

VXI/VME-PCI8022 FOR SOLARIS INSTALLATION GUIDE

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Quick Start

You can use this *Quick Start* section as a guide to quickly configure and operate your VXI or VME system using the PCI-MXI-2 or PCI-MXI-2 Universal and the VXI-MXI-2 or VME-MXI-2.

The *Quick Start* summary assumes that you intend to perform a basic configuration as follows:

- You have one PCI-MXI-2 or PCI-MXI-2 Universal interface module, which you will install in your PCI-based computer as the Resource Manager (logical address 0).
- You have either one C-size VXI-MXI-2 or one 6U, B-size VME-MXI-2, which you will install in a VXI or VME chassis, respectively, and connect to the PCI-MXI-2 or PCI-MXI-2 Universal.
- You will be using the NI-VXI software for initialization, configuration, and device interaction.
- You will use the default hardware and software settings.
 - The PCI-MXI-2 or PCI-MXI-2 Universal is the main controller, the VXI/VME Resource Manager, and a message-based device.
 - Your system contains only one VXI or VME chassis.
 - There is no shared memory used on the PCI-based computer, the PCI-MXI-2 or PCI-MXI-2 Universal, or the VXI/VME-MXI-2.

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Documentation

For more information, or to try a different configuration, refer to the appropriate hardware or software chapters in the online manuals. They are in the NI-VXI base directory in Adobe Acrobat portable document file (PDF) format and describe the installation and configuration steps in greater detail. With the exception of this *Installation Guide*, all documentation is online.

The following list shows the path and filenames of the online manuals available after you install your software:

- /opt/NICpcimxi/manuals/GettingStarted.pdf
This is the *Getting Started* manual, which contains an overview of the MXI-2 hardware and the NI-VXI software, guides you through setting up your kit and configuring the hardware and software, and helps you get started with application development. Appendix D, *Common Questions*, addresses commonly asked questions you may have about using the NI-VXI software on the PCI-MXI-2 or PCI-MXI-2 Universal platform.
- /opt/NICpcimxi/manuals/NI-VXIUserMan.pdf
This is the *NI-VXI User Manual*, which describes the features of the NI-VXI software.
- /opt/NICpcimxi/manuals/NI-VXIProgrammerMan.pdf
This is the *NI-VXI Programmer Reference Manual*, which describes in detail the VXI/VME function calls in the C/C++ and BASIC languages.
- /opt/NICpcimxi/manuals/GraphicalUtils.pdf
This is the *NI-VXI Graphical Utilities Reference Manual*, which describes the graphical NI-VXI utilities VXIedit, VIC, and the Startup Resource Manager.
- /opt/NICpcimxi/manuals/TextUtil.pdf
This is the *NI-VXI Text Utilities Reference Manual*, which describes the text-based NI-VXI utilities VXIedit, VICtext, and the Startup Resource Manager.
- /opt/vxipnp/sun/NIvisa/Manuals/NI-VISAUsersMan.pdf
This is the *NI-VISA User Manual*, which describes how to program using VISA.
- /opt/vxipnp/sun/NIvisa/Manuals/NI-VISAProgrammersMan.pdf
This is the *NI-VISA Programmer Reference Manual*, which describes in detail the attributes, events, and operations you use in NI-VISA.

Hardware Installation

To guard against electrostatic discharge, touch the antistatic plastic package to a metal part of your computer before removing the PCI-MXI-2 or PCI-MXI-2 Universal from the package. Install the PCI-MXI-2 or PCI-MXI-2 Universal in an available PCI slot in your PCI-based computer.

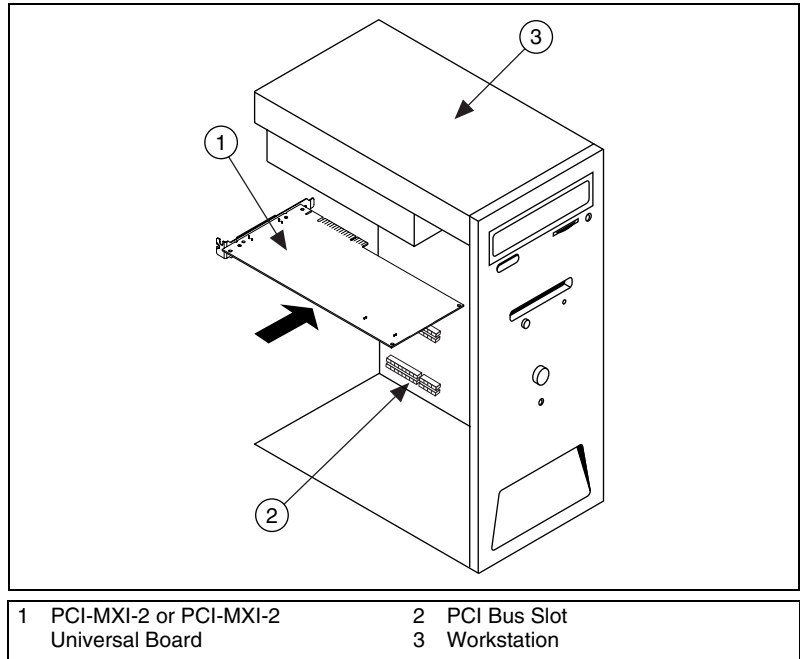


Figure 1. PCI-MXI-2 or PCI-MXI-2 Universal Installed in a Computer

By default, the PCI-MXI-2 or PCI-MXI-2 Universal automatically detects whether it should be the system controller on the MXIbus. Verify that the correct cable end labeled *Connect This End To Device Closest To MXIbus Controller In This Daisy Chain* is attached securely to the PCI-MXI-2 or PCI-MXI-2 Universal. The cable must be connected in this manner so that the PCI-MXI-2 or PCI-MXI-2 Universal can correctly detect whether it should be the system controller on the MXIbus. For more information, refer to Chapter 2, *PCI-MXI-2 Configuration and Installation*, or Chapter 3, *PCI-MXI-2 Universal Configuration and Installation*, of the *Getting Started* manual.

You received either a VXI-MXI-2 or a VME-MXI-2 in your VXI/VME-PCI8022 kit. To guard against electrostatic discharge, touch the antistatic plastic package to a metal part of your computer before removing the VXI-MXI-2 or VME-MXI-2 from the package. Install the VXI-MXI-2

in the first slot of a VXI chassis, or install the VME-MXI-2 in the first slot of a VME chassis.

The VXI/VME-MXI-2 default configuration automatically detects whether it should be the VXI/VMEbus system controller. The VXI/VMEbus system controllers operate certain VXI/VMEbus lines as required for VXI/VME systems. Verify that any other VXI/VME devices with system controller capability in the same chassis are not configured as system controller. Having more than one device configured as system controller will damage the VXI/VME system.

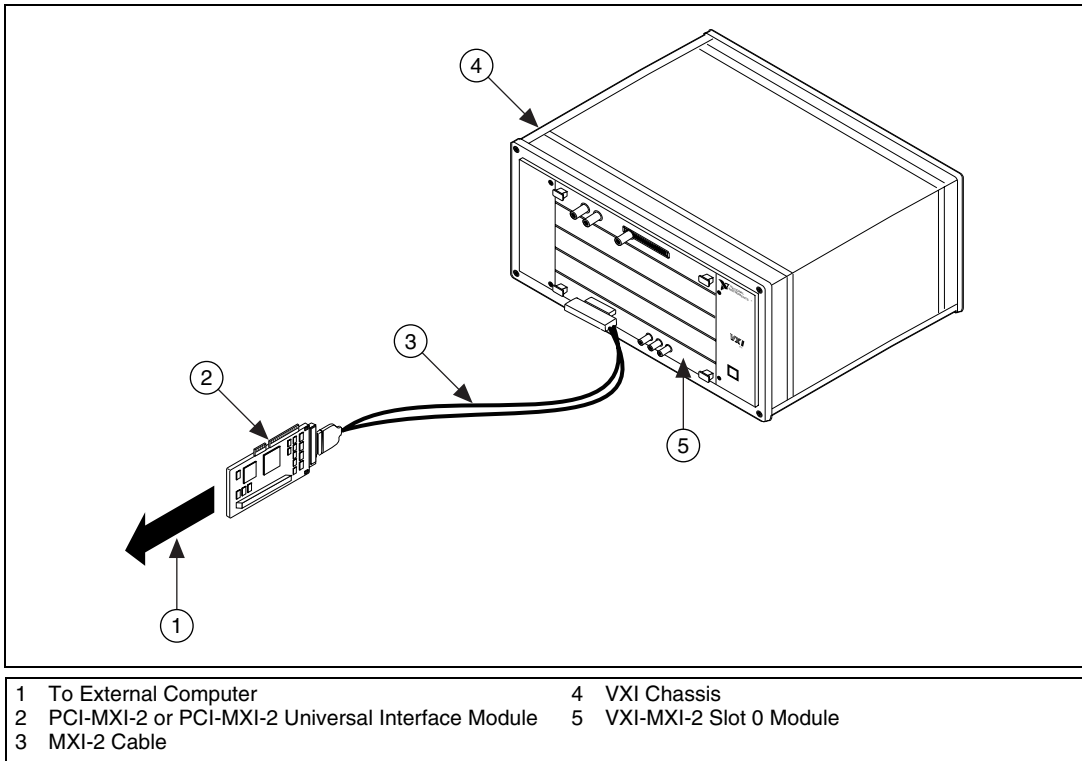


Figure 2. MXI-2 Cable Configuration Using a PCI-MXI-2 or PCI-MXI-2 Universal and a VXI-MXI-2

For VXI systems that include VME devices, ensure that the VME devices are not configured in the upper 16 KB (starting from 0xC000) of the A16 address space. This region is reserved for VXI device configuration registers, which are used for initializing, configuring, and interacting with VXI devices. The PCI-MXI-2, PCI-MXI-2 Universal, and VME-MXI-2 also use this region for this purpose.

Also ensure that no VXI devices in your system are configured for either logical addresses 0 or 1. These are the default configurations for the PCI-MXI-2 or PCI-MXI-2 Universal and the VXI-MXI-2, respectively.

For more details on the VXI-MXI-2 or VME-MXI-2 hardware, refer to either Chapter 4, *VXI-MXI-2 Configuration and Installation*, or Chapter 5, *VME-MXI-2 Configuration and Installation*, of the *Getting Started* manual.

Installing the NI-VXI Software for Solaris

The NI-VXI Software includes two installation packages:

- NICpcimxi—the NI-VXI driver software
- NICcvirt—the CVI Runtime Engine (required by the NI-VXI Graphical Utilities)

These packages are installed using the Solaris standard software packaging mechanisms.



Note You must be logged in as superuser to install the NI-VXI software.

1. Change to the VXI directory on the installation CD-ROM:

```
# cd /cdrom/ni-vxi/VXI
```

Follow the instructions as prompted.

2. Transfer the software packages to the system:

```
# pkgadd -d .
```

The packaging utilities will prompt you for installation information as it is needed.



Note If you want to install the NI-VXI software to a directory other than `/opt/NICpcimxi`, use the `-a none` pkgadd option:

```
# pkgadd -d . -a none
```

VME Users

When used with a VXI-MXI-2, Resman identifies and configures the VXI devices, including the VXI-MXI-2. When used with a VME-MXI-2, Resman configures the VME-MXI-2 to allow the PCI-MXI-2 or PCI-MXI-2 Universal to access devices in the VME chassis. Resman does not configure VME devices. The VME specification does not specify the initialization and configuration procedures that the VXI specification requires.

You should enter the information about your VME devices into the `vxiedit` or `vxitedit` utility. Resman can then properly configure the various device-specific VME address spaces and VME interrupt lines. For more information on configuring non-VXI devices in your VXI system, refer to the description of the **Non-VXI Device Configuration Editor** in Chapter 3, *VXI Resource Editor: VXIedit*, of the *NI-VXI Graphical Utilities Reference Manual*. For more details about installing the NI-VXI software, refer to Chapter 5, *NI-VXI Software Installation*, of the *Getting Started* manual.

Device Interaction

After Resman has detected and configured all VXI/VME devices, you can view specific information on each device in your system by using the `vxiedit` or `vxitedit` utilities. These utilities include a Resource Manager Display, which contains a description for each device, including each VXI device's logical address.

You can interact with your VXI/VME devices by using the `vic` or `victext` utilities. These utilities let you interactively control your VXI/VME devices without having to use a conventional programming language, LabVIEW, or LabWindows™/CVI™.

Try the following in `vic` or `victext`:

At the prompt, type:

```
help vxiiinreg
```

This help file shows you the syntax for this command, which reads VXI device configuration registers. The first argument is a logical address, and the second is the offset of the VXI device configuration register to be read.

Now type:

```
vxiiinreg 1,0
```

This should return a value, such as:

```
Return Status (0): SUCCESS.  
value = 0x4ff6
```

If the value ends with `ff6`, you have successfully read the National Instruments manufacturer ID from the ID register for the VXI/VME-MXI-2.

You may now want to read the configuration registers from other VXI devices in your system using the command `vxiiinreg`. This command accesses only the upper 16 KB of A16 space. Try reading the registers from

one of the devices listed in the **Resource Manager Display** of either `vxiedit` or `vxitedit`. In this way, you can verify that your PCI-MXI-2 or PCI-MXI-2 Universal can access each of the devices in your VXI system successfully.

You can also access VXI and VME devices that are configured in A16, A24, and A32 address space by using the `vxiiin` or `vxioout` commands. For more information regarding `vic` operation and commands, refer to the *NI-VXI Graphical Utilities Reference Manual*. For more information regarding `victext` operation and commands, refer to the *NI-VXI Text Utilities Reference Manual*.