SCXI™ Quick Start Guide

Signal Conditioning eXtensions for Instrumentation

This document contains English, French, and German language instructions. For Japanese, Korean, and Simplified Chinese language instructions, refer to the other document in your kit.

Ce document contient des instructions en anglais, français et allemand. Pour les consulter en japonais, coréen et chinois simplifié, reportez-vous à l'autre document dans votre kit.

Dieses Dokument enthält Anleitungen auf Englisch, Französisch und Deutsch. Anleitungen auf Japanisch, Koreanisch und in vereinfachtem Chinesisch finden Sie in dem anderen Dokument in diesem Kit.

このドキュメントは、英語、フランス語、ドイツ語で記述されています。日本語、韓国語、簡体中国語については、キットに含まれているもう1つのドキュメントをご参照ください。

이 문서에는 영어, 프랑스어, 독일어 설명서가 담겨있습니다. 일본어, 한국어, 중국어 간체 설명서는 키트에 포함된 별도의 문서를 참조하시기 바랍니다.

本手册包含英语、法语和德语版。日语、韩语和简体中文版请参考另一本手册。

This document explains how to install and configure SCXI signal conditioning modules in SCXI-1000, SCXI-1001, SCXI-1000DC, or PXI/SCXI combination chassis, confirm the module and chassis are operating properly, and set up multichassis systems. It also describes the NI-DAQmx software relative to SCXI and integrated signal conditioning products. This document assumes you have already installed, configured, and tested your NI application and driver software, and the data acquisition (DAQ) device to which you will connect the SCXI module. If you have not, refer to the *DAQ Getting Started* guides included with the DAQ device and available on the NI-DAQ software media and from `ni.com/manuals`, before continuing.

For instructions on configuring Traditional NI-DAQ (Legacy), refer to the *Traditional NI-DAQ (Legacy) Readme* after you have installed the software. Refer to the *NI Switches Getting Started Guide*, available at `ni.com/manuals`, for switch information.

Step 1. Unpack the Chassis, Module, and Accessories

Remove the chassis, module, and accessory from the packaging and inspect the products for loose components or any sign of damage. Notify NI if the products appear damaged in any way. Do *not* install a damaged device.

NATIONAL INSTRUMENTS™

For safety and compliance information, refer to the device documentation packaged with your device, at `ni.com/manuals`, or the NI-DAQmx media that contains device documentation.

The following symbols may be on your device.

⚠ This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash. When this symbol is marked on a product, refer to the *Read Me First: Safety and Electromagnetic Compatibility* document, shipped with the device, for precautions to take.

⚡ When this symbol is marked on a product, it denotes a warning advising you to take precautions to avoid electrical shock.

♨ When this symbol is marked on a product, it denotes a component that may be hot. Touching this component may result in bodily injury.

Step 2. Verify the Components

Make sure you have the specific combination of the SCXI system components, shown in Figures 1 and 2, needed for your application along with the following items:

- NI-DAQ 7.*x* or later software and documentation
- NI LabVIEW, NI LabWindows™/CVI™, NI LabVIEW SignalExpress, NI Measurement Studio, Visual C++, or Visual Basic
- SCXI product manuals
- 1/8 in. flathead screwdriver
- Numbers 1 and 2 Phillips screwdrivers
- Wire insulation strippers
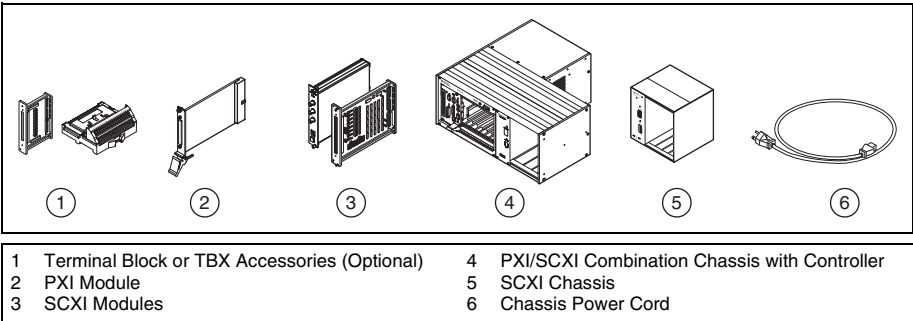- Long nose pliers

1	Terminal Block or TBX Accessories (Optional)	4	PXI/SCXI Combination Chassis with Controller
2	PXI Module	5	SCXI Chassis
3	SCXI Modules	6	Chassis Power Cord

Figure 1. SCXI System Components

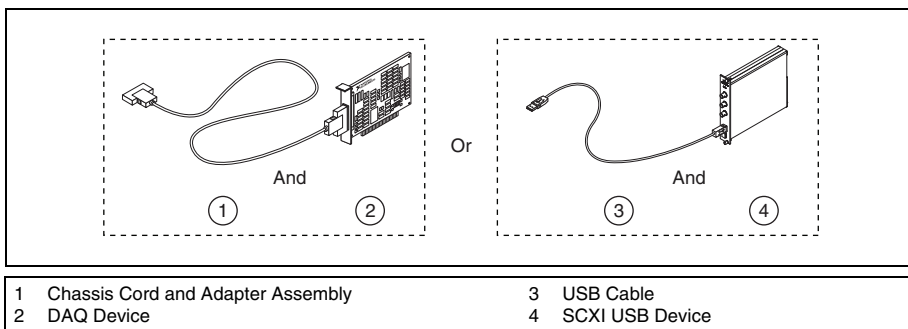|			
1	Chassis Cord and Adapter Assembly	3	USB Cable
2	DAQ Device	4	SCXI USB Device

Figure 2. For SCXI Chassis Only

Step 3. Set Up the Chassis

⚠️ **Caution** Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document packaged with your chassis before removing equipment covers or connecting or disconnecting any signal wires. Follow proper ESD precautions to ensure you are grounded before installing the hardware.

You can test NI-DAQmx applications without installing hardware by using an NI-DAQmx simulated device. For instructions on creating NI-DAQmx simulated devices, in Measurement & Automation Explorer, select **Help»Help Topics»NI-DAQmx»MAX Help**.

Refer to the *Windows Device Recognition* section after installing a DAQ device or an SCXI USB device.

SCXI Chassis

1. Power off and unplug the chassis.
2. Set the chassis address if your chassis is addressable. Some older chassis are not addressable.

   • If the chassis has address switches, you can set the chassis to a desired address. When configuring the chassis in MAX in Step 12, make sure the software address settings match the hardware address settings. All switches are shown in the off position, the default setting, in Figure 3.

   • Some older chassis use jumpers inside the front panel instead of chassis address switches. Older chassis also differ in fuses and AC power selection. Refer to the chassis documentation for more information.

3. Confirm the correct power settings (100, 120, 220, or 240 VAC).
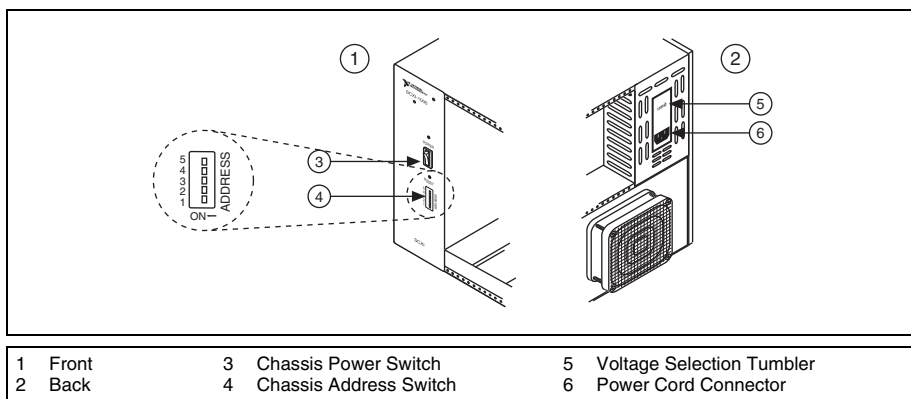4. Connect the power cord.

1	Front	3	Chassis Power Switch	5	Voltage Selection Tumbler
2	Back	4	Chassis Address Switch	6	Power Cord Connector

Figure 3. SCXI Chassis Setup

PXI/SCXI Combination Chassis

You must have a system controller installed in the PXI side of the chassis. Refer to ni.com/info and type rdfis5 to order a configured PXI/SCXI combination chassis.

1. Power off both the PXI and SCXI power switches, and unplug the chassis.

2. Set the SCXI chassis address switch positions to the desired address. In Figure 4, all switches are shown in the off position.

3. Set the voltage selection tumbler to the correct voltage for your application. Refer to the chassis documentation for more information.
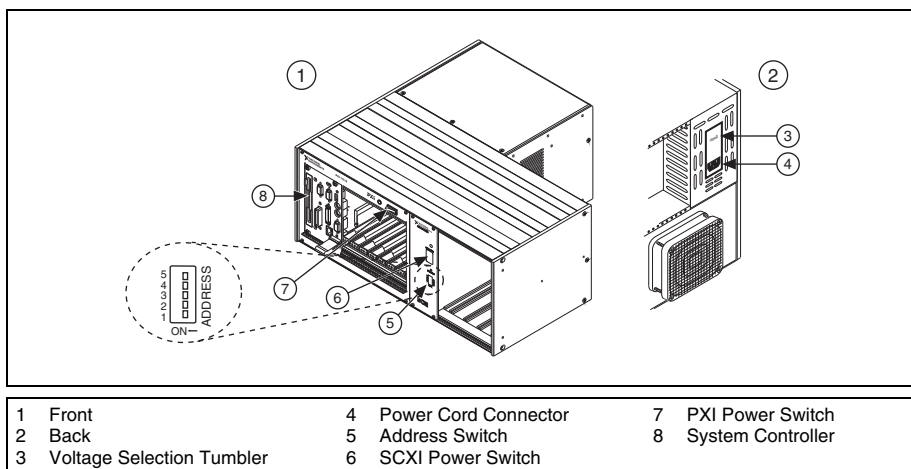
4. Connect the power cord.

1	Front	4	Power Cord Connector	7	PXI Power Switch
2	Back	5	Address Switch	8	System Controller
3	Voltage Selection Tumbler	6	SCXI Power Switch		

Figure 4. PXI/SCXI Combination Chassis Setup

Step 4. Install the Modules

⚠️ **Caution** Make sure the chassis is completely powered off. SCXI modules are not hot-swappable. Adding or removing modules while the chassis is powered on can result in blown chassis fuses or damage to the chassis and modules.

PXI/SCXI Combination Chassis

To install the PXI DAQ communicating device in the right-most slot of the PXI chassis, complete the following steps:

1. Touch any metal part of the chassis to discharge static electricity.

2. Place the module edges into the top and bottom PXI module guides, as shown in Figure 5.

3. Slide the module to the rear of the chassis. Ensure that the injector/ejector handle is pushed down.

4. When you begin to feel resistance, pull up on the injector/ejector handle to inject the module.

5. Secure the module to the chassis front panel mounting rail using the two screws.
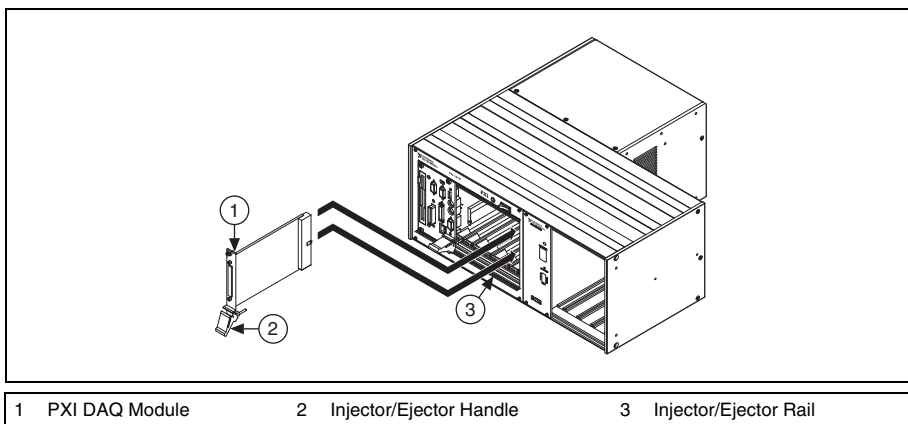

| 1 | PXI DAQ Module | 2 | Injector/Ejector Handle | 3 | Injector/Ejector Rail |

Figure 5. Installing the PXI Module in a New Chassis

SCXI Chassis

1. Touch any metal part of the chassis to discharge static electricity.

2. Insert the module into the SCXI slot.

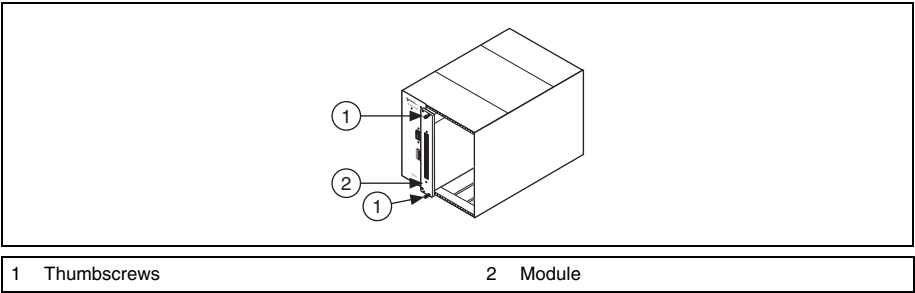3. Secure the module to the chassis front panel mounting rail using the two thumbscrews.

| 1 | Thumbscrews | 2 | Module |

Figure 6. Installing the SCXI Module in a New Chassis

SCXI USB Modules

SCXI USB modules are plug-and-play, integrated signal conditioning modules that communicate between an SCXI system and a USB-compatible computer or USB hub, so no intermediate DAQ device is needed. SCXI USB modules, such as the SCXI-1600, cannot be used in a PXI/SCXI combination chassis or in multichassis systems. After you install the module in the chassis, complete these steps:

1. Connect the USB cable from the computer port or from any other USB hub to the USB port on the SCXI USB module.

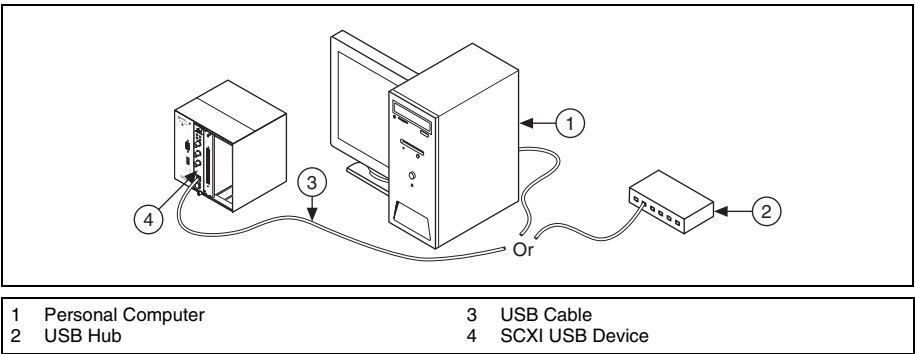2. Attach the cable to the strain relief using a cable tie.

| 1 | Personal Computer | 3 | USB Cable |
| 2 | USB Hub | 4 | SCXI USB Device |

Figure 7. Installing an SCXI USB Module

Add a Module to an Existing SCXI System

You also can add a module to an existing SCXI system in multiplexed mode. If your system already has a controller established, install additional SCXI modules in any available chassis slots. Refer to *Step 7. Install the Cable Adapter* to determine which module to connect to the cable adapter, if applicable.
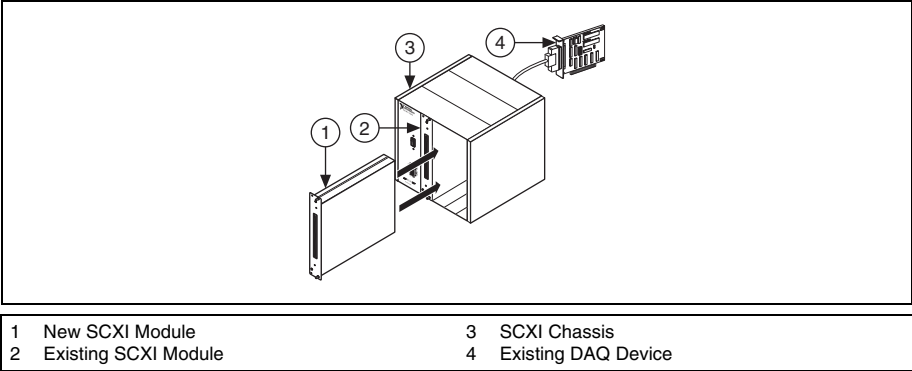

| 1 | New SCXI Module | 3 | SCXI Chassis |
| 2 | Existing SCXI Module | 4 | Existing DAQ Device |

Figure 8. Installing the SCXI Module in an Existing System

Step 5. Attach Sensors and Signal Lines

Attach sensors and signal lines to the terminal block, accessory, or module terminals for each installed device. The following table lists device terminal/pinout locations.

Location	How to Access Pinout
MAX	Right-click the device name under Devices and Interfaces, and select **Device Pinouts**.
	Right-click the device name under Devices and Interfaces**,** and select **Help»Online Device Documentation**. A browser window opens to ni.com/manuals with the results of a search for relevant device documents.
DAQ Assistant	Select the task or virtual channel, and click the **Connection Diagram** tab. Select each virtual channel in the task.
NI-DAQmx Help	Select **Start»All Programs»National Instruments»NI-DAQ»NI-DAQmx Help**.
ni.com/ manuals	Refer to the device documentation.

For information about sensors, refer to ni.com/sensors. For information about IEEE 1451.4 TEDS smart sensors, refer to ni.com/teds.

Step 6. Attach the Terminal Blocks

SCXI Chassis or PXI/SCXI Combination Chassis

If you installed direct-connect modules, skip to *Step 7. Install the Cable Adapter*.

Attach the terminal blocks to the front of the modules. Refer to `ni.com/products` to determine valid terminal block and module combinations. If you are using a TBX terminal block, refer to its guide.
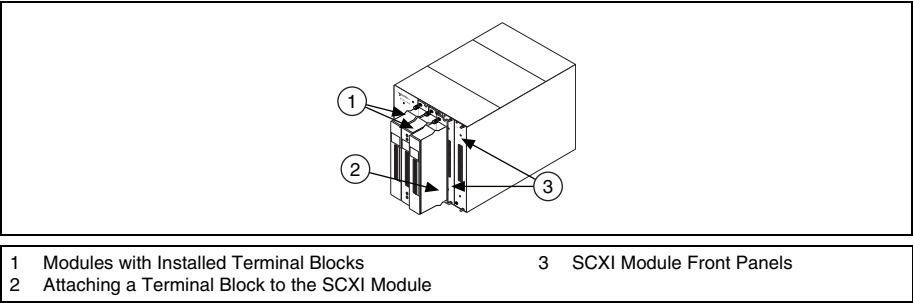

| 1 | Modules with Installed Terminal Blocks | 3 | SCXI Module Front Panels |
| 2 | Attaching a Terminal Block to the SCXI Module | | |

Figure 9. Attaching Terminal Blocks

Step 7. Install the Cable Adapter

Single-Chassis System

If you installed an SCXI USB module, such as the SCXI-1600, or are using a PXI/SCXI combination chassis, skip to *Step 9. Power On the SCXI Chassis*.

1. Identify the appropriate SCXI module to connect to the cable adapter, such as the SCXI-1349. If there is an analog input module with simultaneous sampling capability in the chassis, you must connect that module to the cable assembly, or an error message appears each time you run your application.

   • If all modules are in multiplexed mode, determine which of the modules occurs first in the following list, and attach the cable adapter to it:

SCXI-1520, SCXI-1530, SCXI-1531, SCXI-1540, SCXI-1140
SCXI-1521/B, SCXI-1112, SCXI-1102/B/C, SCXI-1104/C, SCXI-1125, SCXI-1126, SCXI-1141, SCXI-1142, SCXI-1143, SCXI-1581
SCXI-1120/D, SCXI-1121, SCXI-1100, SCXI-1122
SCXI-1124, SCXI-116x

   • If your system has both parallel and multiplexed modules, select the multiplexed controller from the previous list, and attach the cable adapter to it.

- If all modules are in parallel mode, attach a cable adapter to each module. The following modules can run in parallel mode:

> SCXI-1120/D, SCXI-1121, SCXI-1125, SCXI-1126, SCXI-1140, SCXI-1141, SCXI-1142, SCXI-1143, SCXI-1520, SCXI-1530, SCXI-1531

2. Insert the 50-pin female connection on the rear of the cable adapter into the 50-pin male connector on the rear of the appropriate SCXI module.

⚠ **Caution** Do *not* force the adapter if there is resistance. Forcing the adapter can bend pins.

3. Fasten the adapter to the rear of the SCXI chassis with the screws provided with the SCXI-1349.
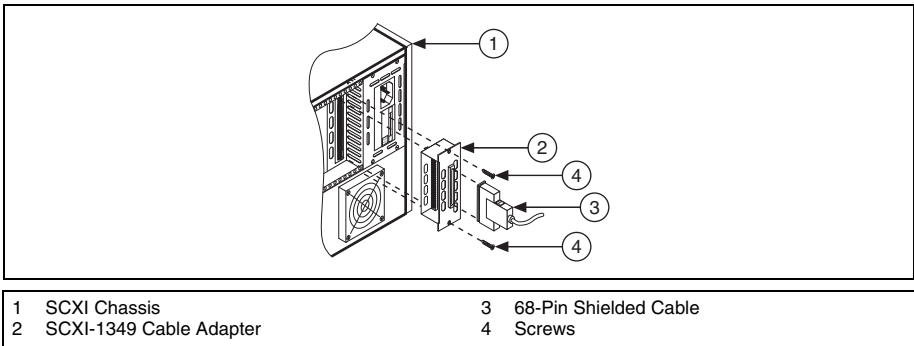

1	SCXI Chassis	3	68-Pin Shielded Cable
2	SCXI-1349 Cable Adapter	4	Screws

Figure 10. Installing the Cable Adapter

Multichassis System

The SCXI-1346 covers the rear connector of two modules. When viewing the chassis from the rear, the module to the right of the module directly connected to the SCXI-1346 cannot have an external cable inserted into its rear 50-pin connector.

SCXI-1000 chassis through revision D do not have address jumpers or switches and respond to any address, but you cannot use them in multichassis systems. Revision E chassis use jumpers on Slot 0 for chassis addressing. Revision F and later chassis use a DIP switch for chassis addressing.

SCXI-1000DC chassis through revision C do not have address jumpers or switches and respond to any address, but you cannot use them in multichassis systems. Revision D and later chassis use jumpers on Slot 0 for chassis addressing.

SCXI-1001 chassis through revision D use jumpers on Slot 0 for chassis addressing. Revision E and later chassis use a DIP switch for chassis addressing.

To connect the multichassis system, you must use one SCXI-1346 multichassis adapter for every chassis in the chain except the chassis furthest from the DAQ communicating device. The last chassis uses the SCXI-1349 cable adapter.

1. Identify the appropriate SCXI module to connect to the cable adapter. Refer to step 1 of the previous *Single-Chassis System* section to determine the appropriate module.

2. Insert the 50-pin female connection on the rear of the cable adapter into the 50-pin male connector on the rear of the appropriate SCXI module.

3. Fasten the adapter to the rear of the SCXI chassis with the screws provided with the SCXI-1346.

4. Repeat steps 1 through 3 for each SCXI chassis in the system, excluding the last SCXI chassis in the chain.
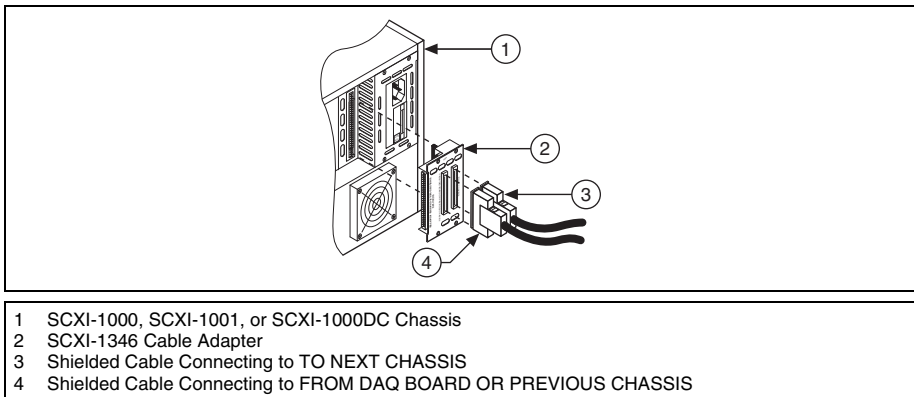

1	SCXI-1000, SCXI-1001, or SCXI-1000DC Chassis
2	SCXI-1346 Cable Adapter
3	Shielded Cable Connecting to TO NEXT CHASSIS
4	Shielded Cable Connecting to FROM DAQ BOARD OR PREVIOUS CHASSIS

Figure 11. SCXI-1346 Cable Assembly

5. Install the SCXI-1349 cable adapter into the last SCXI chassis in the chain. Refer to step 1 of the previous *Single-Chassis System* section for instructions on installing the SCXI-1349.

Step 8. Connect the Modules to the DAQ Device

Single-Chassis System

If you installed modules in a PXI/SCXI combination chassis, the PXI backplane of the chassis connects the modules and DAQ device.

If you are using an SCXI chassis, complete the following steps:

1. Connect one end of the 68-pin shielded cable to the SCXI-1349.

2. Connect the other end of the cable to the DAQ device. For M Series devices, connect the cable to connector 0.

If you are running modules in parallel mode, repeat the steps for each module and DAQ device pair.

Multichassis System

1. Connect one end of a 68-pin shielded cable to the DAQ communicating device.

2. Connect the other end of the cable to the SCXI-1346 in chassis ID *n* labeled *FROM DAQ BOARD OR PREVIOUS CHASSIS*.

3. Connect a 68-pin shielded cable to the SCXI-1346 in chassis *n* labeled *TO NEXT CHASSIS*.

4. Connect the other end of the cable to the SCXI-1346 in chassis ID *n+1* labeled *FROM DAQ BOARD OR PREVIOUS CHASSIS*.

5. Repeat steps 3 and 4 for the remaining chassis until you reach the last chassis.

6. Connect the 68-pin shielded cable to the next to the last chassis in the slot labeled *TO NEXT CHASSIS*.

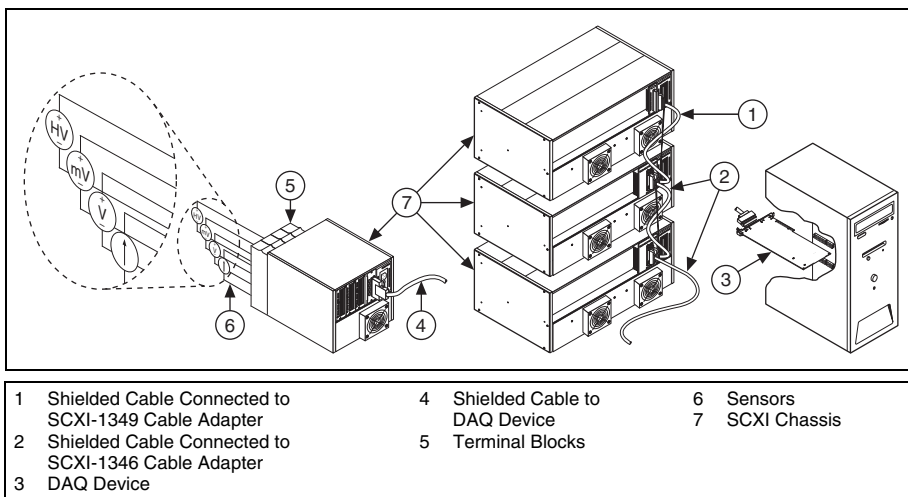7. Connect the other end of the cable to the SCXI-1349 in the last chassis.

1	Shielded Cable Connected to SCXI-1349 Cable Adapter	4	Shielded Cable to DAQ Device	6	Sensors
2	Shielded Cable Connected to SCXI-1346 Cable Adapter	5	Terminal Blocks	7	SCXI Chassis
3	DAQ Device				

Figure 12. Completed SCXI System

Step 9. Power On the SCXI Chassis

If you are using an SCXI chassis, the chassis power switch is shown in Figure 3. If you are using a PXI/SCXI combination chassis, the PXI and chassis power switches are shown in Figure 4.

When the controller recognizes a USB device such as an SCXI-1600 module, the LED on the module front panel blinks or lights up. Refer to the device documentation for LED pattern descriptions and troubleshooting information.

Windows Device Recognition

Windows versions earlier than Windows Vista recognize any newly installed device when the computer restarts. Vista installs device software automatically. If the Found New Hardware wizard opens, **Install the software automatically** as recommended for each device.

NI Device Monitor

After Windows detects newly installed NI USB devices, NI Device Monitor runs automatically at startup.

Make sure the NI Device Monitor icon, shown at left, is visible in the taskbar notification area. Otherwise, the NI Device Monitor does not open. To turn the NI Device Monitor on, unplug your device, restart NI Device Monitor by selecting **Start»All Programs»National Instruments» NI-DAQ»NI Device Monitor**, and plug in your device.

The NI Device Monitor prompts you to select from the following options. These options may vary, depending on the devices and software installed on your system.

- **Begin a Measurement with This Device Using NI LabVIEW SignalExpress**—Opens an NI-DAQmx step that uses the channels from your device in LabVIEW SignalExpress.

- **Begin an Application with This Device**—Launches LabVIEW. Choose this option if you have already configured your device in MAX.

- **Run Test Panels**—Launches MAX test panels for your device.

- **Configure and Test This Device**—Opens MAX.

- **Take No Action**—Recognizes your device but does not launch an application.

The following features are available by right-clicking the NI Device Monitor icon:

- **Run at Startup**—Runs NI Device Monitor at system startup (default).

- **Clear All Device Associations**—Select to clear all actions set by the **Always Take This Action** checkbox in the device auto-launch dialog box.

- **Close**—Turns off NI Device Monitor. To turn on NI Device Monitor, select **Start»All Programs»National Instruments»NI-DAQ»NI Device Monitor**.
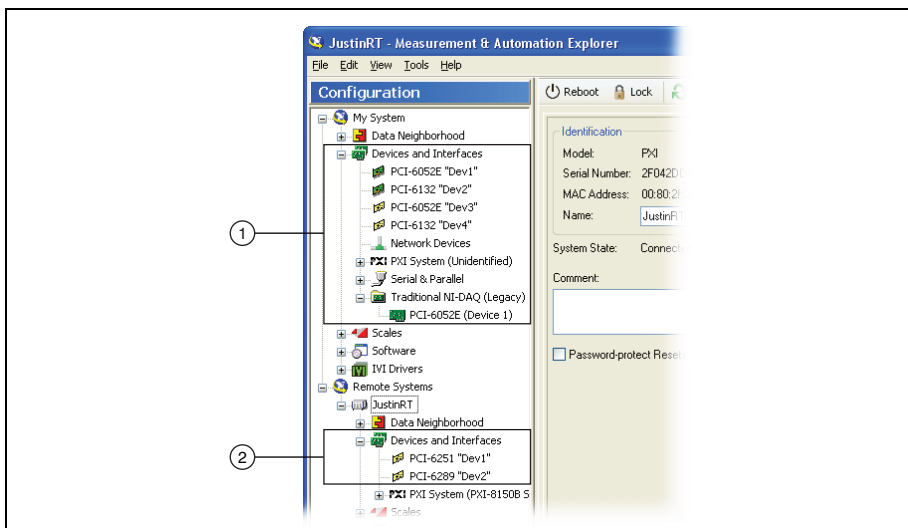
Step 10. Confirm That the Chassis and Modules Are Recognized

Complete the following steps:

1. Double-click the **Measurement & Automation** icon on the desktop to open MAX.

2. Expand **Devices and Interfaces** to confirm your device is detected. If you are using a remote RT target, expand **Remote Systems**, find and expand your target, and then expand **Devices and Interfaces**.

| 1 | When a device is supported by both Traditional NI-DAQ (Legacy) and NI-DAQmx and both are installed, the same device is listed with a different name under **My System»Devices and Interfaces**. |
| 2 | Only NI-DAQmx devices are listed under **Remote Systems»Devices and Interfaces**. |

If your device is not listed, press <F5> to refresh MAX. If the device is still not recognized, refer to `ni.com/support/daqmx`.

Step 11. Add the Chassis

Identify the PXI Controller

If you are using a PXI/SCXI combination chassis, complete the following steps to identify the embedded PXI controller installed in your chassis.

1.   Right-click **PXI System** and select **Identify As**. If you are using a remote RT target, expand **Remote Systems**, find and expand your target, and then right-click **PXI System**.
2.   Select the PXI controller from the list.

Add the SCXI Chassis

If you installed an SCXI USB module, such as the SCXI-1600, skip to *Step 12. Configure the Chassis and Modules*. The SCXI USB module and associated chassis appear automatically under **Devices and Interfaces**.

To add the chassis, complete the following steps.

1.   Right-click **Devices and Interfaces** and select **Create New**. If you are using a remote RT target, expand **Remote Systems**, find and expand your target, right-click **Devices and Interfaces**, and select **Create New**. The Create New window opens.
2.   Select the SCXI chassis.
3.   Click **Finish**.

Alternatively, you can right-click **Devices and Interfaces** and select your chassis from **New» NI-DAQmx SCXI Chassis**.

Step 12. Configure the Chassis and Modules

If you are configuring a chassis with an SCXI-1600, right-click the chassis, select **Properties**, and skip to step 6 of this section. The SCXI-1600 auto-detects all other modules.

Complete the following steps as shown in the figures. Numbered callouts in the figures correspond to the step numbers.

1. Select the DAQ device cabled to the communicating SCXI module from **Chassis Communicator**. If MAX detects only one DAQ device, the device is chosen by default, and this option is disabled.
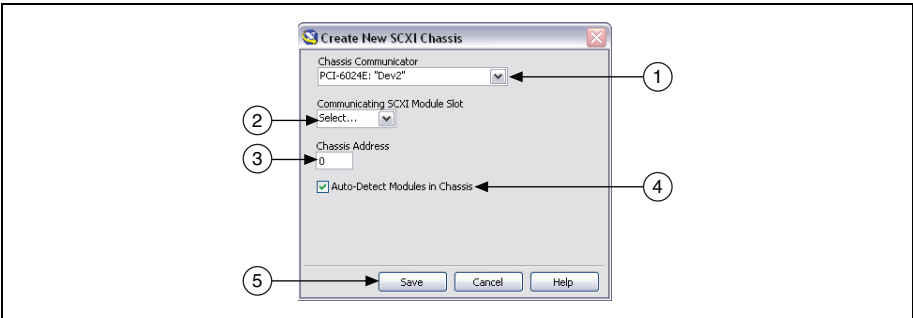
2. Select the module slot connected to the chassis communicator from **Communicating SCXI Module Slot**.

3. Enter the chassis address setting in **Chassis Address**. Make sure the setting matches the address setting on the SCXI chassis.

4. Select whether to auto-detect SCXI modules. If you do not auto-detect modules, MAX disables Communicating SCXI Module Slot.

5. Click **Save**. The SCXI Chassis Configuration window opens. The **Modules** tab is selected by default.
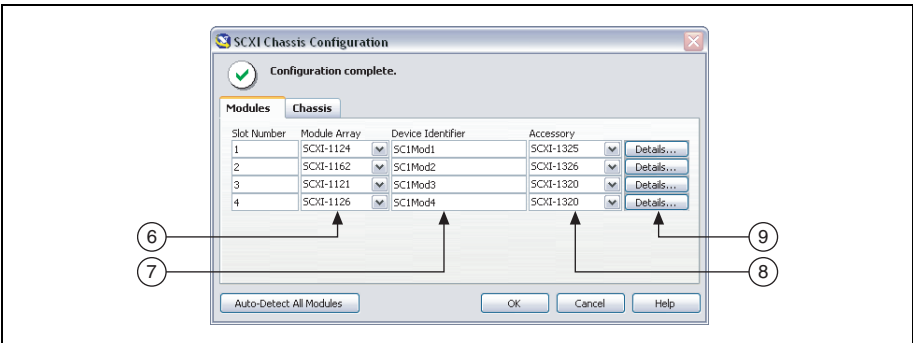
6. If you did not auto-detect modules, select an SCXI module from the **Module Array** listbox. Be sure to specify the module in the correct slot.

7. Click in the **Device Identifier** field and enter a unique alphanumeric ID to change the name of the SCXI module. MAX provides a default name for the Device Identifier.

8. If you are using a connected accessory, specify it in **Accessory**.

9. Click **Details**. The Details window opens.
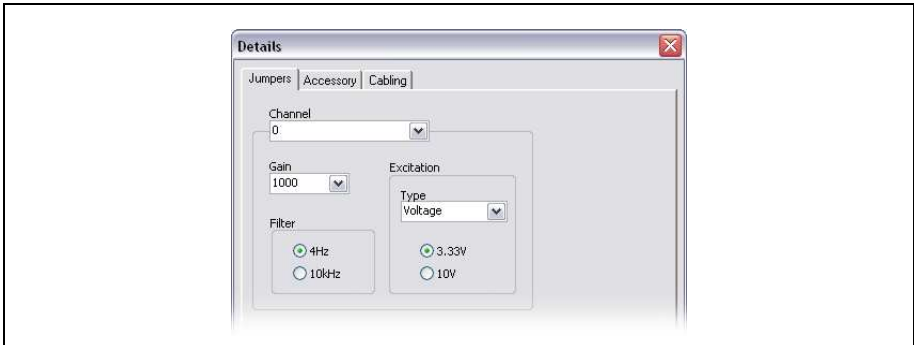
10. If you are configuring an SCXI module with jumper-selectable settings, click the **Jumpers** tab and enter the hardware-selected settings.

11. Click the **Accessory** tab. Select a compatible module accessory from the **Accessory** drop-down listbox.

12. Click **Configure** to edit accessory settings. Not all accessories have settings. Refer to the accessory documentation for more information.

13. If you are using an analog input module in parallel mode, in a multichassis configuration, or another special configuration, click the **Cabling** tab to adjust the settings for cabling. If you are using standard multiplexed mode operation, you do not need to change the settings.

14. Select the DAQ device connected to the SCXI module from the **Which device connects to this module?** list.

15. Select a DAQ device from the **Module Digitizer** list.

    • In multiplexed mode, you can select a different module to be the module digitizer. If the module is operating in multiplexed mode, make sure **Multiplexed** digitization mode is selected.

    • In parallel mode, the device connected to the module and the module digitizer are the same. If the module is operating in parallel mode, make sure **Parallel** digitization mode is selected.

16. Select a **Digitization Mode**.

    • For **Multiplexed** mode, select an index number from the Multichassis Daisy-Chain Index drop-down listbox.

    • For **Parallel** mode, select a range of channels from the Digitizer Channel drop-down listbox. If the cabled device only has one connector, the range of channels is selected automatically.

Note Some M Series devices have two connectors. You must select the range of channels that corresponds to the connector cabled to the module. Channels 0–7 correspond to connector 0. Channels 16–23 correspond to connector 1.

Caution If you remove a chassis from a daisy chain, reassign the index values for modules in other chassis. Reassigning values maintains consistency and prevents addressing removed chassis.

17. Click **OK** to accept the settings, close the Details window, and return to the SCXI Chassis Configuration window.

18. If you installed more than one module, repeat the configuration process from step 6 by selecting the appropriate SCXI module from the next **Module Array** listbox.

19. If you need to change any chassis settings, click the **Chassis** tab.
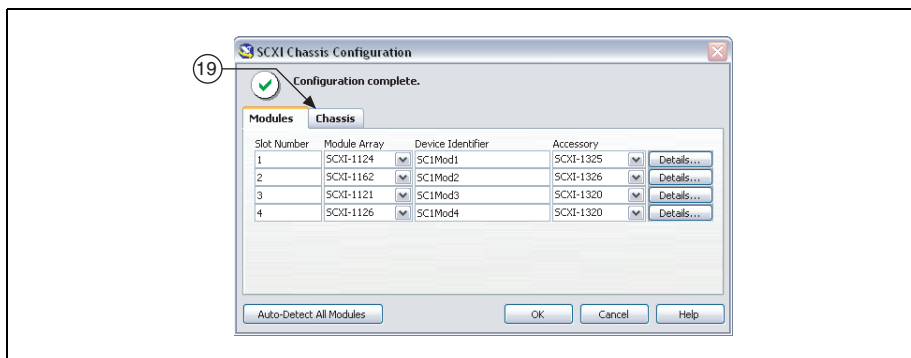
20. Click **OK** to accept and save the settings for this chassis.

A message at the top of the SCXI Chassis Configuration window displays the status of the configuration. You cannot save the chassis configuration if an error appears until you finish entering module information. If a warning appears, you can save the configuration, but NI recommends that you correct the source of the warning first.

21. For IEEE 1451.4 transducer electronic data sheet (TEDS) sensors and accessories, configure the device and add the accessory as described in these steps. To configure TEDS sensors cabled directly to a device, in MAX, right-click the module under **Devices and Interfaces** and select **Configure TEDS**. Click **Scan for HW TEDS** in the configuration window.

Add Modules to an Existing System

Complete the following steps:

1. Expand **Devices and Interfaces**. If you are using a remote RT target, expand **Remote Systems**, find and expand your target, and right-click **Devices and Interfaces**.

2. Click the chassis to display a list of slots.

3. Right-click an empty slot and select **Insert**. The SCXI Chassis Configuration window opens.

4. Click **Auto-Detect All Modules** and **Yes**.

5. Starting with step 6 from *Step 12. Configure the Chassis and Modules*, begin configuration of the module.

6. Test the chassis, as described in *Step 13. Test the Chassis*.

Step 13. Test the Chassis

1. Expand **Devices and Interfaces**.

2. Right-click the name of the chassis to test.

3. Select **Test** to verify that MAX recognizes the chassis. A message explains when the chassis is not recognized.

To test the successful installation of each module, right-click the module you want to test and click **Test Panels**. When the SCXI-1600 is tested, it verifies the entire SCXI system. The **Error Details** box displays any errors the test encounters. The module icon in the device tree is green if you have successfully installed the module. The SCXI system should now operate properly. Close the test panel.

Test NI-DAQmx applications without installing hardware using NI-DAQmx simulated SCXI chassis and modules, excluding the SCXI-1600. Refer to the *Measurement & Automation Explorer Help for NI-DAQmx* by selecting **Help»Help Topics»NI-DAQ»MAX Help for NI-DAQmx** for instructions about creating NI-DAQmx simulated devices and importing NI-DAQmx simulated device configurations to physical devices.

If the previous self-test did not verify that the chassis is properly configured and working, check the following to troubleshoot the SCXI configuration:

• If the **Verify SCXI Chassis** message box opens showing the SCXI chassis model number, **Chassis ID:** *x*, and one or more messages stating `Slot Number: x Configuration has module: SCXI-XXXX or 1600, hardware in chassis is: Empty`, take the following troubleshooting actions:

  – Make sure the SCXI chassis is powered on.

  – Make sure all SCXI modules are properly installed in the chassis as previously described.

  – Make sure the USB cable between the SCXI-1600 and the computer is properly connected.

• After checking the preceding items, retest the SCXI chassis.

• If the SCXI-1600 is not detected, complete the following steps:

  1. Press <F5> to refresh MAX.

  2. Verify that the SCXI-1600 *Ready* LED is bright green. If the LED is not bright green, power off the chassis, wait five seconds, and power on the chassis.

If these steps do not successfully configure the SCXI system, contact NI Technical Support at `ni.com/support` for assistance.

Step 14. Take an NI-DAQmx Measurement

This step applies only if you are programming your device using NI-DAQ or NI application software. Refer to *Take an NI-DAQmx Measurement* in the *DAQ Getting Started Guide* for information.

Use Your Task in an Application

Refer to the *DAQ Getting Started Guide* for information.

Troubleshooting

This section contains troubleshooting tips and answers to questions that SCXI users commonly ask NI technical support staff.

Tips

Before you contact NI, try the following troubleshooting tips:

- If you have problems installing your software, go to `ni.com/support/daqmx`. For hardware troubleshooting, go to `ni.com/support`, enter your device name, or go to `ni.com/kb`.
- Go to `ni.com/info` and enter `rddq8x` for a complete listing of NI-DAQmx documents and their locations.
- If you need to return your National Instruments hardware for repair or device calibration, refer to `ni.com/info` and enter the info code `rdsenn` to start the Return Merchandise Authorization (RMA) process.
- Make sure the SCXI chassis is powered on. If you are using a PXI/SCXI combination chassis, make sure the PXI chassis is powered on.
- Make sure you have installed the latest version of the NI-DAQ driver software that supports the devices in your system.
- If MAX cannot establish communication with the chassis, try one or all of the following:
    - Connect the DAQ device to a different module in the chassis.
    - Try a different cable assembly.
    - Try a different chassis.
    - Try a different DAQ device.
- Make sure that each SCXI chassis connected to a single DAQ device has a unique address.
- Make sure that the cable is securely connected to the chassis.
- Check for bent pins on the module, chassis backplane, and the device connector.
- If you have multiple SCXI modules, remove all the modules and test each module individually.
- If you are getting erroneous readings from the signal source, disconnect the signal source and short-circuit the input channel to ground. You should get a 0 V reading. Alternatively, connect a battery or other known signal source to the input channel.
- Run an example program to see if you still get erroneous results.

Frequently Asked Questions

My chassis is powered on, and my modules are configured for multiplexed mode, but I am not getting good data on any channel. What is causing this problem?

The SCXI chassis has backplane fuses, fused at 1.5 A on the SCXI-1000 chassis and at 4 A on the SCXI-1001 chassis. One or both of the fuses might be blown.

On the SCXI-1600, you can determine whether the fuses are blown by looking at the power LEDs. Both power LEDs on the SCXI-1600 and the LED on the chassis must be lit. If any of the LEDs are not lit, one or both fuses are blown.

On the SCXI-1000, the backplane fuses are located behind the fan. On the SCXI-1001, the backplane fuses are located behind the right-hand fan, near the power entry module, as viewed from the rear of the chassis.

Complete the following steps to examine and/or replace fuses.

1. Power off the chassis and remove the power cord.
2. Remove the four screws that secure the fan and filter to the rear of the chassis. When removing the last screw, be careful to hold the fan to avoid breaking the fan wires.
3. To determine whether a fuse is blown, connect an ohmmeter across the leads. If the reading is not approximately 0 Ω, replace the fuse. The fuse marked with a copper + on the backplane is for the positive analog supply, and the fuse marked with a copper – is for the negative analog supply.
4. Using long-nose pliers, carefully remove the fuse.
5. Take a new fuse and bend its leads so the component is 12.7 mm (0.5 in.) long—the dimension between the fuse sockets—and clip the leads to a length of 6.4 mm (0.25 in.).
6. Using long-nose pliers, insert the fuse into the socket holes.
7. Repeat steps 3 through 6, if necessary, for the other fuse.
8. Align the fan and filter with the fan holes, making sure that the label side of the fan is face down. Reinstall the four screws and make sure the assembly is secure.

Refer to the chassis user manuals for fuse specifications.

My chassis worked until I inadvertently removed and reinserted a module while the chassis was powered on. Now my chassis does not power on. What can I do?

SCXI modules are not hot-swappable, so you might have blown a chassis fuse. If replacing the fuse does not correct the problem, you might have damaged the digital bus circuitry or the SCXI module. Contact NI Technical Support at `ni.com/support` for assistance.

MAX does not recognize my chassis when I perform a test. What can I do?

Check the following items:

*   Verify the chassis is powered on.
*   Verify the chassis is correctly cabled to a DAQ device. If more than one DAQ device is installed in your PC, verify the device selected for **Chassis Communicator** is actually connected to the chassis.
*   Check backplane pins to determine if any were bent during installation of the modules.

- Verify correct placement and configuration of the modules. If you did not auto-detect modules, modules installed in the chassis may not be configured in software. Alternately, modules configured in software might not match the ones installed in the chassis.

All my channels float to a positive rail when I try to take a measurement. How do I correct the problem?

Make sure that the signal reference settings for the DAQ device match the SCXI module. For example, if the device is configured for NRSE, make sure that the cabled SCXI module shares the same configuration. Matching configurations can require a change to the jumper setting of the module.

I am using one of the following modules—SCXI-1100, SCXI-1102/B/C, SCXI-1112, or SCXI-1125—with one of the following terminal blocks—SCXI-1300, SCXI-1303, or SCXI-1328—to measure temperature with a thermocouple. How do I stop the thermocouple reading from fluctuating?

Average the temperature readings to minimize fluctuations. Also, ensure proper field wiring techniques. Most thermocouples are floating signal sources with low common-mode voltage; they require a path for bias currents from the SCXI module amplifier to ground. Make sure that you have grounded the negative lead of each floating thermocouple through a resistor. Refer to the terminal block documentation for impedance values. For grounded thermocouples, ensure that there is not a high common-mode voltage present on the thermocouple ground reference.

Worldwide Technical Support

For additional support, refer to `ni.com/support` or `ni.com/zone`. For further support information for signal conditioning products, refer to the *Technical Support Information* document packaged with your device.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs.

Specifications

Safety

These products meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

> **Note** For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326 (IEC 61326): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

> **Note** For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

> **Note** For EMC compliance, operate this product according to the documentation.

> **Note** For EMC compliance, operate this device with shielded cables.

CE Compliance $\,C\,E$

This product meets the essential requirements of applicable European Directives as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

> **Note** Refer to the product Declaration of Conformity (DoC) for any additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at `ni.com/environment`. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit `ni.com/environment/weee`.

电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)