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PCIe-8388

Setting Up Your MXI-Express x16 for PXI Express Remote Controller

This document explains how to set up your MXI-Express x16 for PXI Express remote controller with a PXI Express system.

What You Need to Get Started

To set up and use your MXI-Express x16 boards, you need the following:

- ☐ One NI PCIe-8388 and one or more NI PXIe-8388/9 modules.
- ☐ One or more MXI-Express x16 cables.
- ☐ A supported host PC (such as an NI RMC-83xx) with an available x16 PCI Express slot.



Note For proper functionality, the host PC must have a certain quality and type of PCI Express clock. Therefore, National Instruments validates and supports only certain hosts. Refer to KB 5J9C7371 for a list of currently supported host platforms.

- ☐ An expansion chassis—the PXI Express or CompactPCI Express chassis to control with MXI-Express x16.



Note Your NI PXIe-8388/9 module works in any standard CompactPCI Express chassis adhering to the *PICMG CompactPCI Express EXP.0 R1.0 Specification*, or in a PXI Express chassis compatible with the *PXI Express Hardware Specification*, Revision 1.0 or later.

Unpacking

Your MXI-Express x16 boards 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 chassis 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 into a PXI Express or CompactPCI Express chassis.

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

Basic MXI-Express x16 System

The simplest MXI-Express x16 system consists of an NI PCIe-8388 in a supported PC connected to an NI PXIe-8388 in the controller slot of a PXI Express or CompactPCI Express chassis, as shown in Figure 1.

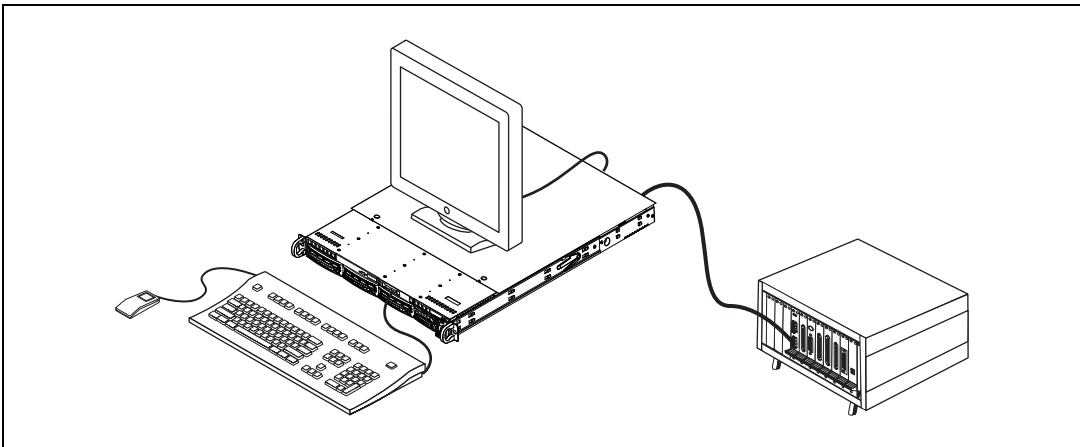


Figure 1. Basic MXI-Express x16 Configuration

Installing an NI PCIe-8388

Complete the following steps to install the NI PCIe-8388 in your computer.

1. Power off the computer and remove the 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-8388.

4. Select any available PCI Express expansion slot (x16). The slot must be x16 both physically and electrically.



Note Using a PCI Express slot narrower than x16 is not validated or supported. Some x16 slots are wired only as x8 or x4. These slots are not supported.



Note The NI PCIe-8388 requires a host computer that supplies a PCI Express clock that adheres to the *PCI Express Specification*. The NI PCIe-8388 may not be compatible with systems with noncompliant clocks, and requires the clock to exceed certain specifications. Therefore, only certain host PCs are supported for use with the NI PCIe-8388. Refer to KB 5J9C7371 for more information about supported host PCs.

5. Locate the metal PCI Express filler panel that covers the cut-out in the back panel of the computer for the slot you have selected. Open the bracket retention latch or remove and save the bracket-retaining screw (if applicable) and the PCI Express slot filler panel.
6. Align the NI PCIe-8388 with the slot on the back panel. Slowly slide the NI PCIe-8388 until its board-edge connector is touching the expansion slot receptacle. Using slow, evenly distributed pressure, press the NI PCIe-8388 until it seats in the expansion slot.
7. Close the PCI Express board retention latch or reinstall the retaining screw (if applicable) to secure the NI PCIe-8388 to the back panel rail.
8. Replace the computer cover.

Installing an NI PXIe-8388/9

Complete the following steps to install the NI PXIe-8388/9 in your PXI Express or CompactPCI Express chassis.



Note The NI PXIe-8388/9 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 power cord.



Caution To protect both yourself and the chassis from electrical hazards, leave the chassis off until you finish installing the NI PXIe-8388/9.

3. Remove or open any doors or covers blocking access to the slot where you intend to install the NI PXIe-8388/9.
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-8388/9 with the board 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-8388/9. 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.

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 NI PXIe-8388/9 front panel should be even with the chassis front panel.
7. Tighten the bracket-retaining screws on the top and bottom of the front panel to secure the NI PXIe-8388/9 to the chassis.
8. Replace or close any doors or covers to the chassis.

Cabling



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

Connect the MXI-Express x16 cable to the NI PCIe-8388 and to port 1 of the NI PXIe-8388/9. The cables have no polarity, so either end may be connected to either board.



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 x16. If a cable becomes unplugged, plug it back into the system. (You may need to restart your computer.)

For more information about cables, refer to the *Cable Options* section of Chapter 3, *Hardware Overview*, in the *MXI-Express x16 for PXI Express Series User Manual*.

Using the Daisy Chain Topology

If daisy chaining additional chassis, connect port 2 of the NI PXIe-8389 to PORT 1 of the NI PXIe-8388/9 of the daisy chained chassis, as shown in Figure 2.

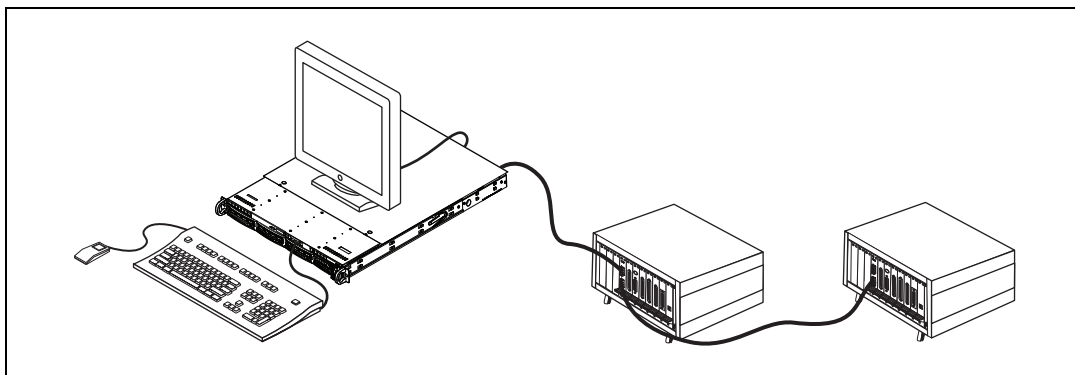


Figure 2. Daisy Chain Topology



Note NI MXI-Express x16 supports wake functionality when used in any NI PXI Express chassis or any chassis supporting 5 V_{aux} power. Pressing the power button on any chassis in the chain should power on all chassis in the chain and the host PC, provided the host PC supports PCI Express wake.



Note When using chassis with no 5 V_{aux} power, the PXI Express or CompactPCI Express chassis must be powered on prior to powering on the host PC. There are no requirements on how MXI-Express x16 expansion chassis are powered on relative to each other, as long as they are all on before the computer is powered on.

Powering On the MXI-Express x16 System

Follow these steps to power on the MXI-Express x16 system.

1. Power on all 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 are available as soon as code execution begins at power on. This assumption means that all expansion chassis must be powered on before the host PC for the BIOS and OS to correctly configure a MXI-Express x16 system.



Note There are no requirements on how MXI-Express x16 expansion chassis are powered on relative to each other, as long as they are all on before the computer is powered on.

Powering Off the MXI-Express x16 System

Because operating systems and drivers commonly make the assumption that PCI devices are present in the system from power on to power off, 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 still is on can cause crashes or hangs.

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

LED Indicators

The LEDs on MXI-Express x16 cards give status information about power supplies and link state. The NI PXIe-8388 has one tri-color LED for the port on the panel. The NI PXIe-8389 has two tri-color LEDs, one for each port.

Table 1 describes the NI PXIe-8388/9 front-panel LEDs.

Table 1. NI PXIe-8388/9 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

The NI PXIe-8388/9 has additional LEDs on the back of the board near the front panel connector. These LEDs give additional information about the link status of the PCI Express lanes on the module to the backplane.

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