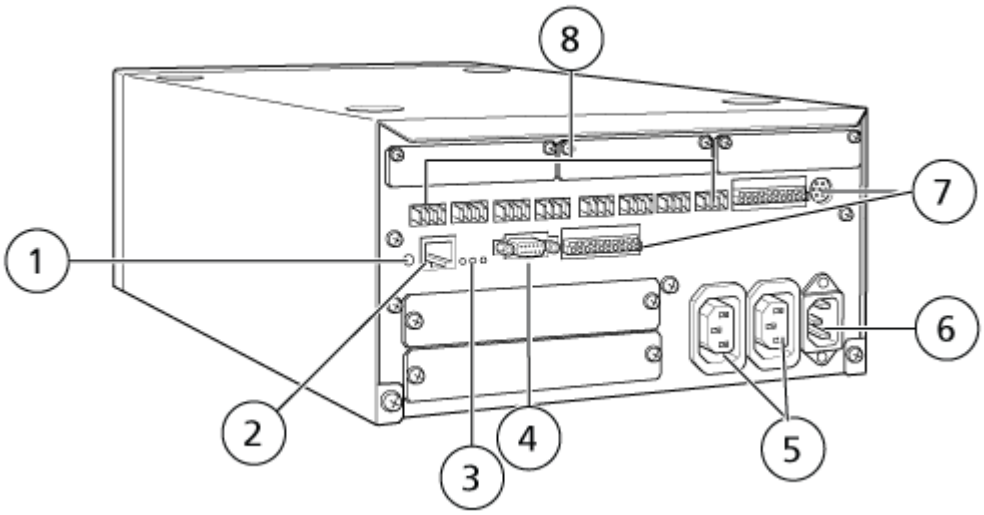
- To let the system controller detect the connected modules, turn off the system controller and other modules, wait two seconds, and then turn on all of the modules. Turn on the system controller last.

**Note:** The model number for each connected module is shown on the System Configuration screen. The message `Remote` is shown on any pump that is connected.

## Connect the Shimadzu CBM/CBM Lite to the Computer

1. Turn off the Shimadzu system controller by pressing the power button.
2. If the system does not include a PDA detector, then connect the LAN cable from the Ethernet port at the back of the system controller to the Ethernet port for the LC system on the computer.

**Figure 5-1 Back of the Controller**

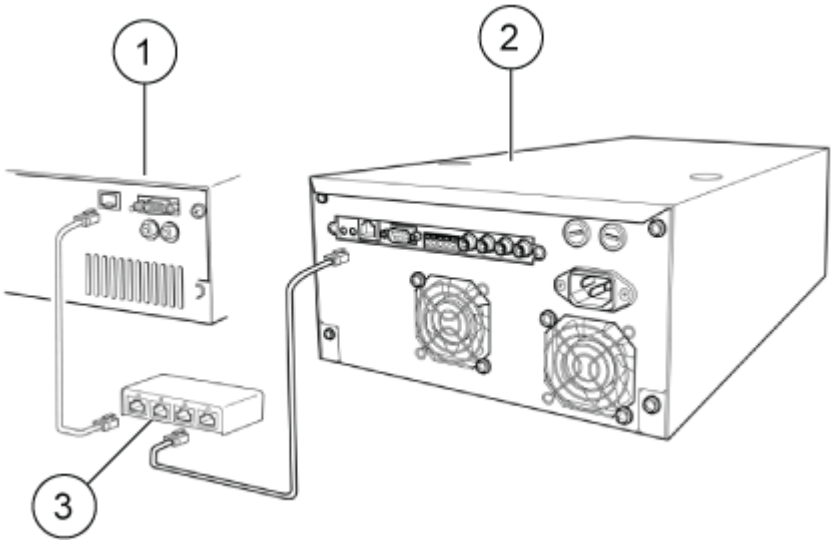



| Item | Description |
|---|---|
| 1 | Initialization button. Press to initialize the system controller or clear errors. |
| 2 | Ethernet port (**ETHERNET**). Connects to the network. |

| Item | Description |
|---|---|
| 3 | Network LEDs. Show the status of the connection to the network.<br>• **100M**: Turns on when operating at 100 Mbps.<br>• **ACT**: Turns on when exchanging data.<br>• **LINK**: Turns on when linked to the network. |
| 4 | RS-232C port. Connector for exchanging data with a computer. |
| 5 | AC output connectors. These connectors are for AC power output and are operationally linked to the power switch. They can be used to supply power to Shimadzu modules. Do not use them for any other application. |
| 6 | Power cord connector. Connects to the mains supply. |
| 7 | External Input/Output terminals. |
| 8 | Remote connectors 1 to 8. Connect to Shimadzu modules. |

3. If the system includes a PDA detector, then do this:
   a. Connect the LAN cable from the Ethernet port at the back of the system controller to the switching hub.
   b. Connect the LAN cable from the Ethernet port at the back of the PDA detector to the switching hub.
   c. Connect the LAN cable from the Ethernet port on the computer that controls the LC system to the switching hub.

**Figure 5-2 PDA Detector Connected to the Acquisition Computer**



| Item | Description |
|---|---|
| 1 | Acquisition computer |
| 2 | PDA detector |
| 3 | Switching hub |

4. For the network connection that is used for the LC system, configure these settings:
   - **IP address**: 192.168.200.90
   - **Subnet mask**: 255.255.255.0

# Configure the Network Settings for the Shimadzu PDA Detector

Use this procedure to configure the IP address and subnet mask. These settings can be also configured with the SPD-M40 Utility software.

1. Open Microsoft Edge.
2. Make sure that the pop-up blocker is turned off.
3. Enable Internet Explorer compatiblity mode.
4. In the browser address field, type `192.168.200.98`, the default IP address for the module, and then press **Enter**.
   If the IP address has changed, then use the new IP address. The URL must be in the format: http://*device IP address*/.
5. Type a user ID and password, and then click **Login**.
   The default user ID and password are `Admin`.
6. Open the Configuration tab.
7. Type values in the **IP Address** and **Subnet Mask** fields, and then click **Register**.
   The new settings are registered, and the connection is closed.
8. In the address field of the web browser, type the newly set IP address, press **Enter**, and then log on.
9. Open the Configuration tab.
10. In the **Group Name** field for the system controller and PDA detector, type the same name.

    **Note:** Do not use the default value for the **Group Name** field: `ShimadzuHPLC`. A different value, for example ShimadzuHPLC_01, must be used.

11. In the **Master Server Name** field for the PDA detector, type the value that shows in the **System Name** field for the system controller.

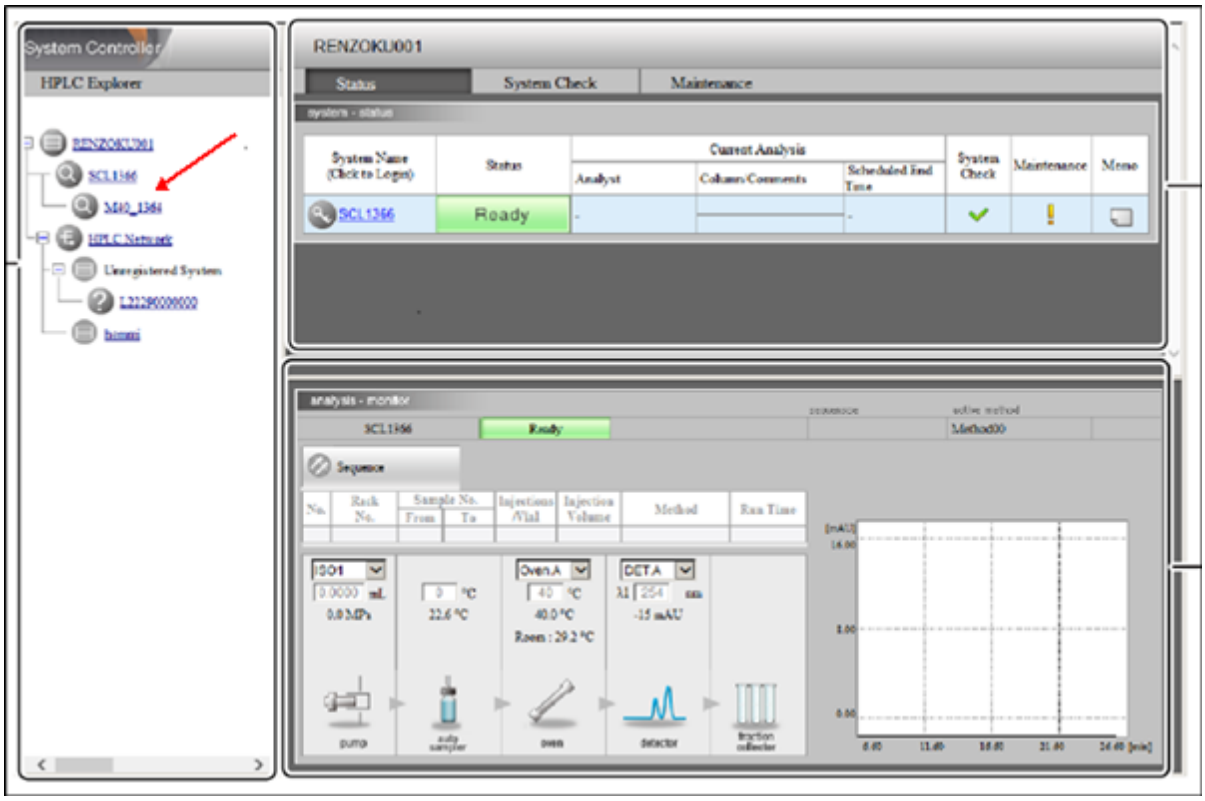
**Note:** The serial number of the system controller can be used as the value for the **Master Server Name** field.

**Table 5-2 System Name**

| Name | System Controller | PDA Detector |
|---|---|---|
| **System Name** | CBM_01 | PDA_01 |
| **Master Server Name** | — | CBM_01 |

12. Click **Apply**.
13. Start the PDA detector and system controller again.
14. Use the Group Monitor Window for the system controller to make sure that the system controller and the PDA detector are connected:
    a. Open a web browser.
    b. In the browser address field, type the IP address for the system controller and then press **Enter**.

**Figure 5-3 Group Monitor Window for the System Controller**



## Connect the System Controller to the Mass Spectrometer

- Use the AUX I/O cable (PN 5056591) to connect the system controller to the mass spectrometer.

## Configure Shimadzu Device Communications for Use With the SCL-40, CBM-40, and CBM-40 Lite

Perform this procedure on the front panel of the autosampler or any pump that is properly connected to the CBM, or from the front panel of the module in which the CBM Lite is installed. Make sure that each module is connected properly with fibre optic cable, that the IP address is properly set, and that the Remote LED is illuminated.

1. Touch the touchscreen to activate it.
2. Press the right arrow, then the down arrow, and then the right arrow again, to enter VP mode.
3. Press the up and down arrows to scroll through the options to show **CALIBRATION**.
4. Press the right arrow to show **INPUT PASSWORD**.
5. Type **00000** (five zeros) and then press **ENTER** to show **Operation Mode**.
6. Press the up and down arrows to scroll through the options to show **CBM PARAMETER**.
7. Press the right arrow to show the serial number of the installed system controller.
8. Press the up and down arrows until **INTERFACE** is shown, select one of the following options, and then press **ENTER**:
   - **0: OPT**, Optical cable connection
   - **1: RS**, Serial communication (RS-232C) connection, use only while performing an update or troubleshooting (this function is reserved for service)
   - **2: ETH**, Ethernet (preferred) connection
9. (If required) to set up the system for remote monitoring, configure the network parameters with information from the customer IT specialist. Use the down arrow to navigate to the next four parameters. For each parameter, type the value and then press **ENTER**.

**Table 5-3 Parameters**

| Field | Value |
|---|---|
| **USE GATEWAY** | **0** (zero) for NO and then press **ENTER** |
| **IP ADDRESS** | **192.168.200.99** (default) and then press **ENTER**. |
| **SUBNET MASK** | **255.255.255.0** (default) and then press **ENTER**. |

**Table 5-3 Parameters (continued)**

| Field | Value |
|---|---|
| **DEFAULT GATEWAY** | **---.---.---.---** (default) and then press **ENTER**. |

10. Turn each LC module OFF and then ON to accept and save the changes.
11. On the computer desktop, right-click **My Network Places** and then click **Properties**.
12. Right-click the network connection that will be dedicated to the Shimadzu CBM communications and then click **Properties**.
13. Click **Internet Protocol (TCP/IP)** and then click **Properties**.
14. Click **Use the following IP** address and then type the following:
    - **IP ADDRESS: 192.168.200.90**
    - **SUBNET MASK: 255.255.255.0**
    - **DEFAULT GATEWAY**: Leave blank
15. Click **OK** to accept the changes.
16. Click **CLOSE**.
17. Shut down the computer.
18. (Only applicable if using LAN connection) Using a CAT 5 network cable, connect the Shimadzu CBM/CBM Lite to the computer.

    **Note:** If using a PDA, then connect the network cable from the CBM/CBM Lite to a network switch. The PDA is also connected to the network switch.

19. Turn on the computer and the CBM/CBM Lite and then wait for them to complete their respective boot-up routines.
20. To determine whether proper communications have been established between the computer and CBM/CBM Lite, start Microsoft Edge (other browsers might not display properly), type the CBM/CBM Lite IP address in the address bar (**192.168.200.99**), and then click **GO**.

    **Note:** Make sure that all pop-up blockers are turned off.

21. Make sure that the serial number listed for the LC system under **System Name** matches that of the unit that is connected and that its status is Ready.
22. Close Microsoft Edge.
23. Start the SCIEX OS software and then configure the LC system.

# Configure Shimadzu Device Communications for Use With the CBM-20A and CBM-20A Lite

This method is the most reliable way to communicate with the Shimadzu system. To also have network access with the computer for data backup, install a second network card in the computer. This additional network card is then configured to communicate exclusively with the Shimadzu CBM interface.

From the front panel of the autosampler or any pump that is properly connected to the CBM, that is, with the fiber optic cable installed, the proper address set, and the REMOTE LED illuminated, or from the front panel of the unit in which the CBM Lite is installed, do the following:

1. Press **VP** key 4 times to show **CALIBRATION**.
2. Press **FUNC** to show **INPUT PASSWORD**.
3. Type **00000** (five zeros), and then press **ENTER** to show **FLOW COMP**.
4. Press **BACK** to show **CBM PARAMETER**.
5. Press **ENTER**. The Serial Number, or serial number of the installed CBM lite, is shown .
6. Press **FUNC** 2 times to show **INTERFACE**, and then type the parameters:
    a. Press **1** for RS-232C, and then press **ENTER**.
    b. Press **2** for Ethernet (preferred), and then press **ENTER**.
    c. Ethernet Speed: Press **0** (zero) for auto-detect, and then press **ENTER**.
7. Set the parameters to set up the peer-to-peer network with the computer:
    - **USE GATEWAY: 0** (zero) for NO, and then press **ENTER**.
    - **IP ADDRESS: 192.168.200.99** (default), and then press **ENTER**.
    - **SUBNET MASK: 255.255.255.0** (default), and then press **ENTER**.
    - **DEFAULT GATEWAY: ---.---.---.---** (default), and then press **ENTER**.
8. Use the **TRS MODE** to set the communications protocol parameters to **CLASS-VP**. Press **2**, and then press **ENTER**.
9. **POWER OFF** the unit to accept and save the changes.
10. On the computer desktop, right-click **My Network Places**, and then click **Properties**.
11. Right-click the network connection that will be dedicated to the Shimadzu CBM communications, and then click **Properties**.
12. Click **Internet Protocol (TCP/IP)**, and then click **Properties**.
13. Click **Use the following IP** address, and then type the following:
    - **IP ADDRESS: 192.168.200.90**

- **SUBNET MASK: 255.255.255.0**
- **DEFAULT GATEWAY**: Leave blank

14. To accept the changes, click **OK**.
15. Click **CLOSE**.
16. Shut down the computer.
17. (Only applicable if a LAN connection is being used) Use a CAT 5 network cable to connect the Shimadzu CBM/CBM Lite to the computer with the network card that was configured for use with the Shimadzu LC system.

    **Note:** If a PDA is being used, then connect the network cable from the CBM/CBM Lite to a network switch. The PDA is also connected to the network switch, which is connected to the computer.

18. Turn on the computer and the CBM/CBM Lite, and then wait for them to complete their respective boot-up routines.
19. To make sure that proper communications have been established between the computer and CBM/CBM Lite, start Microsoft Edge (other browsers may not operate correctly), type the CBM/CBM Lite IP address in the address bar (**192.168.200.99**), and then click **GO**.

    **Note:** Make sure that all pop-up blockers are turned off.

20. Make sure that the serial number for the LC system under **System Name** is the same as that of the unit that is connected, and that the system status is Ready.
21. Close Microsoft Edge.
22. Start the SCIEX OS software, and then configure the LC system.

# Fault Recovery

The manufacturer recommends that the devices attached to the system controller be identical to those configured in the SCIEX OS hardware configurations. Differences between the two configurations can result in communication issues between the software, the system controller, and the attached modules.

If the vial detection sensor is ON, then missing autosampler vials or aborting a run during an autosampler rinse creates fault conditions. To correct these errors, intervene manually to let the SCIEX OS software continue functioning normally. To recover control by the SCIEX OS software, do the task indicated on the device screen. Alternatively, follow the Fault Recovery procedure to clear all of the conditions.

**Note:** The needle height in the method must match that of the current tray. The preset value is not valid for all of the trays.

The LC equipment can generate three different error conditions that cause the SCIEX OS software to stop: warning, error, and fatal error.

Errors from the system controller are shown in the Windows event logs as VI*xxxx* errors, for example: VIRUN.

## Warnings

A warning is an informational notification of conditions such as a door open on a temperature controlled module, solvent level, or temperature not ready. These conditions do not prevent the LC system from operating properly. However, the SCIEX OS software does not recognize these warnings, generates an error, and then stops the batch. Contact the manufacturer for information on how to minimize these conditions.

## Errors

Any error condition on the LC system stops the SCIEX OS software batch. The LC system typically sounds an audible alarm until the user acknowledges the error. Some errors that might be encountered and the recommended actions include the following:

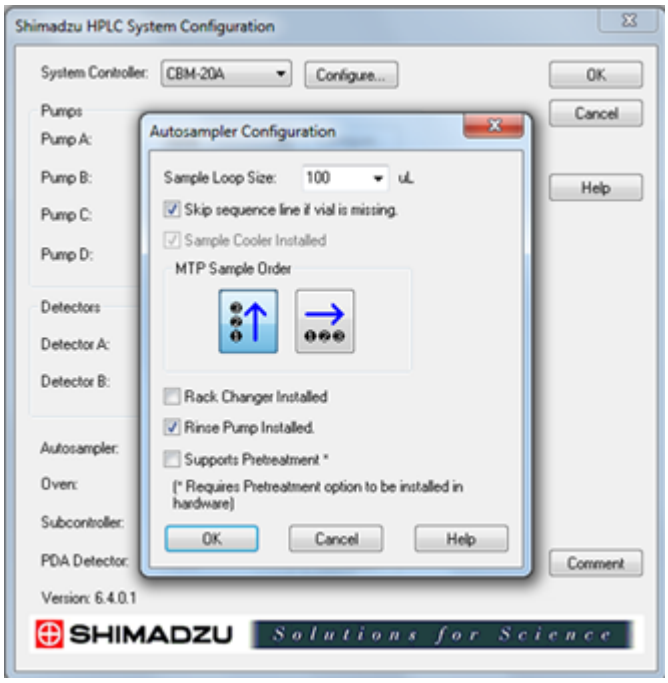
- LEAK DETECT: Press **CE** to stop the alarm. Find and address the problem. Thoroughly dry the area around the leak sensor of the affected module (and possibly any module below it in the stack due to the internal drain system).
- PRESSURE OVER PMAX: Press **CE** to stop the alarm. Correct the problem.
- MISSING VIAL: This error appears on the autosampler if it does not find a vial it is asked to inject. The result of this condition can be dealt with in one of two ways through the SCIEX OS software in the hardware profile.

  If the system is configured as follows:

  - (Shimadzu LC–20/30 systems configured through **Integrated System Shimadzu LC Controller**)

    Select the autosampler model from the list and then click **Configuration** to show the Autosampler Configuration dialog.

**Figure 5-4 Autosampler Configuration Dialog**




Select the **Skip sequence line if vial is missing** check box and then click **OK**. The SCIEX OS software skips that vial and continues running. If the check box is not selected, then the software reports an error and stops the batch.

The Skipped Vial notification is shown on the autosampler status panel and the vial number skipped is shown. Be sure to reconcile the data obtained in subsequent runs.

- (Shimadzu LC–20/30 systems configured through **Integrated System Shimadzu LC-20/30 Controller** and Shimadzu LC–40 systems)

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**Note:** There is no missing vial setup option in the hardware profile configuration for Shimadzu LC-20/30 systems configured through **Integrated System Shimadzu LC-20/30 Controller** and Shimadzu LC-40 systems. The setup for these systems is done on the autosampler module.

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Vial detection is set on the LC hardware with Vialdet setting on Shimadzu LC–20/30 systems and the VIAL/PLATE SENSOR setting on Shimadzu LC–40 systems.

# Fatal Errors

The final level of error shown by the system is a fatal error. Fatal errors are usually caused by a mechanical failure, such as the failure of the autosampler injection mechanism. However, fatal errors can occur with any of the modules. The only way to recover from a fatal error is to restart the entire system. If, after restarting, the error occurs again, contact SCIEX for assistance.

## Recover from a Fault

For warnings and typical errors, the module experiencing the issue shows the condition on its status panel and the module and CBM show a RED status LED bar. The connect LED on the CBM is no longer lit. The CBM-20A Lite system controller works in the same way but has no indication of the error because it is installed in a module.

1. To stop the alarm and clear the error, on the operation panel of the applicable module, push **CE**.

   For errors such as leaks, the alarm stops when the cause of the error is corrected.
2. Correct the cause of the error.
3. Press the black **INIT** button at the back of the CBM-20A Lite for no longer than five seconds. The system controller status LED bar changes to green and the connect LED illuminates, thus confirming that communication with the SCIEX OS software has been restored.
4. If the color of the status LED does not change to green or the connect LED does not illuminate, then continue with steps 5 to 10.
5. Deactivate the hardware profile.
6. Turn off the power to the modules. Include the system controller.
7. Turn on the power to the modules, but not the system controller.
8. Turn on the power to the system controller.
9. (Only applicable to Shimadzu LC-20/30 systems configured through Integrated System Shimadzu LC-20/30 Controller) Make sure that all of the modules selected in the Shimadzu HPLC System Configuration screen in the hardware profile setup match the ones that were turned on. If they do not match, reselect the modules or only turn on the required modules. If necessary, restart the system controller.
10. Activate the hardware profile.
11. (Optional) If the hardware profile fails to activate, then close the software and restart the computer. Re-configure the LC devices in the hardware profile setup and then try to activate the hardware profile again.

# Agilent Systems 6

**WARNING! Electrical Shock Hazard. Refer to the Agilent autosampler safety instructions before configuring mains-powered equipment.**

For information about the Agilent devices supported by the SCIEX OS software, and the latest tested firmware version, refer to the most current version of the document: *Software Installation Guide*.

**Note:** The autosampler does not support the high throughput settings.

## Device Communication Configuration

This section provides information about configuring the Agilent series peripheral devices using LAN (Ethernet) communication with CAN cables. The Flexible Cube must be connected to the autosampler.

**Note:** Use CAN cables when configuring multiple Agilent devices in a stack configuration. Refer to the section: Configuration of CAN Communication.

### Configuration of Ethernet Communication

Connect the Agilent system to the computer through Ethernet communication. Use a LAN cable to connect the detector, if used, or the pump to the computer.

**Note:** Agilent modules are shipped with all DIP switches Down (Off). Switches 7 and 8 must be up on the detector, if used, and the pump.

### Configuration of CAN Communication

Use CAN cables in conjunction with Ethernet cable to configure a stack of Agilent modules. In an Agilent stack configuration, a single module is connected to the computer with Ethernet cable. Any additional Agilent modules are then connected to each other (in series) with CAN cables.

To monitor and control the stack manually, connect a handheld Agilent series control module to one of the CAN connections at the back of any Agilent device. The modules connected by CAN cables in the stack must match the modules defined for the device in the SCIEX OS software. If a fault occurs in the CAN-linked stack, then restart all of the devices in the stack.

**Note:** All modules connected by CAN cables must be on the same suite of firmware.

For more information on configuring Agilent devices with CAN cables, refer to the Agilent documentation.

# Autosampler Configuration

**WARNING! Electrical Shock Hazard. Refer to the Agilent autosampler safety instructions before configuring mains-powered equipment.**

## Connect the Autosampler

This procedure describes how to connect the Agilent autosampler to the computer through standard LAN (Ethernet) communication.

The cables for the Agilent autosamplers are included with the mass spectrometer.

1. Turn off the Agilent autosampler by pressing the On/Off button on the front of the module.
2. Shut down the acquisition computer.
3. Connect the CAN cable to the autosampler.

**Figure 6-1 Back Panel of the 1290 Autosampler**

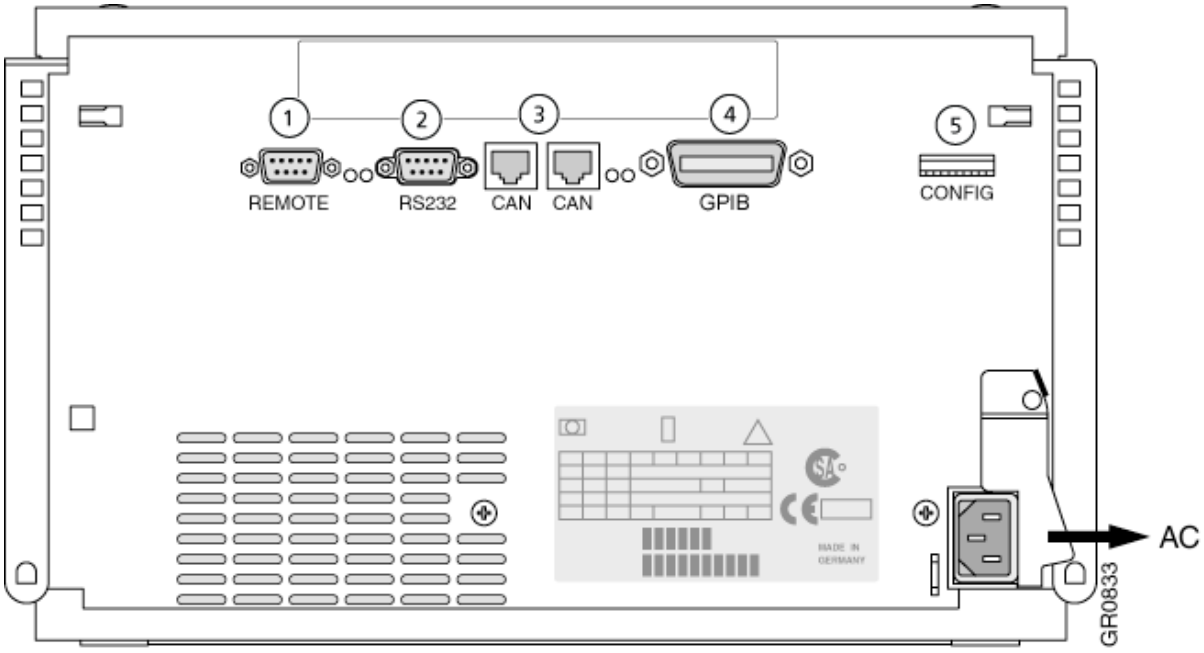
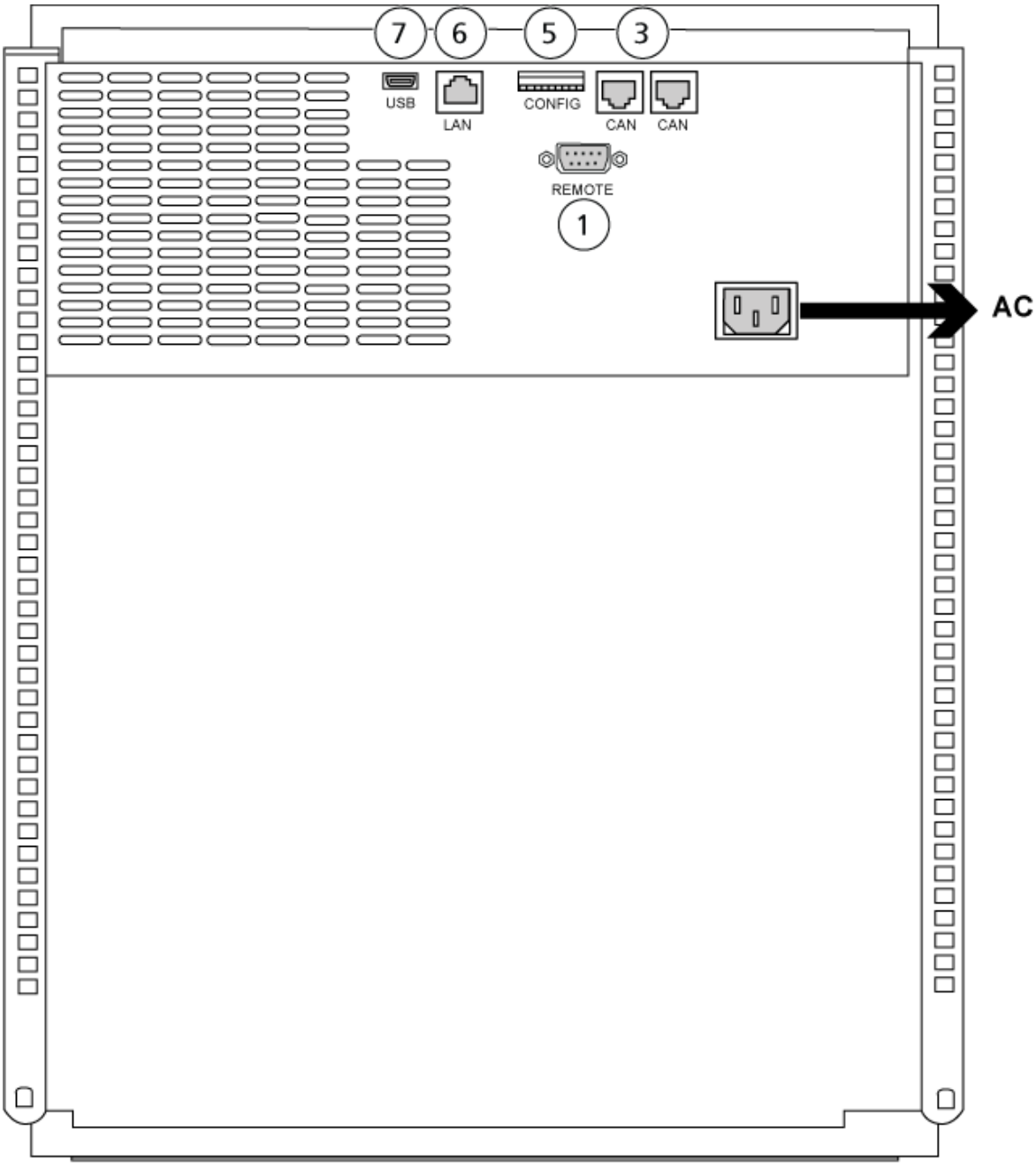


**Figure 6-2 Back Panel of the 1260 or 1290 Infinity II Autosampler**




| Item | Description |
|---|---|
| 1 | Remote port |
| 2 | Serial port |

| Item | Description |
|---|---|
| 3 | CAN connectors |
| 4 | Agilent GPIB |
| 5 | DIP switches |
| 6 | LAN (Ethernet) port |
| 7 | USB port |

# Pump Configuration

**WARNING! Electrical Shock Hazard. Refer to the Agilent pump safety instructions before configuring mains-powered equipment.**

This section describes the required hardware for each pump and how to connect the pump to the computer. Either the pump or DAD can be connected using the LAN (Ethernet) connection. If both a pump and DAD are used in the device profile, then make sure that the DAD is connected using the LAN connection.

The following table lists the required hardware. Depending on how the system is configured, all of the following cables might not be required.

- CAN cable (provided with Agilent system)
- LAN (Ethernet) cable

## Connect the Pump

This procedure describes how to connect the Agilent pump to the computer through LAN (Ethernet) communication. Connect the pump to the computer with an Ethernet cable.

1. Shut down the computer.
2. Press the On/Off button to turn off the pump.
3. Connect the CAN cables to the pump.

**Figure 6-3 Back Panel of Agilent G4220A Pump**

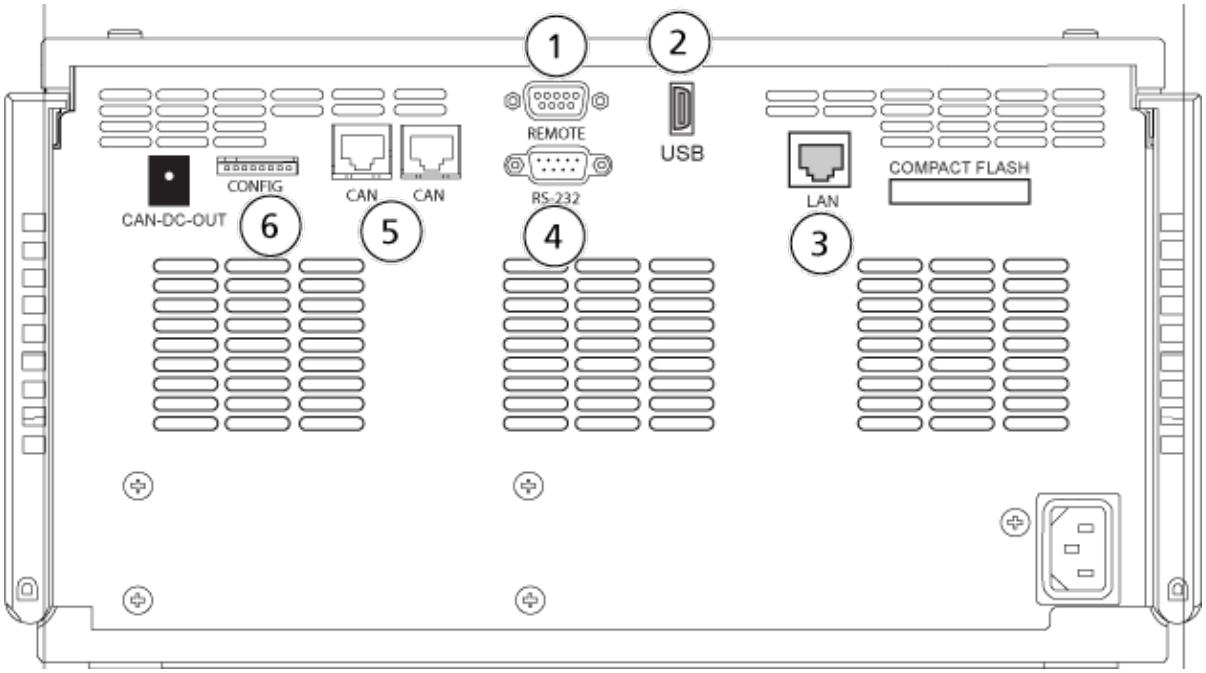
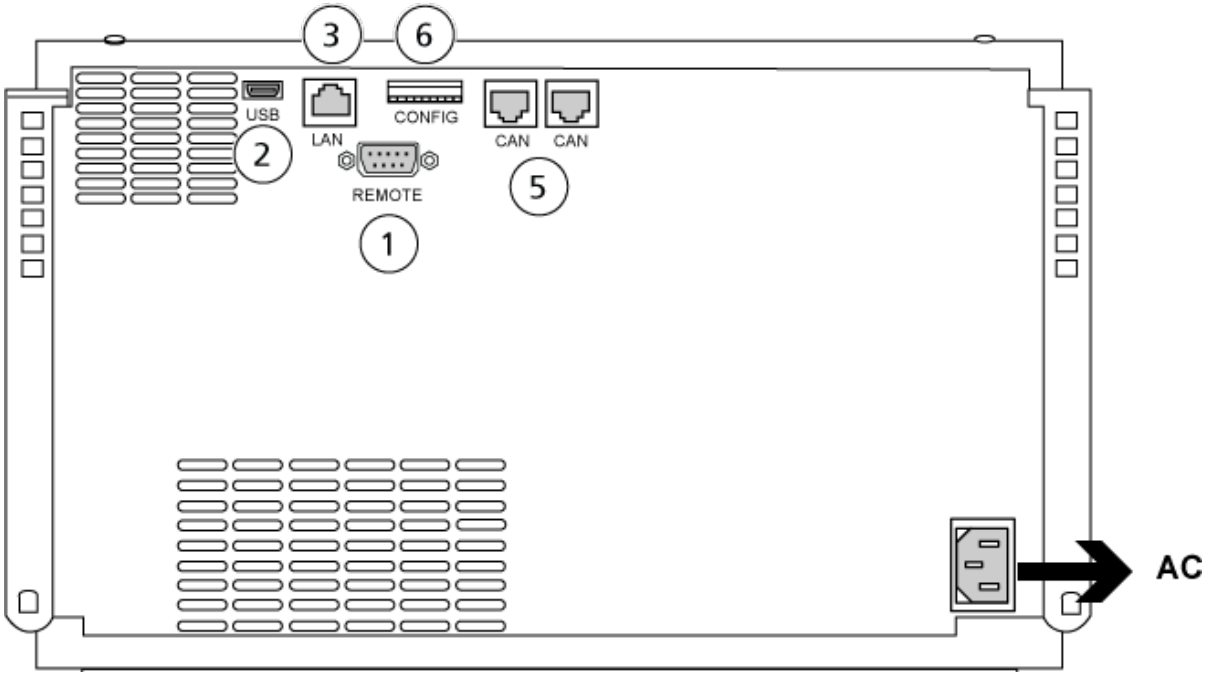



**Figure 6-4 Back Panel of Agilent G7111 or G5654 Pump**



| Item | Description |
|---|---|
| 1 | Remote port |
| 2 | USB port |
| 3 | LAN (Ethernet) port |
| 4 | Serial port |
| 5 | CAN ports |
| 6 | DIP switches |

4. If the system does not include a detector, then connect the LAN (Ethernet) cable from the pump to the acquisition computer.

# Column Compartment Configuration

The following hardware is required:

- CAN cable (provided with the Agilent system)

## Connect the Column Compartment

- Connect the CAN cables to the column compartment.

# Diode Array Detector Configuration

**WARNING! Electrical Shock Hazard. Refer to the Agilent detector safety instructions before configuring mains-powered equipment.**

The following table lists the required hardware:

- LAN (Ethernet) cable

## Connect the Diode Array Detector to the Computer

The Agilent DAD includes an on-board LAN interface. Connect the DAD to the computer using the LAN (Ethernet) cable. Refer to the section: Configuration of Ethernet Communication.

1. Shut down the computer.
2. Press the On/Off button to turn off the Agilent diode array detector.
3. Connect a LAN (Ethernet) cable to the back of the Agilent diode array detector. Refer to the following figures.

**Figure 6-5 Back of the G4212A Diode Array Detector**

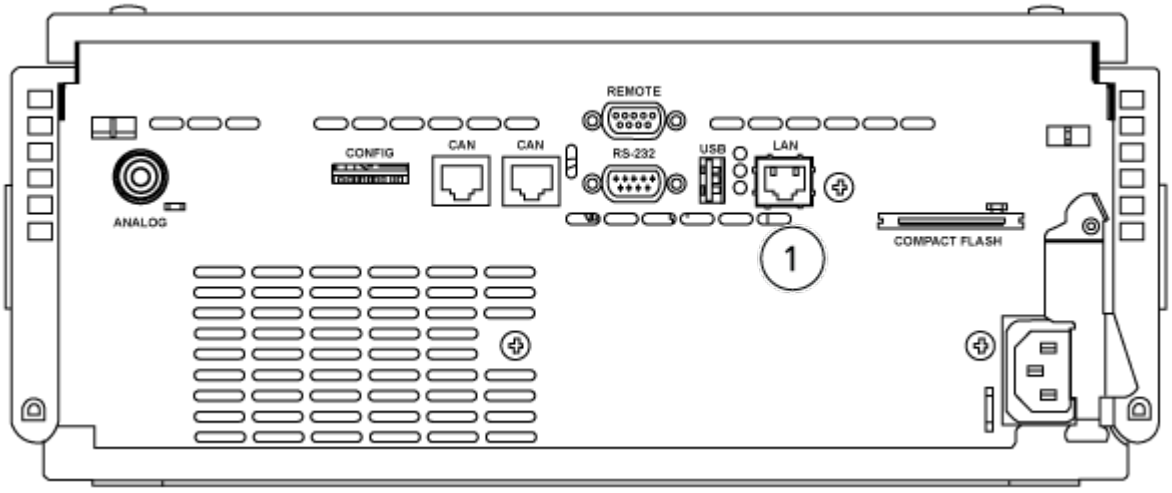
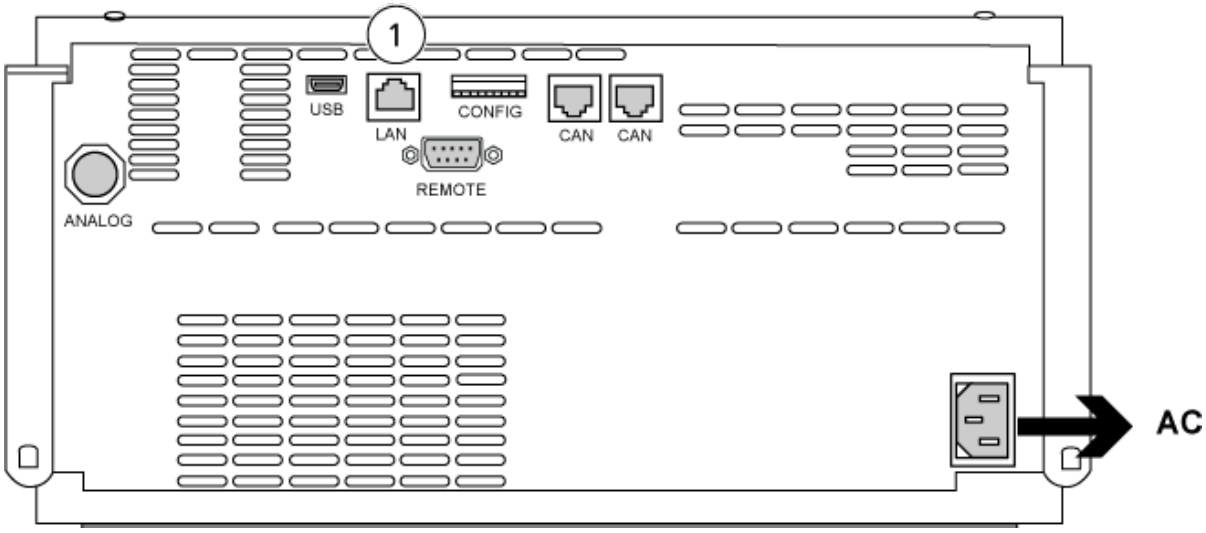



**Figure 6-6 Back of the G7117 Diode Array Detector**




| Item | Description |
|---|---|
| 1 | LAN port |

4. Connect the other end of the LAN cable to the computer.

# Harvard Syringe Pump 7

The SCIEX OS software supports the Harvard Pump 11 Elite and Harvard PHD Ultra syringe pumps.

To use an external Harvard syringe pump, do the following steps:

- Connect one end of the communication cable supplied by the manufacturer to the syringe pump and the other end to the serial port on the acquisition computer.
- (Windows 7 only) Install the device driver for the Harvard syringe pump. Refer to the section: Install the Device Driver (Windows 7).

  **Note:** Windows 10 automatically installs the required device driver.

- Add the syringe pump to the Devices list in the SCIEX OS software. Refer to the section: Configure the Harvard Syringe Pump.

## Install the Device Driver (Windows 7)

| Prerequisite Procedures |
| --- |
| • Connect one end of the communication cable supplied by the manufacturer to the syringe pump and the other end to the serial port on the acquisition computer. |

On an acquisition computer with the Microsoft Windows 7 operating system, the device driver for the Harvard syringe pump must be installed, to let the SCIEX OS software communicate with the syringe pump.

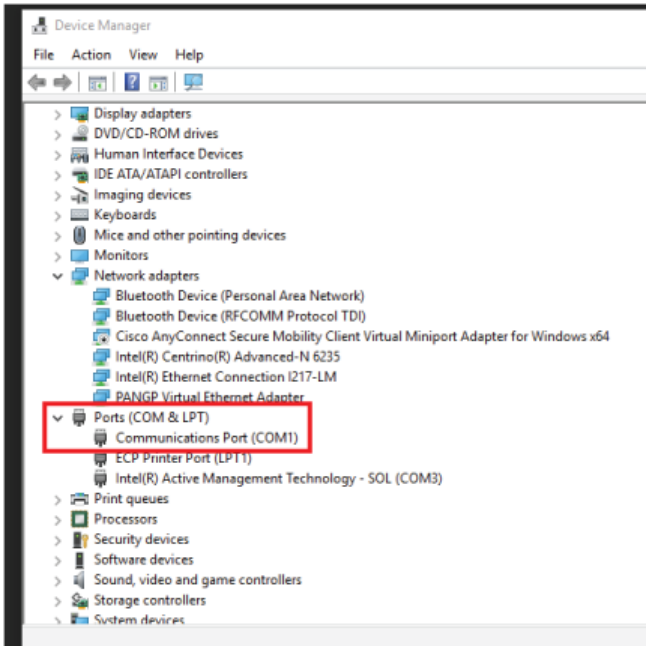
1. Insert the installation DVD for the the SCIEX OS software in a DVD drive on the acquisition computer, or download and extract the installer for the SCIEX OS software.
2. Browse to the `Released\DVD\Drivers\HarvardApparatusBulkDriver 3.0.1.0` folder.
3. Double-click `Driver Setup.exe`.
4. Follow the instructions to install the driver.

# Configure the Harvard Syringe Pump

| Prerequisite Procedures |
| --- |
| • Connect one end of the communication cable supplied by the manufacturer to the syringe pump and the other end to the serial port on the acquisition computer. |

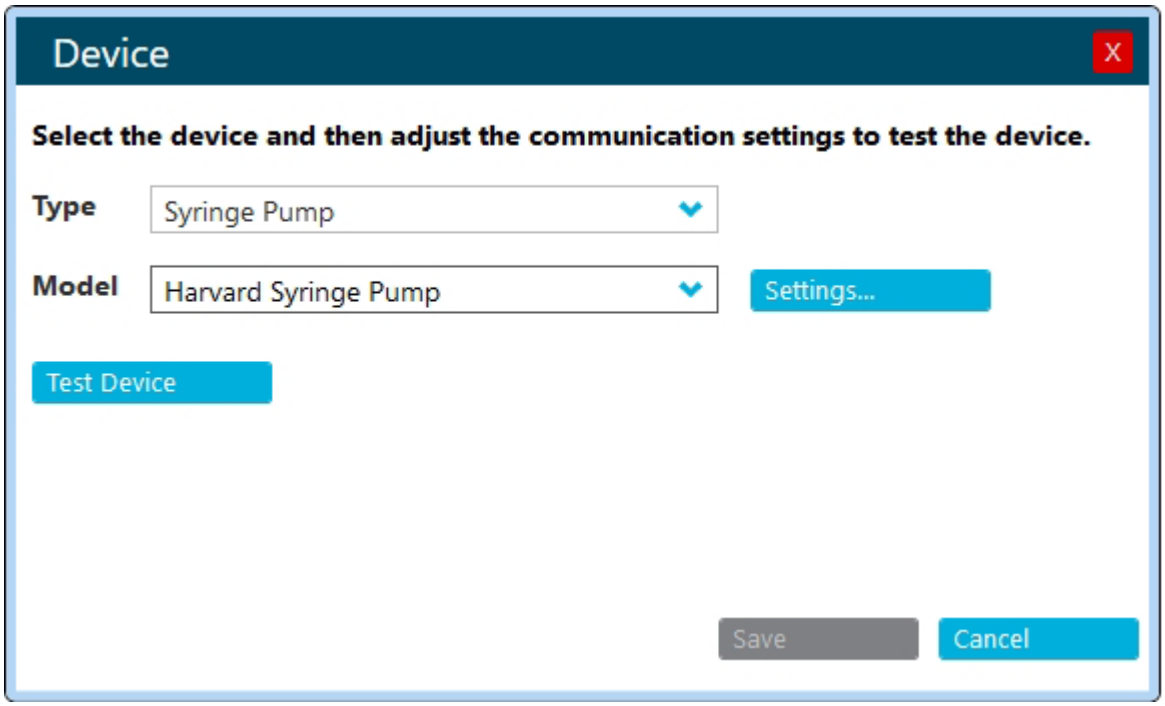
1. Open the Microsoft Windows Device Manager and then open **Ports**.
   When connecting the syringe pump to the acquisition computer, make sure to use an available serial (COM) port, as identified in the Device Manager.

   **Figure 7-1 Device Manager: Ports**



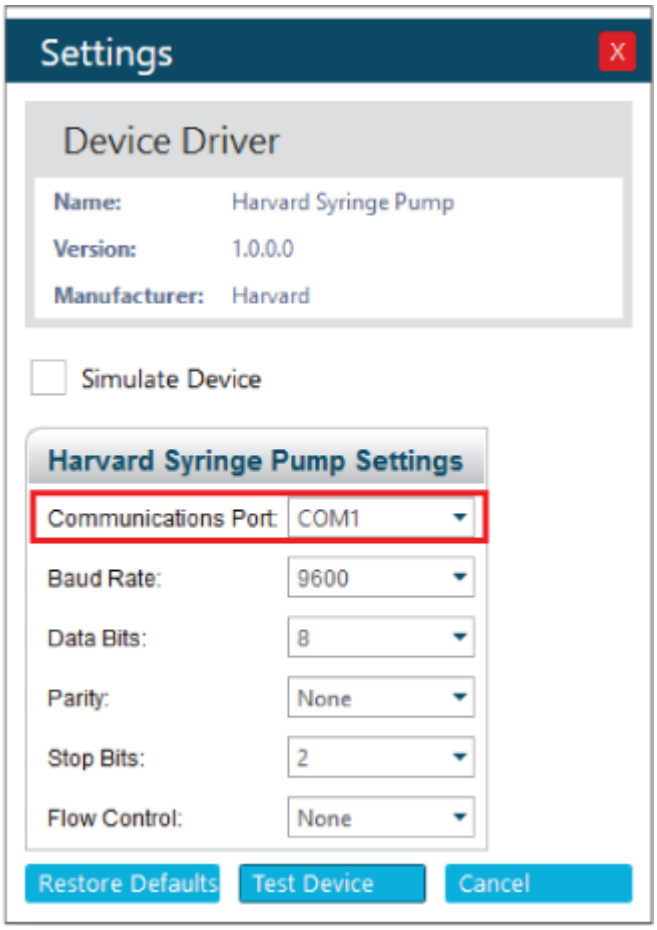

2. In the SCIEX OS software, in the Configuration workspace, click **Devices**.
3. Click **Add**.
   The Device dialog opens.
4. In the **Type** field, select **Syringe Pump** and in the **Model** field, select **Harvard Syringe Pump**.

**Figure 7-2 Device Dialog**




5. Click **Settings**.
   The Settings dialog opens.
6. Verify that the **Communications Port** matches the port shown in the Windows Device Manager, and make sure that the other settings are configured correctly. Refer to the documentation that comes with the device for the correct values.

**Figure 7-3 Communications Port**




7. Click **Test Device**.
8. If the test is successful, then click **Save** to save the new device.
   If the test is unsuccessful, then verify the device configuration and the cable connections.

# Contact Closure 8

The SCIEX OS software accepts synchronization signals through contact closure. Contact closure can be used to synchronize signals between the SCIEX OS software and devices that are not directly controlled by the SCIEX OS software.

**Note:** Some means of controlling the device must be available, such as software or a handheld controller. SCIEX does not support third-party devices or their software. For information about configuring a device for contact closure, refer to the documentation that comes with the device, or contact the device manufacturer.

Contact closure cables are available from SCIEX for devices such as:

- MicroLC 200 and nanoLC 400 systems
- Agilent 1100, 1200, and 1260 autosamplers
- CTC PAL, DLW, and LC/mini samplers

**Note:** For a complete list of devices for which contact closure cables are available, refer to the document: *Parts and Equipment Guide*.

| **Required Materials** |
| --- |
| • Contact closure cable for the device |

## Connect the Device to the Mass Spectrometer

- Connect the contact closure cable to the AUX IO port on the mass spectrometer.

# Contact Us

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- Global: sciex.com/contact-us

## Online Learning Center

- SCIEX Now Learning Hub

## SCIEX Support

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- sciex.com/contact-us
- sciex.com/request-support

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