GETTING STARTED GUIDE
NI High-Speed Digitizers

This document explains how to install, configure, and test NI high-speed digitizers, and how to begin acquiring data. This document applies to NI 5102, NI 5112, NI 5122/5124, NI 5620/5621, and NI 5911 digitizers.

For more information on features and programming, refer to the *NI High-Speed Digitizers Help* at **Start»Programs»National Instruments» NI-SCOPE»Documentation»NI High Speed Digitizers Help**. For NI high-speed digitizer specifications, refer to the specifications document included with your digitizer.

For the most current versions of documentation, visit ni.com/manuals. For the latest version of NI-SCOPE, visit ni.com/idnet.

Contents

NATIONAL INSTRUMENTS

Conventions

The following conventions are used in this manual:

»	The **»** symbol leads you through nested menu items and dialog box options to a final action. The sequence **File» Page Setup»Options** directs you to pull down the **File** menu, select the **Page Setup** item, and select **Options** from the last dialog box.
♦	The ♦ symbol indicates that the following text applies only to a specific product, a specific operating system, or a specific software version.
	This icon denotes a tip, which alerts you to advisory information.
	This icon denotes a note, which alerts you to important information.
	This icon denotes a caution, which advises you of precautions to take to avoid injury, data loss, or a system crash.
bold	Bold text denotes items that you must select or click in the software, such as menu items and dialog box options.
italic	Italic text denotes emphasis or a cross reference.

monospace	Text in this font denotes text or characters that you should enter from the keyboard, sections of code, programming examples, and syntax examples. This font is also used for disk drives, paths, directories, filenames, and extensions.
monospace italic	Italic text in this font denotes text that is a placeholder for a word or value that you must supply.

1. Verifying System Requirements

To use an NI high-speed digitizer and NI-SCOPE, your system must meet the listed *Minimum System Requirements* and must have one of the listed operating systems installed. For optimal performance, your system should meet the *Recommended System Requirements*. If you are developing applications, you need one of the listed *Application Development Environments* (ADEs) and its documentation.

Minimum System Requirements

- Processor: Pentium 200 MHz or equivalent
- RAM: 64 MB
- Microsoft Internet Explorer 5.5 or later
- Screen resolution of 640 × 480 with 256 colors—required for Scope Soft Front Panel (SFP)

Recommended System

- Processor: Pentium III/Celeron 600 MHz or equivalent
- RAM: 256 MB
- Microsoft Internet Explorer 5.5 or later
- Screen resolution of 640 × 480 with 256 colors—required for Scope SFP
- One of the following operating systems:
  - Windows 2000
  - Windows NT 4.0 Service Pack 6A
  - Windows XP

Application Development Environments

- LabVIEW 7.0 or later
- LabVIEW Real-Time Module 7.1 or later (NI 5122/5124 only)
- LabWindows™/CVI™ 6.0 or later
- Measurement Studio 6.0 or later
- Microsoft Visual C++ (MSVC) 6.0 or later
- Microsoft Visual Basic 6.0

Note If you use the Scope SFP to interactively control the digitizer, an ADE is not required. The Scope SFP is included on the NI-SCOPE CD.

2. Unpacking

NI high-speed digitizers are shipped in an antistatic bag to protect them from electrostatic discharge (ESD). Prior to removing the digitizer from the bag, touch the antistatic bag to a metal part of the chassis to remove any built up static charge.

Caution When handling the digitizer, ensure that you are grounded with a grounding strap or touching a grounded metal object. Handle the digitizer carefully to avoid touching any exposed pins or electronic circuitry.

Remove the digitizer from the package, remove the packing foam and rubber screw covers (PXI devices only), and inspect the digitizer for loose components or any sign of damage. Notify NI if the digitizer appears damaged in any way. Do *not* install a damaged digitizer into your computer or chassis.

Store the digitizer in the antistatic bag when not in use.

3. Verifying the Kit Contents

The following items are included in the NI high-speed digitizer kit:

❑ One of the following NI high-speed digitizers:

- – NI PXI/PCI/USB/PCMCIA/AT-5102 (NI 5102)
- – NI PXI/PCI-5112 (NI 5112)
- – NI PXI/PCI-5122/5124 (NI 5122/5124)
- – NI PXI-5620/5621 (NI 5620/5621)
- – NI PCI-5911 (NI 5911)

❏ NI-SCOPE instrument driver DVD case, which contains the following:

– NI-SCOPE driver software CD

– *NI-SCOPE Quick Reference*

– *NI High-Speed Digitizers Getting Started Guide*

❏ Other included items:

– The specifications document for the digitizer

– *Read Me First: Safety and Radio-Frequency Interference*

– (NI 5122/5124 only)—*Maintain Forced-Air Cooling Note to Users*

– (NI 5122/5124: 32 MB, 256 MB, and 512 MB memory options only)—NI Spectral Measurements Toolkit CD

Other Required Items

In addition to the items contained in the kit, you need the following:

❏ 1/8 in. flat-head screwdriver

For PXI Devices

❏ A PXI chassis, a PXI/SCXI combination chassis, or a PXI/CompactPCI chassis—with a controller and the chassis documentation

Note If your application uses NI-TClk synchronization, you must use a PXI chassis. You cannot use a CompactPCI chassis that is not also a PXI chassis. Refer to **NI High-Speed Digitizers Help» Programming»NI-TClk Synchronization Help** for more information.

For PCI Devices

❏ A desktop computer and its documentation

4. Installing the Software

Caution Make sure you install the software *before* you install the hardware.

To install the software, complete the following steps:

1. If you are using an ADE or third-party tool, install it now if you have not already done so.

2. Install NI-SCOPE by inserting the NI-SCOPE CD and clicking **Install Software** in the window that appears.

Note If the installation window does not appear automatically, navigate to the CD drive and double-click `setup.exe`.

3. If you are using a system running the LabVIEW Real-Time Module, restart. Download NI-SCOPE to the target using Measurement & Automation Explorer (MAX). For more information, refer to the *Measurement & Automation Explorer Remote Systems Help* by selecting **Help»Help Topics»Remote Systems** in MAX.

5. Installing the Hardware

This section describes how to install hardware for the following platforms: PXI, PCI, PCMCIA, USB, and AT.

Note For all platforms, you must install the software *before* you install the hardware.

To prevent damage to the device caused by ESD or contamination, handle the device using the edges or the metal bracket. Refer to the *Read Me First: Safety and Radio Frequency Interference* for more information.

Caution You *must* power off and unplug your PC or chassis before installing hardware.

Installing PXI Devices

NI PXI devices are sensitive instruments that should be handled carefully. Do not expose the device to temperatures or humidity beyond the rated maximums. Keep the device free of dust by cleaning with compressed air only. Do not clean the device with any solvents or liquids.

You can install PXI devices in any PXI slot marked with a peripheral slot compatibility glyph (a circle containing the slot number) by completing the following steps:

1. Power off and unplug the PXI chassis before installing a PXI device.
2. If the PXI chassis has multiple fan speed settings, ensure that the fans are set to high.
3. Position the PXI chassis so that inlet and outlet vents are not obstructed. For more information, refer to the chassis documentation.
4. Ensure that the ejector handle is in the unlatched (downward) position.
5. Holding the device by the ejector handle, slide it into an empty slot, ensuring that the base card (the card on the left when looking at the front of the device) engages with the card guides in the chassis, as shown in Figure 1.
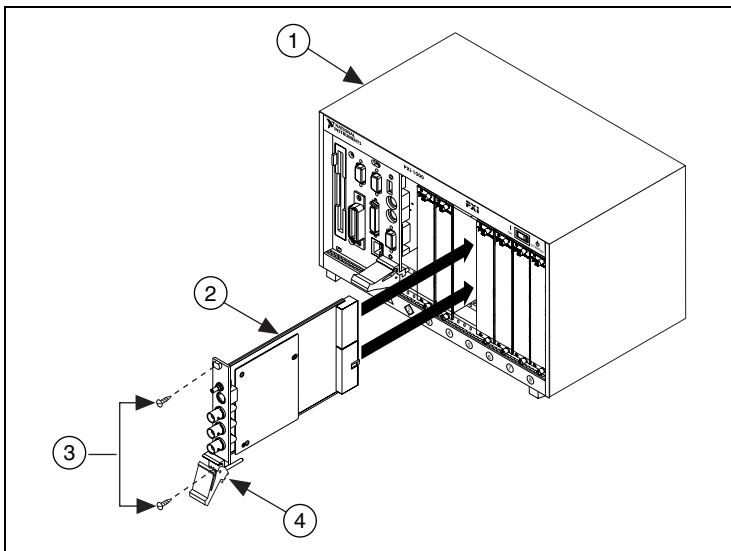
1	PXI Chassis	3	Captive Screws
2	NI PXI Device	4	Ejector Handle

Figure 1. PXI Installation

6. Slide the device completely into the chassis and latch by pulling up on the ejector handle.

7. Tighten the captive screws at the top and bottom of the device front panel. Performance may suffer if both screws are not tightened properly.

8. Verify that the PXI chassis fans are operable and free of dust and other contaminants restricting airflow.

9. Before operating the device, cover all empty PXI slots using blank PXI filler panels.

10. Plug in and power on the PXI chassis.

NI PXI-5122/5124 Cooling Considerations

⚠️ **Caution** When installing hardware, follow the guidelines in the *Maintain Forced-Air Cooling Note to Users* that shipped with the device to ensure that the device is cooled effectively. If the device overheats, it shuts down and Measurement & Automation Explorer (MAX) or NI-SCOPE notifies you with an error message.

To re-enable your device after thermal shutdown, you must perform a hard reset using *one* of the following methods:

• Power down the computer or chassis that contains the digitizer.

OR

• Call `niScope_ResetDevice` or perform a device reset in MAX. For more information on resetting a device in MAX, go to **Help» Help Topics»NI-DAQmx»Measurement & Automation Explorer Help NI-DAQmx** within MAX.

Review the guidelines in the *Maintain Forced-Air Cooling Note to Users* and make any necessary adjustments. The thermal shutdown error is reported until the device is successfully reset.

Uninstalling PXI Devices

When removing PXI devices from the chassis, ensure that you are grounded with a grounding strap or are touching a grounded metal surface. To avoid ESD, do *not* touch the exposed pins of the PXI connector or any exposed circuitry on the device. When not in use, PXI devices should be stored in the antistatic bag to avoid damage.

⚠️ **Caution** During operation, the metal surfaces of PXI devices may become hot. Be careful when removing the device from the chassis or when moving it to a different peripheral slot. When removing the device, hold it by the ejector handle and front panel *only*.

Installing PCI Devices

To install a PCI device (NI PCI-5102, NI PCI-5112, NI PCI-5122, NI PCI-5124, or NI PCI-5911), complete the following steps:

1. Power off and unplug the PC.
2. Remove the PC cover.
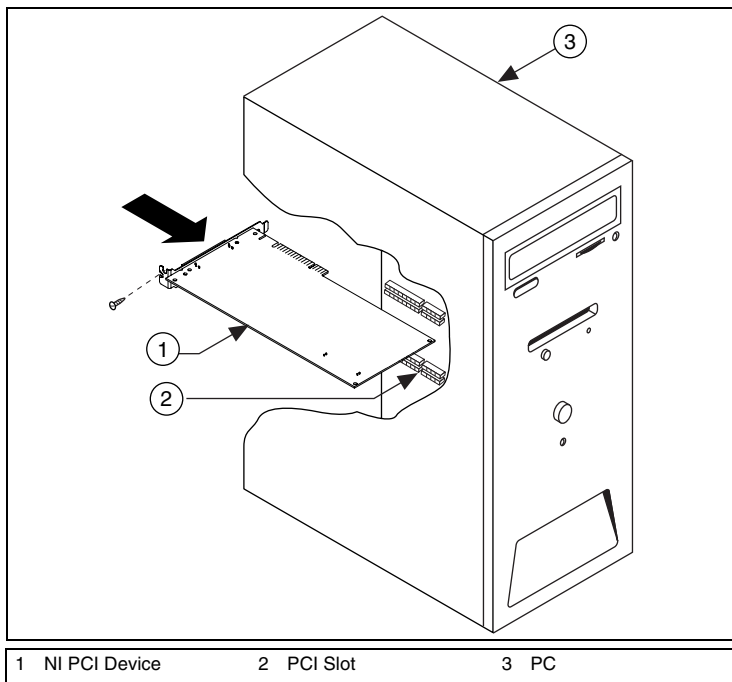3. Insert the device into an open PCI slot, as shown in Figure 2.

| 1 NI PCI Device | 2 PCI Slot | 3 PC |

Figure 2. PCI Installation

> **Tip** To maximize airflow and extend the life of the device, leave any adjacent PCI slots empty.

♦ NI PCI-5911

When you install the NI PCI-5911, verify that the BNC connector is centered in the metal frame of the chassis, as shown in Figure 3. Signal degradation can occur if the outer shell of the BNC connector touches the computer chassis. Also, to minimize noise, do *not* allow the shell of the BNC connector to touch or lie near the metal on a PC.
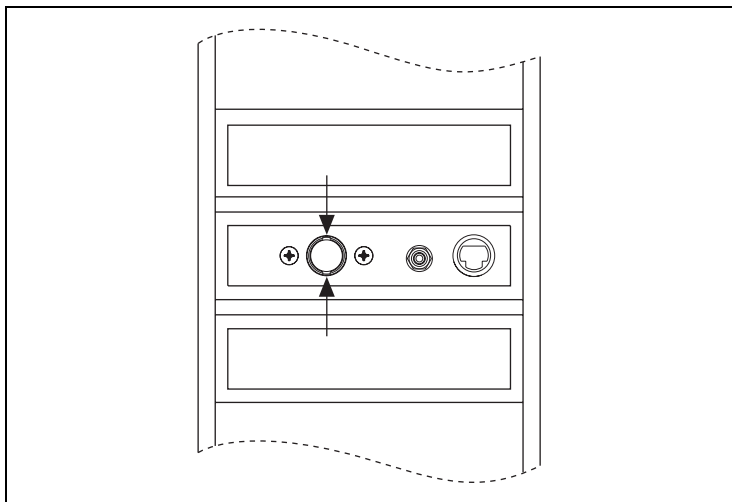
Figure 3. NI 5911 Installation

Multiple NI 5911 devices in the same computer can raise operating temperatures beyond specification and produce imprecise data. NI strongly recommends leaving an empty PCI slot between multiple NI 5911 devices or adding a fan.

4. Secure the device with a screw.

⚠️ **Caution** It is important to completely screw the device into the PCI slot both for mechanical stability and to create a solid ground connection. Improperly secured devices may affect the accuracy of device specifications.

(NI PCI-5122/5124 only) Some computer manufacturers use a securing lever made of plastic to secure PCI devices; such a lever is unacceptable and *must* be removed. Use the screw provided in the kit to screw down the NI PCI-5122/5124. Otherwise, you must use a different computer chassis.

5. Replace the PC cover.
6. Plug in and power on the PC.

7. (NI PCI-5122/5124 only) Verify that spread-spectrum clocking is enabled in the PC BIOS. Refer to the PC user documentation for information about how to verify this setting.

⚠️ **Caution** Spread-spectrum clocking varies the clock signal to spread the timing clock signal over a small frequency range. Disabling spread-spectrum clocking may affect the accuracy of the NI PCI-5122/5124 specifications.

NI PCI-5122/5124 Cooling Considerations

⚠️ **Caution** When installing hardware, follow the guidelines in the *Maintain Forced-Air Cooling Note to Users* that shipped with the device to ensure that the device is cooled effectively. If the device overheats, it shuts down and MAX or NI-SCOPE notifies you with an error message.

To re-enable your device after thermal shutdown, you must perform a hard reset using *one* of the following methods:

• Power down the computer or chassis that contains the digitizer.

OR

• Call niScope_ResetDevice or perform a device reset in MAX. For more information on resetting a device in MAX, go to **Help»Help Topics»NI-DAQmx»Measurement & Automation Explorer Help NI-DAQmx** within MAX.

Review the guidelines in the *Maintain Forced-Air Cooling Note to Users* and make any necessary adjustments. The thermal shutdown error is reported until the device is successfully reset.

Installing PCMCIA Devices

To install the NI PCMCIA-5102, complete the following steps:

1. Power off and unplug the laptop.
2. Install the digitizer as shown in Figure 4.
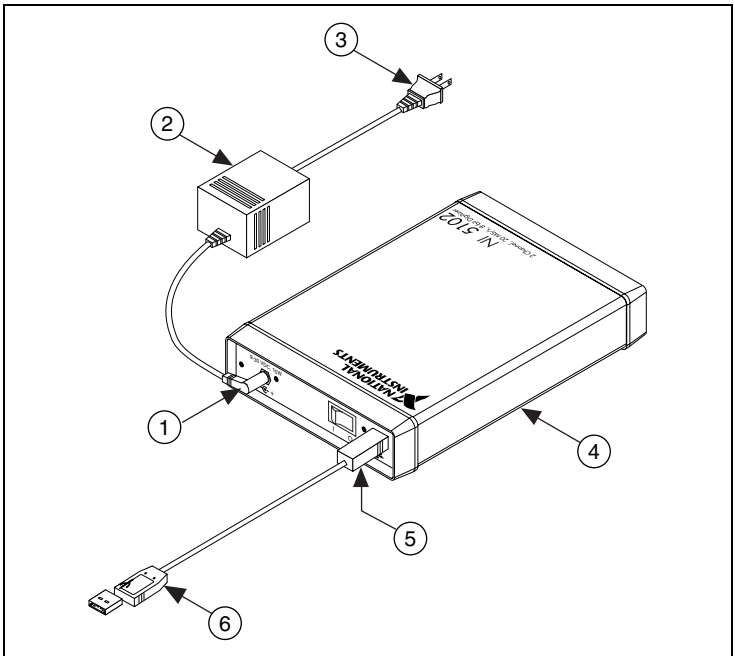3. Power on your laptop.
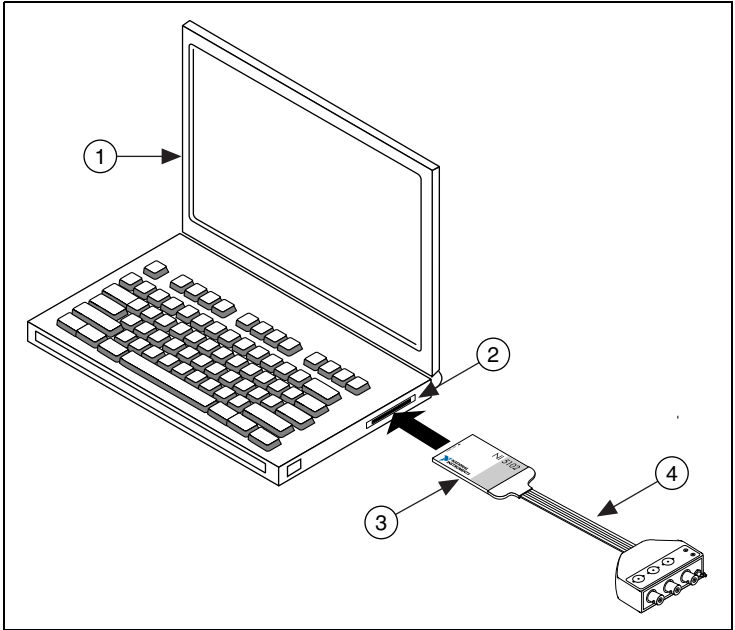
1	Laptop	3	PSH32-C5
2	PCMCIA Socket	4	NI PCMCIA-5102

Figure 4. PCMCIA Installation

Installing USB Devices

To install the NI USB-5102, complete the following steps:

1. Power down the PC and the NI USB-5102.
2. Connect the USB cable to the PC and the digitizer, as shown in Figure 5.

1	Power Jack	4	NI USB-5102
2	AC/DC Converter	5	USB Connector (Downstream)
3	AC/DC Plug	6	USB Connector to PC (Upstream)

Figure 5. USB Installation

3. Plug the power cord into the power jack on the NI USB-5102.
4. Plug the AC/DC plug on the power cord into the power source.
5. Power on the computer.

Installing AT Devices

To install the NI AT-5102, complete the following steps:

1. Power off and unplug the PC.
2. Remove the PC cover.
3. Insert the NI AT-5102 into an open ISA slot as shown in Figure 6.
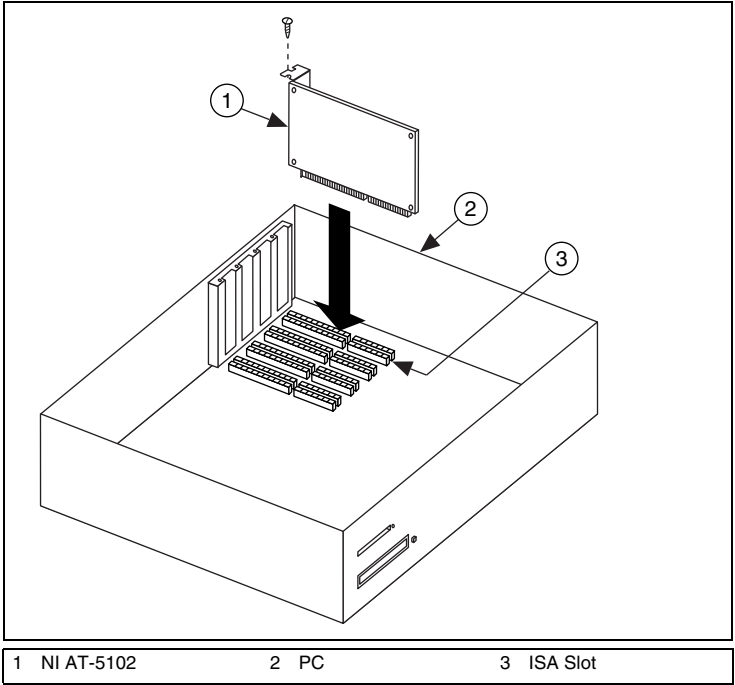

1 NI AT-5102	2 PC	3 ISA Slot

Figure 6. NI AT-5102 Installation

4. Secure the device with a screw.
5. Replace the PC cover.
6. Plug in and power on the PC.

6. Configuring and Testing in MAX

1. Launch MAX.

2. Expand **Devices and Interfaces** to see the list of installed devices. If you are using a digitizer with the LabVIEW Real-Time Module, expand **Remote Systems**. Find your target IP address or name, expand it, and then expand **Devices and Interfaces**.

   The configuration tree lists both Traditional NI-DAQ devices and NI-DAQmx devices, as shown in Figure 7.
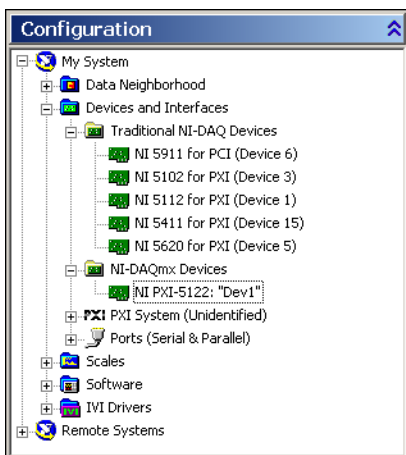

Figure 7. MAX Configuration Tree

> **Note** If your device is not listed, press <F5> to refresh. If the device is still not listed, repeat the steps in section *5. Installing the Hardware*. For more information about using MAX, navigate to the help files available within MAX.

> **Tip** Refer to **Start»Programs»National Instruments» LabVIEW 7.*x*»Module Documents»Search the Real-Time Module Bookshelf** for more information about using the LabVIEW Real-Time Module.

3. Record the device number or device name assigned to the device. You need this number when programming your device.

   ♦ **Traditional NI-DAQ (NI 5102/5112/5620/5621/5911)**—Select the device to see its properties in the configuration view. The

device number appears in the Value column. When developing your application, the resource name for the device is `DAQ::n`, where `n` is the device number MAX assigned to your device. Devices configurable under Traditional NI-DAQ are not supported by LabVIEW Real-Time.

♦ **NI-DAQmx (NI 5122/5124)**—The assigned device name is appended to the device in its configuration tree label. For example, after installing the NI 5122/5124, the device configuration tree label may appear as `NI PXI-5122: "Dev1"`, where `Dev1` is the device name. When developing your application, the resource name is the device name assigned by MAX. Only the devices that appear under NI-DAQmx are supported by the LabVIEW Real-Time Module.

📝 **Note** To avoid modifying existing applications that use a Traditional NI-DAQ device number, change the assigned NI-DAQmx device name. To change an NI-DAQmx device name, right-click on the device, select **Rename**, and enter the Traditional NI-DAQ device number used in your application. For more information about device naming conventions, refer to the `niScope_init` function at **NI High-Speed Digitizers Help» Programming»NI-SCOPE Function Reference Help**.

4. Perform a self-test on the device to verify installation.

♦ **Traditional NI-DAQ**—Right-click the device, select **Properties**, and click **Test Resources**. Traditional NI-DAQ does not have test panels for LabVIEW Real-Time Series products.

♦ **NI-DAQmx**—Right-click the device and select **Self-Test**.

A dialog box appears and indicates whether the device has passed the test.

📝 **Note** If the device does not pass the test, repeat the instructions in section *5. Installing the Hardware*. If the device still does not pass the test, visit NI Technical Support at `ni.com/support`.

5. Run the test panels on the device to verify the signal.

a. Connect a signal to the digitizer, and select the appropriate parameters such as range, input limits, sample rate, and sample mode.

b. Access the test panel.

♦ **Traditional NI-DAQ**—Click **Run Test Panels** in the Properties window.

♦ **NI-DAQmx**—Right-click the device and select **Test Panels**.

Notes For both types of devices, you can enable triggering by clicking the **Advanced** button on the test panel.

All NI digitizers have self-calibration capabilities. You can access this feature for all NI digitizers programmatically with NI-SCOPE and your ADE, or you can use the Scope SFP. However, only the NI 5122/5124 can be self-calibrated using MAX.

6. Exit MAX when you have finished configuring and testing the device.

Setting Up NI-DAQmx Devices for Synchronization

Note The following step is required for any type of synchronization involving an NI-DAQmx device, including NI-TClk synchronization. For information about NI-TClk synchronization, refer to **NI High-Speed Digitizers Help» Programming»NI-TClk Synchronization Help**.

If you plan to share triggers and/or clocks for the purpose of synchronizing NI-DAQmx devices (for example, the NI 5122/5124), you must identify or configure certain components in MAX.

♦ For PXI devices, you must identify the PXI system controller by completing the following steps:

1. In the MAX configuration tree,

   a. Right-click **PXI System»Identify As**.

   b. Select your controller from the list. For example, select **External PC** if you are using a MXI-3 controller in an external PC.

2. Expand the PXI System tree and right-click the name of the chassis you are using.

♦ For PCI devices, you must configure the RTSI cable by completing the following steps:

1. Connect a RTSI cable between the PCI devices to physically share triggers and/or clocks.

2. In the MAX configuration tree,

   a. Right-click **NI-DAQmx Devices**.

   b. Select **Create New NI-DAQmx Device»RTSI Cable**.

   c. Right-click the RTSI cable, then select the device to add to the RTSI cable.

7. Acquiring Data

You can control your digitizer interactively with the Scope SFP or programmatically with an ADE using the supplied NI-SCOPE Interchangeable Virtual Instrument (IVI) driver. The two options for controlling your digitizer are described in the following sections.

Acquiring Data Interactively

Launch the Scope Soft Front Panel from **Start»Programs»National Instruments»NI-SCOPE»NI-SCOPE Soft Front Panel**. The Scope SFP provides context-sensitive help for using its controls. You also can find more information in the *Scope Soft Front Panel Help.*

Acquiring Data Programmatically

You can use NI-SCOPE to begin programming the digitizer in your ADE. Programming examples for using NI-SCOPE with LabVIEW, CVI, and C are located at **Start»Programs»National Instruments»NI-SCOPE» Examples**.

For more information about programming with NI-SCOPE, refer to the *NI High-Speed Digitizers Help* at **Start»Programs»National Instruments» NI-SCOPE»Documentation**.

8. Making Your First Measurement

To begin making measurements with an NI high-speed digitizer, complete the following steps:

1. Open your ADE.
2. Navigate to the example programs for your ADE and open one of the examples. If you are not sure which example to choose, begin with the Getting Started example.
3. Enter the correct string into the resource name control or parameter. This string varies depending on whether the digitizer is a Traditional NI-DAQ device or an NI-DAQmx device. You can refer to any of the following resources for more information about device names.
   - Section *6. Configuring and Testing in MAX*
   - **NI-SCOPE VI Reference Help»niScope Initialize**
   - **NI-SCOPE C Function Reference Help»niScope_init**
4. Adjust the parameters, if necessary, to capture the input signal that you want to acquire.

5. Connect the signal that you want to acquire to one of the input channels of the digitizer. Refer to the *Appendix A: Front Panels* section for the appropriate connection.

6. Run the example program.

Appendix A: Front Panels

This appendix describes digitizer front panels and signal connections.

NI 5102 Front Panels

The NI 5102 is available for five platforms: PXI, PCI, AT, PCMCIA, and USB. This section describes the front panels and signal connections for each type of NI 5102 digitizer.

♦ **NI PXI-5102**—Figure 8 shows the NI PXI-5102 front panel. Refer to Figure 9 for the AUX connector pinout information.
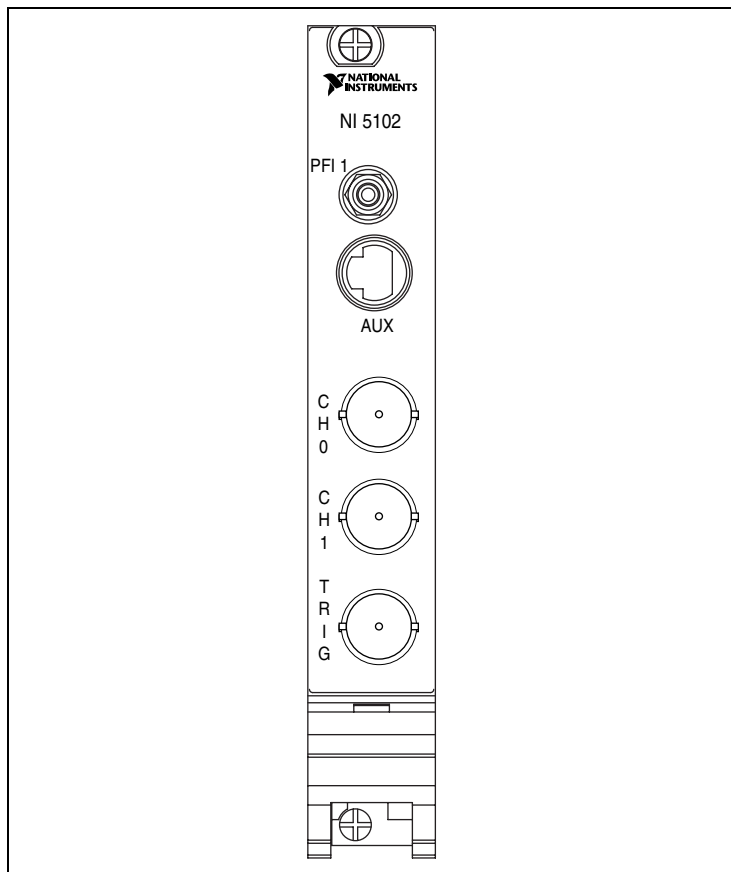

Figure 8. NI PXI-5102 Front Panel

Table 1 describes the signal connections for the NI PXI-5102.

Table 1. NI PXI-5102 Front Panel Connector Signals

Connector	Description	Function
CH 0, CH 1	Standard BNC female connector	Analog input connection; digitizes data and triggers acquisitions.
TRIG	Standard BNC female connector	External analog trigger connection; signals on the TRIG connector cannot be digitized.
PFI 1	Standard SMB jack connector	Multipurpose digital timing and triggering signal.
AUX	9-pin mini-circular DIN connector	Access to PFI 2 (with optional cable). Refer to Figure 9 for pinout information.

Figure 9 shows the pin assignments for the 9-pin DIN connector on the NI PXI-5102.
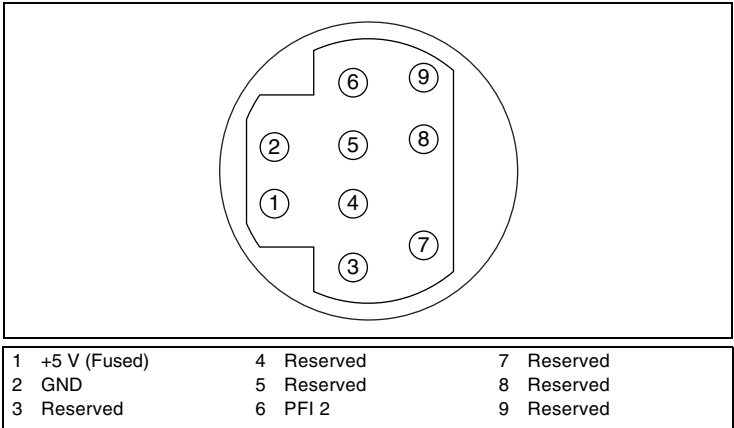

1	+5 V (Fused)	4	Reserved	7	Reserved
2	GND	5	Reserved	8	Reserved
3	Reserved	6	PFI 2	9	Reserved

Figure 9. 9-Pin DIN Connector for NI PXI-5102, NI PXI/PCI-5112, and NI PCI-5911

Note The +5 V signal is fused at 1.1 A. However, NI recommends limiting the current from this pin to 30 mA. The fuse is self-resetting.

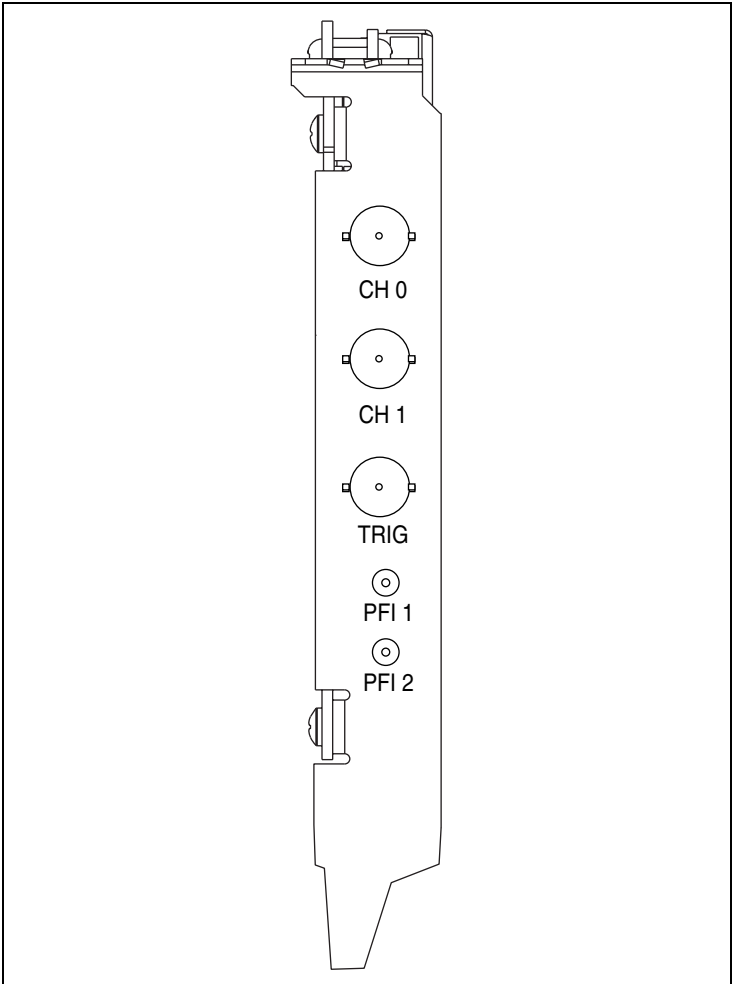♦ **NI PCI/AT-5102 Front Panel**—Figure 10 shows the NI PCI/AT-5102 front panel.

Figure 10. NI PCI/AT-5102 Front Panel

♦ **NI PCMCIA-5102 Front Panel**—Figure 11 shows the NI PCMCIA-5102 front panel. Use the cable assembly provided with your digitizer for the connections on the NI PCMCIA-5102.
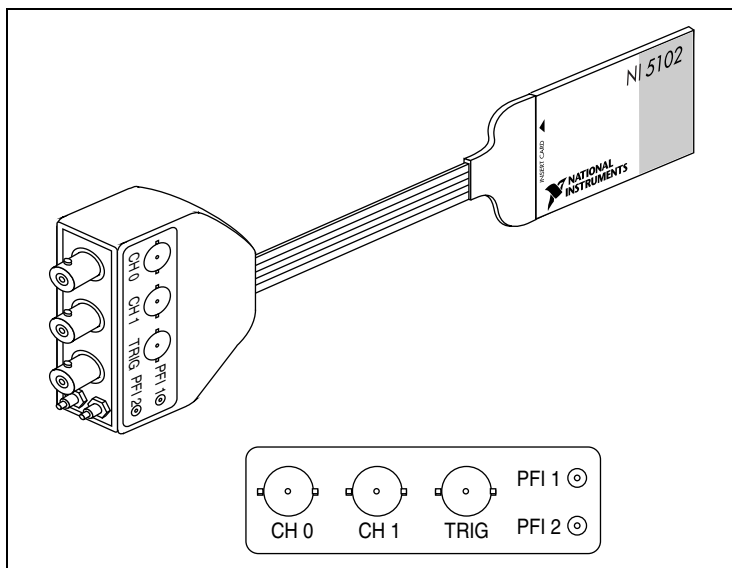

Figure 11. NI PCMCIA-5102 Front Panel

♦ **NI USB-5102 Front Panel**—Figure 12 shows the NI USB-5102 front panel.
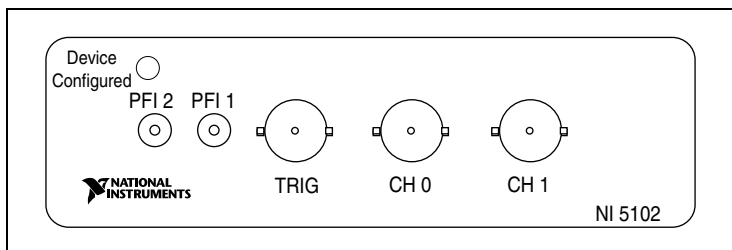

Figure 12. NI USB-5102 Front Panel

Table 2 describes the signal connections for all NI 5102 digitizer buses except PXI.

Table 2. NI PCI/AT/PCMCIA/USB-5102 Front Panel Connector Signals

Connector	Description	Function
CH 0, CH 1	Standard BNC female connector	Analog input connection; digitizes data and triggers acquisitions.
TRIG	Standard BNC female connector	External analog trigger connection; signals on the TRIG connector cannot be digitized.
PFI 1	Standard SMB jack connector	Multipurpose digital timing and triggering signal.
PFI 2	Standard SMB jack connector	Multipurpose digital timing and triggering signal.

Note When used as inputs, NI 5102 PFI lines can trigger an acquisition and/or allow an external sample clock connection.

NI 5112 Front Panels

The NI 5112 is available for both PXI and PCI buses. Figure 13 shows the NI PXI-5112 and the NI PCI-5112 front panels. Refer to Figure 9 for the AUX connector pinout information.
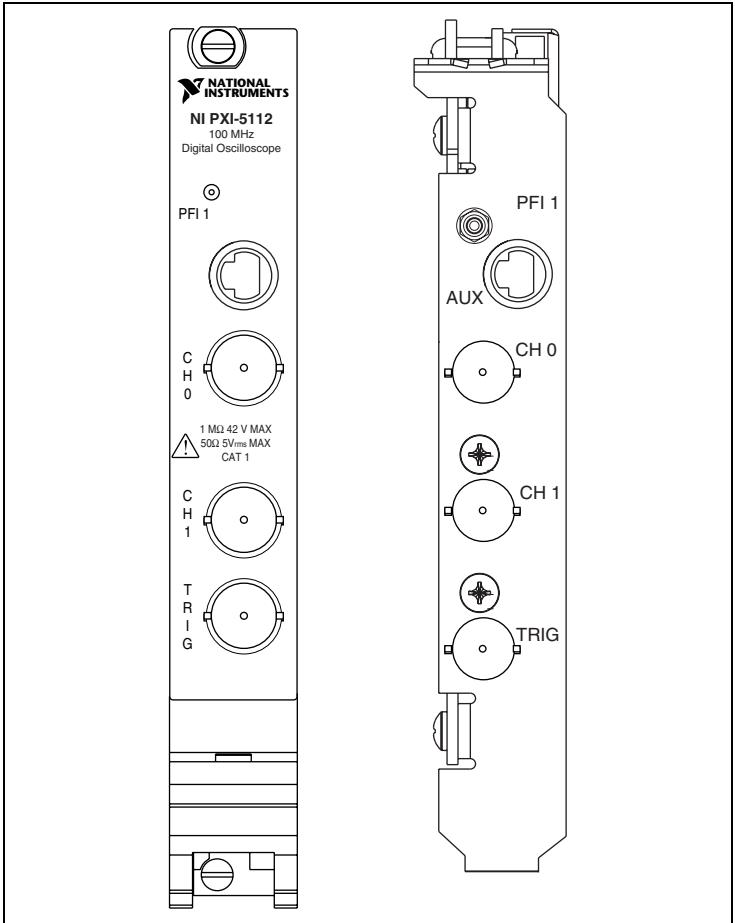

Figure 13. NI PXI/PCI-5112 Front Panels

Table 3 describes the signal connections on the NI PXI/PCI-5112.

Table 3. NI PXI/PCI-5112 Front Panel Connector Signals

Connector	Description	Function
CH 0, CH 1	Standard BNC female connector	Analog input connection; digitizes data and triggers acquisitions.
TRIG	Standard BNC female connector	External analog trigger connection; signals on the TRIG connector cannot be digitized.
PFI 1	Standard SMB jack connector	Multipurpose digital timing and triggering signal.
AUX	9-pin mini-circular DIN connector	Access to PFI 2 (with optional cable). Refer to Figure 9 for pinout information.

NI 5122/5124 Front Panels

Figure 14 shows the NI PXI-5122 and the NI PCI-5122 front panels. Refer to Figure 16 for the AUX connector pinout information.
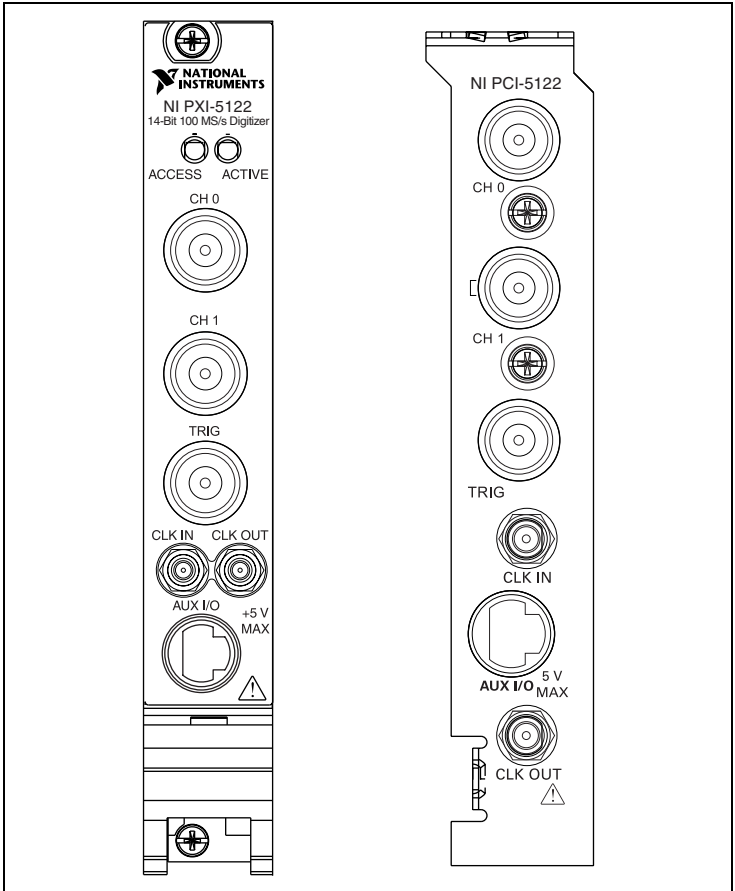

Figure 14. NI PXI/PCI-5122 Front Panels

Figure 15 shows the NI PXI-5124 and the NI PCI-5124 front panels. Refer to Figure 16 for the AUX connector pinout information.
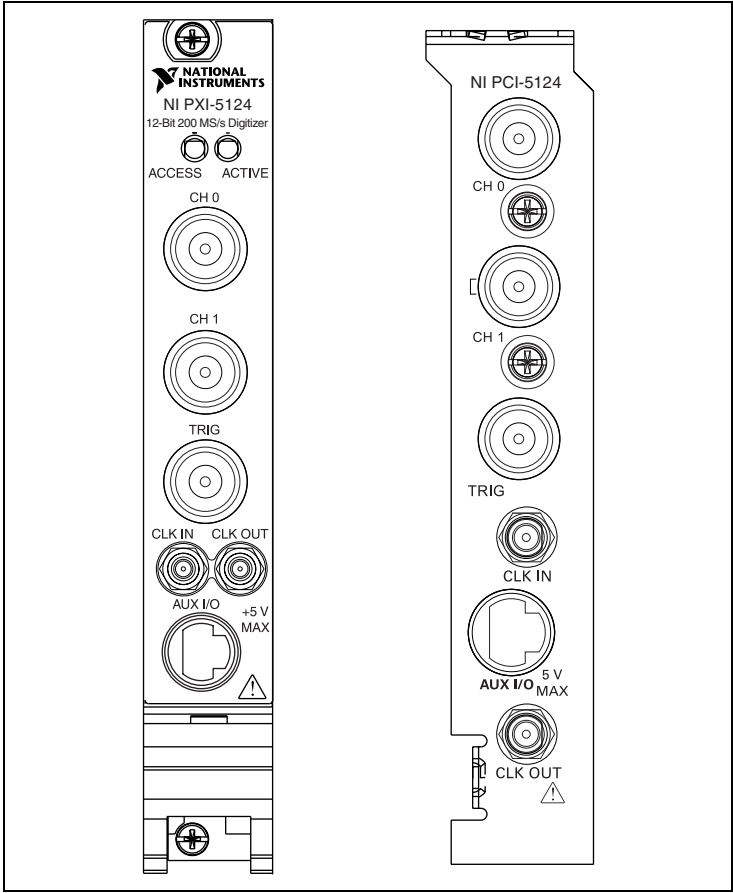

Figure 15. NI PXI/PCI-5124 Front Panels

Table 4 describes the signal connections on the NI 5122/5124.

Table 4. NI 5122 Front Panel Connector Signals

Connector	Description	Function
CH 0, CH 1	Standard BNC female connector	Analog input connection; digitizes data and triggers acquisitions.
TRIG	Standard BNC female connector	External analog trigger connection; signals on the TRIG connector cannot be digitized.
CLK IN	Standard SMB jack connector	Input for an external reference or sample clock to the digitizer.
CLK OUT	Standard SMB jack connector	Output for the reference or sample clock.
AUX I/O	9-pin mini-circular DIN connector	Provides access to the multipurpose digital timing and triggering lines, PFI 0 and PFI 1 (with optional cable).

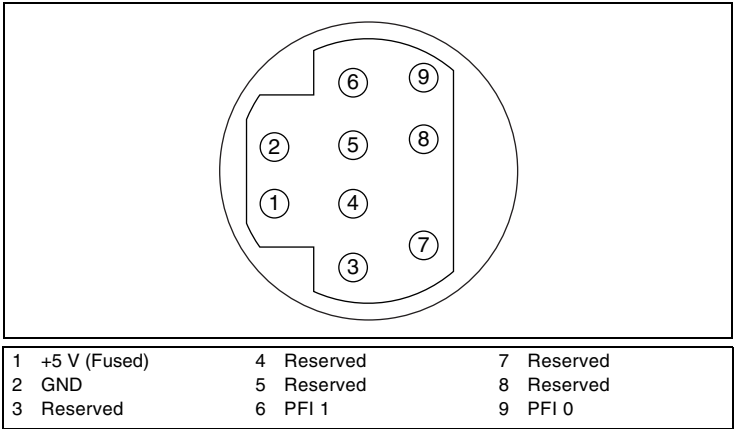Figure 16 shows the pin assignments for the 9-pin DIN connector on the NI 5122/5124.

1	+5 V (Fused)	4	Reserved	7	Reserved
2	GND	5	Reserved	8	Reserved
3	Reserved	6	PFI 1	9	PFI 0

Figure 16. 9-Pin DIN Connector for the NI 5122/5124

NI 5620/5621 Front Panels

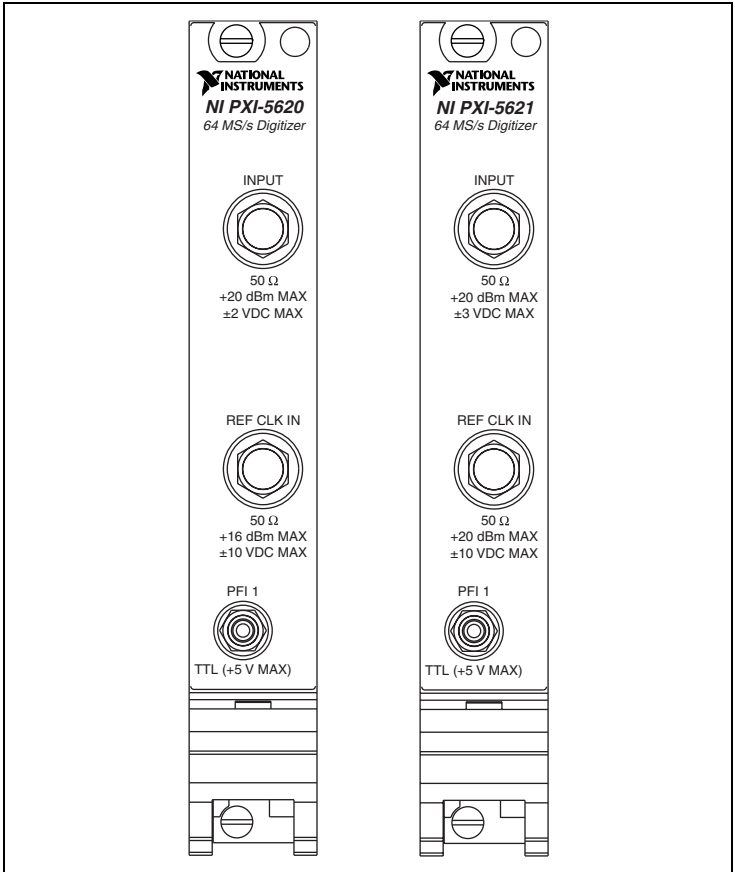Figure 17 shows the NI PXI-5620/5621 front panels.

Figure 17. NI PXI-5620 Front Panel

Table 5 describes the signal connections for the NI 5620/5621.

Table 5. NI 5620/5621 Front Panel Connector Signals

Connector	Description	Function
INPUT	Standard SMA female connector	Analog input connection; digitizes data and triggers acquisitions. NI 5620—50 Ω, AC-coupled NI 5621—50 Ω, DC-coupled
REF CLK IN	Standard SMA female connector	50 Ω, 10 MHz, AC-coupled reference input.
PFI 1	Standard SMB jack connector	External digital trigger connection.

NI 5911 Front Panel

Figure 18 shows the NI 5911 front panel. Refer to Figure 9 for the PFI 2 (AUX) connector pinout information.
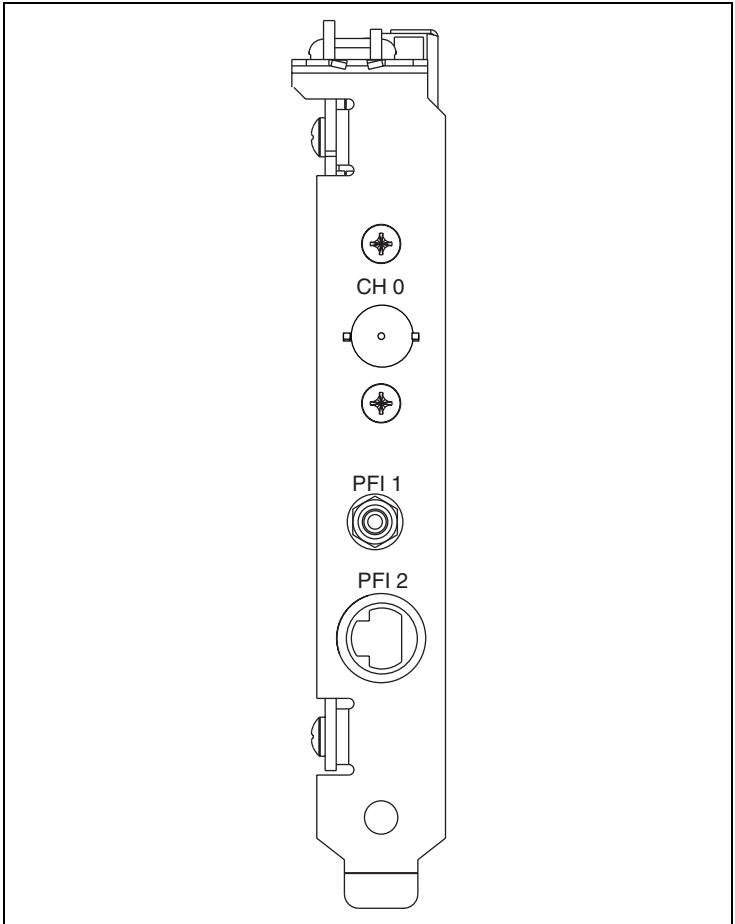

Figure 18. NI 5911 Front Panel

Table 6 describes the signal connections for the NI 5911.

Table 6. NI 5911 Front Panel Connector Signals

Connector	Description	Function
CH 0	Standard BNC female connector	Analog input connection; digitizes data and triggers acquisitions.
PFI 1	Standard SMB jack connector	Multipurpose digital timing and triggering signal.
PFI 2 (AUX)	9-pin mini-circular DIN connector	Access to PFI 2 (with optional cable). Refer to Figure 9 for pinout information.

Appendix B: Technical Support Resources

NI Web Support

National Instruments Web support is your first stop for help in solving installation, configuration, and application problems and questions. Online problem-solving and diagnostic resources include frequently asked questions, knowledge bases, product-specific troubleshooting wizards, manuals, drivers, software updates, and more. Web support is available through the Technical Support section of ni.com.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electronic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting ni.com/certification. If your product supports calibration, you can obtain the calibration certificate for your product at ni.com/calibration.

Worldwide Support

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. You can access our branch office Web sites from the Worldwide Offices section of ni.com. Branch office Web sites provide up-to-date contact information, support phone numbers, email addresses, and current events.

If you have searched the technical support resources on our Web site and still cannot find the answers you need, contact your local office or National Instruments corporate. For telephone support in the United States, dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 0 662 45 79 90 0,
Belgium 32 0 2 757 00 20, Brazil 55 11 3262 3599,
Canada (Calgary) 403 274 9391, Canada (Ottawa) 613 233 5949,
Canada (Québec) 450 510 3055, Canada (Toronto) 905 785 0085,
Canada (Vancouver) 604 685 7530, China 86 21 6555 7838,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 385 0 9 725 725 11, France 33 0 1 48 14 24 24,
Germany 49 0 89 741 31 30, India 91 80 51190000, Israel 972 0 3 6393737,
Italy 39 02 413091, Japan 81 3 5472 2970, Korea 82 02 3451 3400,
Malaysia 603 9131 0918, Mexico 01 800 010 0793,
Netherlands 31 0 348 433 466, New Zealand 0800 553 322,
Norway 47 0 66 90 76 60, Poland 48 22 3390150,
Portugal 351 210 311 210, Russia 7 095 783 68 51,
Singapore 65 6226 5886, Slovenia 386 3 425 4200,
South Africa 27 0 11 805 8197, Spain 34 91 640 0085,
Sweden 46 0 8 587 895 00, Switzerland 41 56 200 51 51,
Taiwan 886 2 2528 7227, Thailand 662 992 7519,
United Kingdom 44 0 1635 523545