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PCIe-8375

Setting Up Your Fiber-Optic MXI™-Express x4 for PXI Express

This document explains how to set up your Fiber-Optic MXI-Express for PXI Express system.

What You Need to Get Started

To set up and use your PXI Express MXI system, you need the following:

- One NI PCIe-8375 and one or more NI PXIe-8375 modules
- One or more Fiber-Optic MXI-Express x4 cables
- A host PC with an available x4 (or wider) PCI Express slot



Note Using a PCI Express slot wider than x4 may result in negotiation down to x1 width.



Note The NI PCIe-8375 requires a host computer with a PCI Express clock that complies with the *PCI Express Specification*. The NI PCIe-8375 may not be compatible with systems using noncompliant clocks, particularly systems with clocks whose frequency peaks at more than 100 MHz. Refer to the NI PCIe-8375 Web page on ni.com for more information.

- An expansion chassis—the PXI Express/CompactPCI Express chassis that you control with MXI-Express



Note Your PXI Express Fiber-Optic MXI-Express card will work in any standard CompactPCI Express chassis adhering to the *PICMG CompactPCI Express EXP.0 R1.0* specification, or in PXI Express chassis that are compatible with the *PXI Express Hardware Specification*, Revision 1.0 or later. Your PCI Express Fiber-Optic MXI-Express card will work in systems compliant with the *PCI Express Base Specification*, Revision 1.0a and *PCI Express Card Electromechanical Specification*, Revision 1.0a or later.

Unpacking

Your PXI Express Fiber-Optic MXI-Express cards are shipped in antistatic packages to prevent electrostatic damage (ESD) to the devices. ESD can damage several components on the device.



Caution *Never* touch the exposed pins of connectors. Doing so may damage the device.

To avoid such damage in handling the device, take the following precautions:

- Ground yourself using a grounding strap or by holding a grounded object.
- Touch the antistatic package to a metal part of the computer case before removing the device from the package.

Remove the device from the package and inspect the device for loose components or any sign of damage. Notify NI if the device appears damaged in any way. Do *not* install a damaged device into the computer or PXI Express/CompactPCI Express chassis.

Store the device in the antistatic envelope when not in use.

Installing an NI PCIe-8375

Complete the following steps to install the NI PCIe-8375 in your computer.

1. Power down the computer and remove the top cover to have access to the PCI Express expansion slots.
2. Touch the metal part of the power supply case inside the computer to discharge any static electricity that might be on your clothes or body. Adhere to proper ESD precautions described in the *Unpacking* section.
3. Unplug the computer.



Caution To protect both yourself and the computer from electrical hazards, your computer should remain off until you finish installing the NI PCIe-8375.

4. Select any available PCI Express expansion slot (x4 or wider).



Note Using a PCI Express slot wider than x4 may result in negotiation down to x1 width.



Note The BIOS or motherboard may not support the NI PCIe-8375 in a slot intended for a graphics card.



Note The NI PCIe-8375 requires a host computer with a PCI Express clock that complies with the *PCI Express Specification*. The NI PCIe-8375 may not be compatible with systems using noncompliant clocks, particularly systems with clocks whose frequency peaks at more than 100 MHz. Refer to the NI PCIe-8375 Web page on ni.com for more information.

5. Locate the metal bracket that covers the cut-out in the back panel of the computer for the slot you have selected. Remove and save the bracket-retaining screw and the bracket cover.
6. Line up the NI PCIe-8375 with the slot on the back panel. Slowly lower the NI PCIe-8375 until its card-edge connector is resting on the expansion slot receptacle. Using slow, evenly distributed pressure, press the NI PCIe-8375 straight down until it seats in the expansion slot, as shown in Figure 1.
7. Reinstall the bracket-retaining screw to secure the NI PCIe-8375 to the back panel rail.
8. Replace the computer cover.

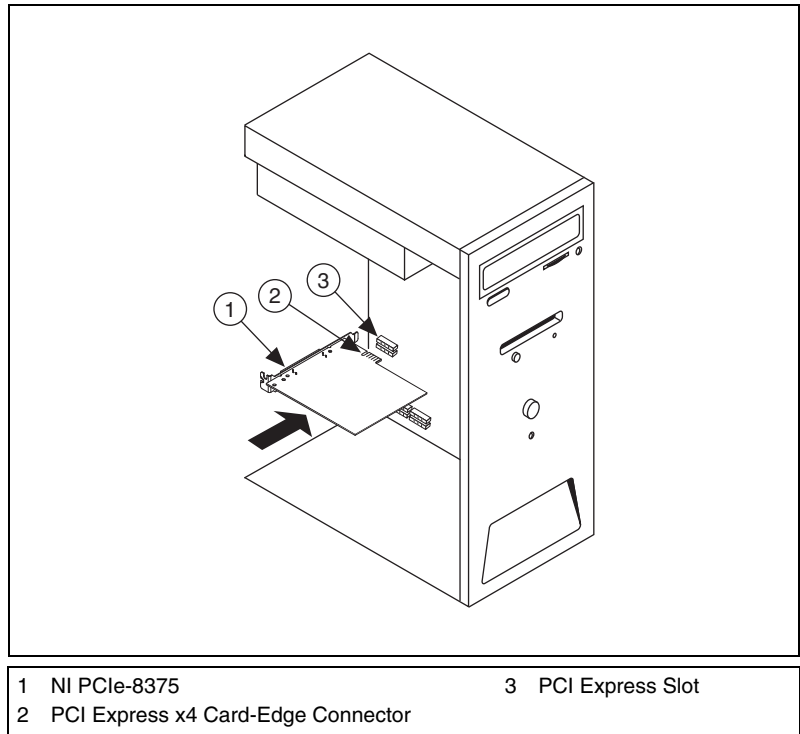


Figure 1. Installing the NI PCIe-8375

Installing an NI PXIe-8375

Complete the following steps to install the NI PXIe-8375 in your PXI Express or CompactPCI Express chassis.



Note The NI PXIe-8375 must be installed in the controller slot (slot 1 in PXI Express).

1. Touch a metal part of the chassis to discharge any static electricity that might be on your clothes or body.
2. Power off your PXI Express or CompactPCI Express chassis and unplug the computer cord.



Caution To protect both yourself and the chassis from electrical hazards, leave the chassis off until you finish installing the NI PXIe-8375.

3. Remove or open any doors or covers blocking access to the slot in which you intend to install the NI PXIe-8375.
4. Make sure the injector/ejector handle is in its downward position. Be sure to remove all connector packaging and protective caps from retaining screws on the module. Align the NI PXIe-8375 with the card guides on the top and bottom of the system controller slot.



Caution Do *not* raise the injector/ejector handle as you insert the NI PXIe-8375. It will not insert properly unless the handle is in its downward position so that it does not interfere with the injector/ejector rail on the chassis, as shown in Figure 2.

5. Hold the handle as you slowly slide the module into the chassis until the handle catches on the injector/ejector rail.
6. Raise the injector/ejector handle until the module firmly seats into the backplane receptacle connectors. The front panel of the NI PXIe-8375 should be even with the front panel of the chassis.



Note The LEDs on the back side of the PCB will light up when the board is plugged in. This indicates that 5 V auxiliary power is present.

7. Tighten the bracket-retaining screws on the top and bottom of the front panel to secure the NI PXIe-8375 to the chassis.
8. Replace or close any doors or covers to the chassis.

Figure 2 shows an NI PXIe-8375 just before installation in the system controller slot of a National Instruments chassis.

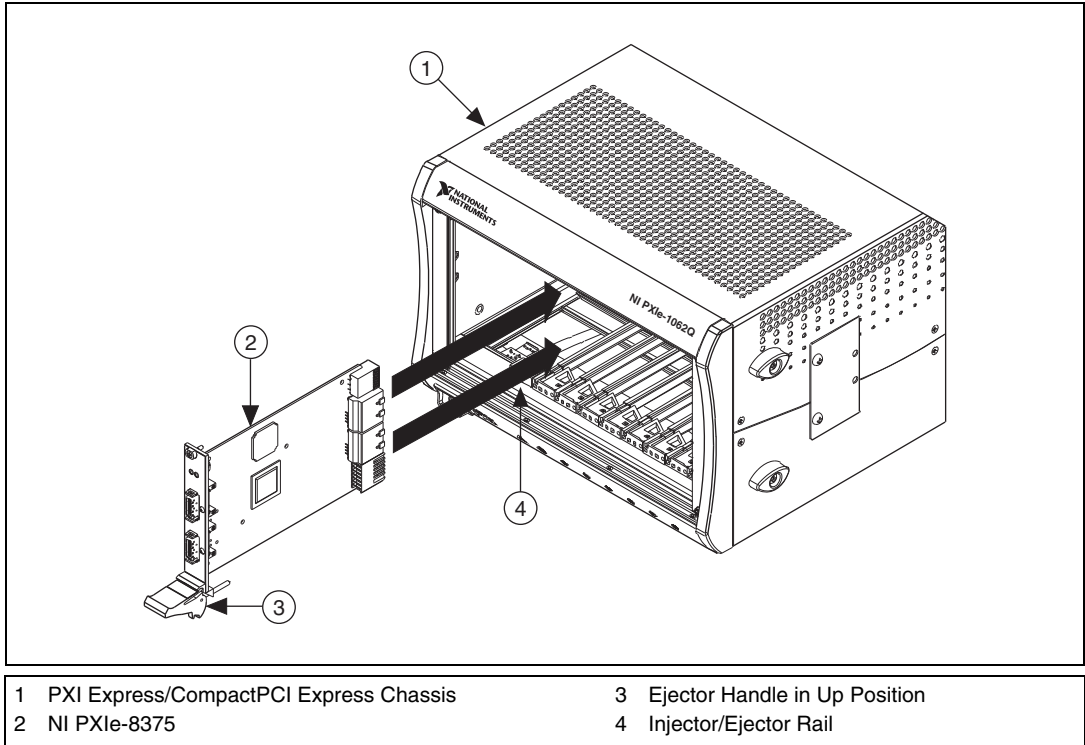


Figure 2. NI PXIe-8375 Card Before Installation

Cabling

Connect the Fiber-Optic MXI-Express x4 cable to the NI PCIe-8375 and PORT 1 of the NI PXIe-8375. The cables have no polarity, so either end may be connected to either card.



Note If daisy chaining additional chassis, connect PORT 2 of the NI PXIe-8375 closer to the system controller to PORT 1 of the NI PXIe-8375 of the daisy chained chassis.



Caution Do *not* remove the cable after the system is powered on. Doing so can hang or cause errors in applications communicating with devices behind MXI-Express. If a cable becomes unplugged, plug it back into the system. You must reboot before you can continue using your hardware.



Note For more information about cables, refer to the *Fiber-Optic MXI-Express Cable Options* section of Chapter 3, *Hardware Overview*, of the *Fiber-Optic MXI-Express x4 for PXI Express Series User Manual*.

Powering On the Fiber-Optic MXI-Express x4 System

Complete the following steps to power on the system.

1. Power on all of the expansion chassis in any order you choose.
2. Power on the host.

Standard PCI-PCI bridges and switches are used to add PCI devices to a PCI hierarchy in which all the bridges and devices are contained within a single chassis. Because of this, BIOSes and operating systems make the assumption that all PCI devices in the entire hierarchy will be available as soon as code execution begins at power-up time. This assumption means that all of the expansion chassis must be turned on before the host PC for the BIOS and OS to correctly configure a MXI-Express system.



Note There are no requirements on how MXI-Express expansion chassis are powered up relative to each other, as long as they are all on before the computer is powered on.

Checking LEDs for Status

After powering on the system, you should check the LEDs for status to ensure that all connected systems have linked.

The front-panel LEDs on the NI PCIe-8375 and NI PXIe-8375 indicate the following:

Table 1-3. NI PCIe-8375 and NI PXIe-8375 Status LED Messages

LED	Meaning
Off	Power is off
Red, Blinking	Power is out of spec
Amber	Power is within spec; link not established
Green	Power is within spec; link established



Note A red blinking LED indicates that the power is out of spec. This can be due to the NI PCIe-8375/NI PXIe-8375 device not receiving appropriate power from the host computer or backplane, or because the NI PCIe-8375/NI PXIe-8375 device is damaged. If possible, try installing the NI PCIe-8375/NI PXIe-8375 device in a different host computer or PXI Express chassis to narrow down the problem. If the problem appears to be the NI PCIe-8375/NI PXIe-8375 device, contact NI to arrange for repair.

Powering Down the Fiber-Optic MXI-Express x4 System

Because operating systems and drivers commonly make the assumption that PCI devices will be present in the system from power-up to power-down, it is important not to power off the expansion chassis until after the host PC is powered off. Powering off the expansion chassis while the host is still on can cause crashes or hangs.

After the host computer has powered down, the order in which expansion chassis are powered off relative to each other is not important. However, to power down a chassis that still has its upstream link active, the power button must be pressed for at least 4 seconds.

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