PXI

NI PXI-8108 User Manual
Important Information

Important Information

Warranty
The NI PXI-8108 is warranted against defects in materials and workmanship for a period of one year from the date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace equipment that proves to be defective during the warranty period. This warranty includes parts and labor.

The media on which you receive National Instruments software are warranted not to fail to execute programming instructions, due to defects in materials and workmanship, for a period of 90 days from date of shipment, as evidenced by receipts or other documentation. National Instruments will, at its option, repair or replace software media that do not execute programming instructions if National Instruments receives notice of such defects during the warranty period. National Instruments does not warrant that the operation of the software shall be uninterrupted or error free.

A Return Material Authorization (RMA) number must be obtained from the factory and clearly marked on the outside of the package before any equipment will be accepted for warranty work. National Instruments will pay the shipping costs of returning to the owner parts which are covered by warranty.

National Instruments believes that the information in this document is accurate. The document has been carefully reviewed for technical accuracy. In the event that technical or typographical errors exist, National Instruments reserves the right to make changes to subsequent editions of this document without prior notice to holders of this edition. The reader should consult National Instruments if errors are suspected. In no event shall National Instruments be liable for any damages arising out of or related to this document or the information contained in it.

EXCEPT AS SPECIFIED HEREIN, NATIONAL INSTRUMENTS MAKES NO WARRANTIES, EXPRESS OR IMPLIED, AND SPECIFICALLY DISCLAIMS ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. CUSTOMER’S RELIABILITY OR ITS ABILITY TO RECOVER DAMAGES CAUSED BY FAULT OR NEGLIGENCE ON THE PART OF NATIONAL INSTRUMENTS SHALL BE LIMITED TO THE AMOUNT THEREFORE PAID BY THE CUSTOMER. NATIONAL INSTRUMENTS WILL NOT BE LIABLE FOR DAMAGES RESULTING FROM LOSS OF DATA, PROFITS, USE OF PRODUCTS, OR INCIDENTAL OR CONSEQUENTIAL DAMAGES, EVEN IF ADVISED OF THE POSSIBILITY THEREOF. This limitation of the liability of National Instruments will apply regardless of the form of action, whether in contract or tort, including negligence. Any action against National Instruments must be brought within one year after the cause of action accrues. National Instruments shall not be liable for any delay in performance due to causes beyond its reasonable control. The warranty provided herein does not cover damages, defects, malfunctions, or service failures caused by owner’s failure to follow the National Instruments installation, operation, or maintenance instructions; owner’s modification of the product; owner’s abuse, misuse, or negligent acts; and power failure or surges, fire, flood, accident, actions of third parties, or other events outside reasonable control.

Copyright
Under the copyright laws, this publication may not be reproduced or transmitted in any form, electronic or mechanical, including photocopying, recording, storing in an information retrieval system, or translating, in whole or in part, without the prior written consent of National Instruments Corporation.

National Instruments respects the intellectual property of others, and we ask our users to do the same. NI software is protected by copyright and other intellectual property laws. Where NI software may be used to reproduce software or other materials belonging to others, you may use NI software only to reproduce materials that you may reproduce in accordance with the terms of any applicable license or other legal restriction.

Trademarks
CVI, National Instruments, NI, ni.com, and LabVIEW are trademarks of National Instruments Corporation. Refer to the Terms of Use section on ni.com/legal for more information about National Instruments trademarks.

The ExpressCard™ word mark and logos are owned by PCMCIA and any use of such marks by National Instruments is under license.

The ExpressCard™, nationalinstruments, and any use of such marks by National Instruments is under license.

The mark LabWindows is used under a license from Microsoft Corporation. Windows is a registered trademark of Microsoft Corporation in the United States and other countries. Other product and company names mentioned herein are trademarks or trade names of their respective companies.

Members of the National Instruments Alliance Partner Program are business entities independent from National Instruments and have no agency, partnership, or joint-venture relationship with National Instruments.

Patents
For patents covering National Instruments products/technology, refer to the appropriate location: Help»Patents in your software, the patents.txt file on your media, or the National Instruments Patent Notice at ni.com/patents.

WARNING REGARDING USE OF NATIONAL INSTRUMENTS PRODUCTS

(1) NATIONAL INSTRUMENTS PRODUCTS ARE NOT DESIGNED WITH COMPONENTS AND TESTING FOR A LEVEL OF RELIABILITY SUITABLE FOR USE IN OR IN CONNECTION WITH SURGICAL IMPLANTS OR AS CRITICAL COMPONENTS IN ANY LIFE SUPPORT SYSTEMS WHOSE FAILURE TO PERFORM CAN REASONABLY BE EXPECTED TO CAUSE SIGNIFICANT INJURY TO A HUMAN.

(2) IN ANY APPLICATION, INCLUDING THE ABOVE, RELIABILITY OF OPERATION OF THE SOFTWARE PRODUCTS CAN BE IMPAIRED BY ADVERSE FACTORS, INCLUDING BUT NOT LIMITED TO FLUCTUATIONS IN ELECTRICAL POWER SUPPLY, COMPUTER HARDWARE MALFUNCTIONS, COMPUTER OPERATING SYSTEM SOFTWARE FITNESS, FITNESS OF COMPILERS AND DEVELOPMENT SOFTWARE USED TO DEVELOP AN APPLICATION, INSTALLATION ERRORS, SOFTWARE AND HARDWARE COMPATIBILITY PROBLEMS, MALFUNCTIONS OR FAILURES OF ELECTRONIC MONITORING OR CONTROL DEVICES, TRANSIENT FAILURES OF ELECTRONIC SYSTEMS (HARDWARE AND/OR SOFTWARE), UNANTICIPATED USES OR MISUSES, OR ERRORS ON THE PART OF THE USER OR APPLICATIONS DESIGNER (ADVERSE FACTORS SUCH AS THESE ARE HEREAFTER COLLECTIVELY TERMINED “SYSTEM FAILURES”). ANY APPLICATION WHERE A SYSTEM FAILURE WOULD CREATE A RISK OF HARM TO PROPERTY OR PERSONS (INCLUDING THE RISK OF BODILY INJURY AND DEATH) SHOULD NOT BE RELIANT SOLELY UPON ONE FORM OF ELECTRONIC SYSTEM DUE TO THE RISK OF SYSTEM FAILURE. TO AVOID DAMAGE, INJURY, OR DEATH, THE USER OR APPLICATIONS DESIGNER MAY USE NATIONAL INSTRUMENTS PRODUCTS IN COMBINATION WITH OTHER PRODUCTS IN A MANNER NOT EVALUATED OR CONTEMPLATED BY NATIONAL INSTRUMENTS. THE USER OR APPLICATIONS DESIGNER IS ULTIMATELY RESPONSIBLE FOR VERIFYING AND VALIDATING THE SUITABILITY OF NATIONAL INSTRUMENTS PRODUCTS WHENEVER NATIONAL INSTRUMENTS PRODUCTS ARE INCORPORATED IN A SYSTEM OR APPLICATION, INCLUDING, WITHOUT LIMITATION, THE APPROPRIATE DESIGN, PROCESS AND SAFETY LEVEL OF SUCH SYSTEM OR APPLICATION.
Compliance

Electromagnetic Compatibility Information

This hardware has been tested and found to comply with the applicable regulatory requirements and limits for electromagnetic compatibility (EMC) as indicated in the hardware’s Declaration of Conformity (DoC)\(^1\). These requirements and limits are designed to provide reasonable protection against harmful interference when the hardware is operated in the intended electromagnetic environment. In special cases, for example when either highly sensitive or noisy hardware is being used in close proximity, additional mitigation measures may have to be employed to minimize the potential for electromagnetic interference.

While this hardware is compliant with the applicable regulatory EMC requirements, there is no guarantee that interference will not occur in a particular installation. To minimize the potential for the hardware to cause interference to radio and television reception or to experience unacceptable performance degradation, install and use this hardware in strict accordance with the instructions in the hardware documentation and the DoC\(^1\).

If this hardware does cause interference with licensed radio communications services or other nearby electronics, which can be determined by turning the hardware off and on, you are encouraged to try to correct the interference by one or more of the following measures:

- Reorient the antenna of the receiver (the device suffering interference).
- Relocate the transmitter (the device generating interference) with respect to the receiver.
- Plug the transmitter into a different outlet so that the transmitter and the receiver are on different branch circuits.

Some hardware may require the use of a metal, shielded enclosure (windowless version) to meet the EMC requirements for special EMC environments such as, for marine use or in heavy industrial areas. Refer to the hardware’s user documentation and the DoC\(^1\) for product installation requirements.

When the hardware is connected to a test object or to test leads, the system may become more sensitive to disturbances or may cause interference in the local electromagnetic environment.

Operation of this hardware in a residential area is likely to cause harmful interference. Users are required to correct the interference at their own expense or cease operation of the hardware.

Changes or modifications not expressly approved by National Instruments could void the user’s right to operate the hardware under the local regulatory rules.

---

\(^1\) The Declaration of Conformity (DoC) contains important EMC compliance information and instructions for the user or installer. To obtain the DoC for this product, visit [ni.com/certification](http://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.
Contents

About This Manual

How to Use the Documentation Set.................................................................xi
Conventions...........................................................................................................xi
Related Documentation...................................................................................xii

Chapter 1
Introduction
Benefits of PXI .................................................................................................1-1
NI PXI-8108 ........................................................................................................1-2
Description .........................................................................................................1-2
Functional Overview .......................................................................................1-2
NI PXI-8108 Functional Description ...............................................................1-2
National Instruments Software .......................................................................1-4

Chapter 2
Installation and Configuration
Installing the NI PXI-8108 ................................................................................2-1
How to Remove the Controller from the PXI Chassis ...................................2-4
BIOS Setup ........................................................................................................2-5
Accessing BIOS Setup Utility ..........................................................................2-5
Main Setup Menu .............................................................................................2-6
Advanced Setup Menu .....................................................................................2-6
SATA Configuration Submenu .........................................................................2-7
CPU Configuration Submenu ..........................................................................2-8
Video Configuration Submenu .........................................................................2-8
ExpressCard Configuration Submenu .............................................................2-9
USB Configuration Submenu ..........................................................................2-9
Serial/Parallel Port Configuration Submenu ................................................2-10
Serial Port 0 Configuration Submenu .............................................................2-10
Parallel Port Configuration Submenu ............................................................2-10
Trigger Router Configuration Submenu .........................................................2-11
LabVIEW RT Options Setup Menu .................................................................2-11
Boot Setup Menu.............................................................................................2-12
Boot Settings Configuration Submenu ............................................................2-13
Hard Drive BBS Priorities Submenu ...............................................................2-13
CD/DVD ROM Drive BBS Priorities Submenu ...............................................2-13
Floppy Drive BBS Priorities Submenu ............................................................2-14
Network Device BBS Priorities Submenu .......................................................2-14
Contents

Security Menu ................................................................. 2-14
Save & Exit Menu ............................................................... 2-14
System CMOS ................................................................. 2-16
LabVIEW RT Installation .................................................. 2-17
  LabVIEW RT Software Installation ................................ 2-17
  LabVIEW RT Configuration Switches .......................... 2-19
Drivers and Software ....................................................... 2-21
  Files and Directories Installed on Your Hard Drive .......... 2-21
PXI Features ................................................................. 2-21
  PXI Trigger Connectivity ........................................... 2-21
Chassis Configuration .................................................... 2-22
  Basic PXI System Configuration ................................. 2-23
Upgrading RAM ............................................................ 2-23
Hard Drive Recovery ...................................................... 2-24
Installing an OS ............................................................ 2-25
  Installing from a CD-ROM ......................................... 2-25
ExpressCard ................................................................. 2-25
  Installing an ExpressCard ........................................ 2-25
  Removing an ExpressCard ........................................ 2-26

Chapter 3
I/O Information

Front Panel Connectors .................................................. 3-1
Front Panel........................................................................ 3-2
  DVI-I .............................................................................. 3-3
  COM1 ........................................................................... 3-5
  Ethernet ........................................................................ 3-6
  Parallel Port ................................................................. 3-7
  Universal Serial Bus .................................................... 3-9
  Trigger ......................................................................... 3-10
  GPIB (IEEE 488.2) ...................................................... 3-11
  ExpressCard/34 Slot .................................................... 3-13
Front Panel Features ..................................................... 3-15
Data Storage ................................................................... 3-15
Chapter 4
Common Configuration Questions

General Questions.......................................................................................................... 4-1
Boot Options.................................................................................................................. 4-1
Cables and Connections................................................................................................. 4-2
Software Driver Installation........................................................................................... 4-3
Upgrade Information....................................................................................................... 4-4
PXI Configuration.......................................................................................................... 4-6

Chapter 5
Troubleshooting

Appendix A
Specifications

Appendix B
Technical Support and Professional Services

Glossary

Index
About This Manual

This manual contains detailed instructions for installing and configuring your National Instruments PXI-8108 embedded controller kit.

How to Use the Documentation Set

Begin by reading the *NI PXI-8108 Installation Guide*, a brief quick-start guide that describes how to install and get started with your controller.

This manual, the *NI PXI-8108 User Manual*, contains more details about changing the installation or configuration from the defaults and using the hardware.

Conventions

The following conventions appear 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.

💡 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. Bold text also denotes parameter names.

*italic* Italic text denotes variables, emphasis, a cross-reference, or an introduction to a key concept. Italic text also denotes text that is a placeholder for a word or value that you must supply.
About This Manual

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 the proper names of disk drives, paths, directories, programs, subprograms, subroutines, device names, functions, operations, variables, filenames, and extensions.

Bold text in this font denotes the messages and responses that the computer automatically prints to the screen. This font also emphasizes lines of code that are different from the other examples.

Related Documentation

The following documents contain information you may find helpful as you read this manual:

- **PICMG 2.0 R3.0 CompactPCI Specification**, PCI Industrial Computers Manufacturers Group
- **PCI Local Bus Specification**, Revision 2.3, PCI Special Interest Group
- **PXI Hardware Specification**, Revision 2.2, PXI Systems Alliance
- **PXI Software Specification**, Revision 2.1, PXI Systems Alliance
- **Serialized IRQ Support for PCI Systems Specification**, Revision 6.0, Compaq Computer et al.
- **ExpressCard Standard**, Release 1.0, PCMCIA
- **Universal Serial Bus (USB) Specification**, Revision 2.0
- **Digital Visual Interface (DVI) Specification**, Revision 1.0
Introduction

Benefits of PXI

The PXI (PCI eXtensions for Instrumentation) industry standard, an open specification governed by the PXI Systems Alliance (PXISA), defines a compact modular PC platform for test, measurement, and control systems. Since PXI leverages the PCI bus, PXI users receive all the benefits of PCI within an architecture that supports mechanical, electrical, and software features tailored to industrial instrumentation, data acquisition, industrial automation, and control applications.

Well-suited for industrial applications, PXI leverages from the CompactPCI specification, which defines a rugged form factor for PCI that offers superior mechanical integrity and easy installation and removal of hardware components. PXI products offer higher and more carefully defined levels of environmental performance required by the vibration, shock, temperature, and humidity extremes of industrial environments. PXI adds mandatory environmental testing and active cooling to the CompactPCI mechanical specification to ease system integration and ensure multivendor interoperability.

Additionally, PXI meets the more specific needs of instrumentation users by adding an integrated trigger bus and reference clock for multiple-board synchronization, a star trigger bus for very precise timing, and local buses for side-band communication between adjacent peripherals.
NI PXI-8108

Description

The NI PXI-8108 PXI/CompactPCI embedded computer is a high-performance PXI/CompactPCI system controller. The NI PXI-8108 controller integrates standard I/O features in a single unit by using state-of-the-art packaging. Combining an NI PXI-8108 embedded controller with a PXI-compatible chassis, such as the NI PXI-1042, results in a fully PC-compatible computer in a compact, rugged package.

The NI PXI-8108 has an Intel® Core™ 2 Duo processor T9400 (2.53 GHz dual core processor), all the standard I/O, and a 80 GB (or larger) hard drive. It also has a PCI-based GPIB controller and an ExpressCard/34 expansion slot.

The standard I/O on each module includes DVI-I (Digital Video Interface Integrated Analog/Digital) video, one RS-232 serial port, a parallel port, four Hi-Speed USB ports, Gigabit Ethernet, a reset button, and a PXI trigger.

Functional Overview

This section contains functional descriptions of each major logic block on the NI PXI-8108 embedded computer.

NI PXI-8108 Functional Description

The NI PXI-8108 is a modular PC in a PXI 3U-size form factor. Figure 1-1 is a functional block diagram of the NI PXI-8108. Following the diagram is a description of each logic block shown.
The NI PXI-8108 consists of the following logic blocks on the CPU module and the I/O module. The CPU module has the following logic blocks:

- **Socket 479 CPU** is the socket definition for the Intel® Core™ 2 Duo processor T9400.
- The **SO-DIMM** block consists of one 64-bit DDR2 SDRAM socket that can hold up to 4 GB.
• The Mobile Intel GM45 Express Chipset (Graphics and Memory Controller Hub) connects to the CPU, DDR2 SDRAM, DVI-I video, and GPIB.

• The SMB to PXI Trigger provides a routable connection of the PXI triggers to/from the SMB on the front panel.

• The Watchdog Timer block consists of a watchdog timer that can reset the controller or generate a trigger.

• The Chipset ICH9M (I/O Controller Hub) connects to the PCI, USB, SATA, LPC buses, and Ethernet.

• The USB Connectors are connected to the ICH9M chipset.

• The PXI Connector connects the NI PXI-8108 to the PXI/CompactPCI backplane.

• The Super I/O block represents the other peripherals supplied by the NI PXI-8108. The NI PXI-8108 has one serial port, and an ECP/EPP parallel port.

• The Gigabit Ethernet connects to either 10 Mbit, 100 Mbit, or 1,000 Mbit Ethernet interfaces.

• The GPIB block contains the GPIB interface.

• The ExpressCard/34 slot accommodates an ExpressCard/34 module.

• The SATA block connects a Serial ATA hard drive to the ICH9M.

National Instruments Software

National Instruments has developed several software tools you can use with the NI PXI-8108.

National Instruments’ hardware and software work together to help you make the most of your PXI system. The LabVIEW, Measurement Studio, and LabWindows™/CVI™ application development environments combine with leading hardware drivers such as NI-DAQmx to provide exceptional control of NI hardware. Instrument drivers are available at ni.com/idnet to simplify communication with instruments over a variety of busses.

LabVIEW is a powerful and easy-to-use graphical programming environment you can use to acquire data from thousands of different instruments including USB, IEEE 488.2, VXI, serial, PLCs, and plug-in boards. LabVIEW helps you convert acquired data into meaningful results using powerful data analysis routines. Add-on tools provide additional specialized functionality. For more information visit ni.com/labview and ni.com/toolkits.
If you prefer to use Microsoft’s Visual Basic, Visual C++, and Visual Studio .NET for the core of your application, Measurement Studio adds tools for Measurement and Automation to each language. For more information visit ni.com/mstudio.

LabWindows/CVI is an interactive ANSI C programming environment designed for building virtual instrument applications. LabWindows/CVI delivers a drag-and-drop editor for building user interfaces, a complete ANSI C environment for building your test program logic, and a collection of automated code generation tools, as well as utilities for building automated test systems, monitoring applications, or laboratory experiments. For more information visit ni.com/lwcvi.

NI-DAQmx provides an extensive library of functions that you can call from your application development environment or interactive environment such as NI Signal Express. These functions provide an intuitive API for National Instruments’ multifunction DAQ products. Features available include analog input (A/D conversion), buffered data acquisition (high-speed A/D conversion), analog output (D/A conversion), waveform generation, digital I/O, counter/timer operations, SCXI signal conditioning, RTSI or PXI synchronization, self-calibration, messaging, and acquiring data to extended memory. For more information visit ni.com/daq.

National Instruments’ Modular Instruments use specialized drivers suited to each product’s specialization. Express VIs provide customized, interactive programming of instruments in a single interface and soft front panels provide an interface for testing the functionality of each instrument with no programming required. NI Switches, DMMs, High-Speed DIO, High-Speed Digitizers, and Sources each have customized drivers for high-end modular instrumentation systems. RF applications leverage two drivers, NI-RFSG and NI-RFSA and Dynamic Signal Acquisition is available through NI-DAQmx. For more information visit ni.com/modularinstruments.

You can expand the timing and triggering functionality of your PXI system with PXI Timing and Synchronization products. These products provide precision clock sources, custom routing of triggers for multi-chassis synchronization, clock sharing, and more and are programmed with NI-Sync. For more information visit ni.com/pxi.
NI-VISA is the National Instruments implementation of the VISA specification. VISA is a uniform API for communicating and controlling USB, Serial, GPIB, PXI, VXI, and various other types of instruments. This API aids in the creation of portable applications and instrument drivers. For information on writing your own PXI instrument driver with NI-VISA, refer to the *NI-VISA Getting Started Manual* and the readme.txt file in the NI-VISA directory. For more information visit [ni.com/visa](http://ni.com/visa).

With LabVIEW for Linux and support for over two hundred devices on Linux with the NI-DAQmx driver, you can now create Virtual Instruments based on the Linux OS. Instrument control in Linux has been improved by the NI-VISA driver for Linux and NI Modular Instruments are partially supported. For more information visit [ni.com/linux](http://ni.com/linux).
Installation and Configuration

This chapter contains information about installing and configuring your NI PXI-8108 controller.

Installing the NI PXI-8108

This section contains general installation instructions for the NI PXI-8108. Consult your PXI chassis user manual for specific instructions and warnings.

1. Plug in your chassis before installing the NI PXI-8108. The power cord grounds the chassis and protects it from electrical damage while you install the module. (Make sure the power switch is turned off.)

   **Caution** To protect both yourself and the chassis from electrical hazards, leave the chassis powered off until you finish installing the NI PXI-8108 module.

2. Remove any filler panels blocking access to the system controller slot (slot 1) in the chassis.

3. Touch the metal part of the case to discharge any static electricity that might be on your clothes or body.
4. Remove the protective plastic covers from the four bracket-retaining screws as shown in Figure 2-1.

5. Make sure the injector/ejector handle is in its downward position. Align the NI PXI-8108 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 PXI-8108. The module will not insert properly unless the handle is in its downward position so that it does not interfere with the injector rail on the chassis.
6. Hold the handle as you slowly slide the module into the chassis until the handle catches on the injector/ejector rail.

7. Raise the injector/ejector handle until the module firmly seats into the backplane receptacle connectors. The front panel of the NI PXI-8108 should be even with the front panel of the chassis.

8. Tighten the four bracket-retaining screws on the top and bottom of the front panel to secure the NI PXI-8108 to the chassis.

9. Check the installation.

10. Connect the keyboard and mouse to the appropriate connectors. If you are using a PS/2 keyboard and a PS/2 mouse, a Y-splitter adapter is available to connect both to a single USB connector. Refer to Figure 4-1, Y-Splitter Cable.

11. Connect the DVI monitor video cable to the DVI connector. If you are using a VGA monitor, use the DVI-to-VGA adapter included with your kit.

12. Connect devices to ports as required by your system configuration.

13. Power on the display device.


15. Verify that the controller boots. If the controller does not boot, refer to the What if the NI PXI-8108 does not boot? section of Chapter 5, Troubleshooting.
Figure 2-2 shows an NI PXI-8108 installed in the system controller slot of a National Instruments PXI-1042 chassis. You can place PXI devices in any other slots.

How to Remove the Controller from the PXI Chassis

The NI PXI-8108 controller is designed for easy handling. To remove the unit from the PXI chassis, complete the following steps:

1. Power off the chassis.
2. Remove any cables that may be attached to the controller front panel.
3. Unscrew the bracket-retaining screws in the front panel. Refer to Figure 2-1 for the location of these screws.
4. Press the injector/ejector handle down.
5. Slide the unit out of the chassis.
BIOS Setup

You can change the NI PXI-8108 configuration settings in the BIOS setup program. The BIOS is the low-level interface between the hardware and operating system software that configures and tests your hardware when you boot the system. The BIOS setup program includes menus for configuring settings and enabling NI PXI-8108 controller features.

Most users do not need to use the BIOS setup program, as the NI PXI-8108 controller ships with default settings that work well for most configurations.

Caution Changing BIOS settings may lead to incorrect controller behavior and possibly an unbootable controller. If this happens, follow the instructions for restoring default settings in the System CMOS section. In general, do not change a setting unless you are absolutely certain what it does.

Accessing BIOS Setup Utility

Complete the following steps to start the BIOS setup program.

1. Power on or reboot your NI PXI-8108 controller.

2. When the message <DEL> = BIOS Setup Menu appears, press the <Del> key. The setup program loads after a short delay.
   The Main menu is displayed when you first enter the BIOS setup program.

Use the following keys to navigate through the BIOS setup program:

- **Left Arrow, Right Arrow**—Use these keys to move between the different setup menus. If you are in a submenu, these keys have no effect, and you must press <Esc> to leave the submenu first. (To use the arrows on the numeric keypad, you must turn off Num Lock.)

- **Up Arrow, Down Arrow**—Use these keys to move between the options within a setup menu. (To use the arrows on the numeric keypad, you must turn off Num Lock.)

- **<Enter>**—Use this key either to enter a submenu or display all available settings for a highlighted configuration option.

- **<Esc>**—Use this key to return to the parent menu of a submenu. At the top-level menus, this key serves as a shortcut to the Exit menu.

- **<-> and <->**—Use these keys to cycle between all available settings for a selected configuration option.
• <Tab>—Use this key to select time and date fields.
• <F9>—Use this key to load the optimal default values for BIOS configuration settings. The optimal default values are the same as the shipping configuration default values.

**Main Setup Menu**

The most commonly accessed and modified BIOS settings are in the Main setup menu. The Main setup menu reports the following configuration information:

• **BIOS Version and Build Date**—These values indicate the version of the PXI-8108 controller BIOS and the date on which the BIOS was built.
• **Processor Type, Speed, and Number of Cores**—These values indicate the type of processor used in the PXI-8108 controller, the speed of the processor, and the number of processor cores.
• **System Memory**—This value indicates the size of system RAM detected by the BIOS.

The Main setup menu also includes the following settings:

• **System Time**—This setting controls the time of day, which is stored in a battery-backed real-time clock. Most operating systems also include a way to change this setting. Use <-> and <Tab> to change these values.
• **System Date**—This setting controls the date, which is stored in a battery-backed real-time clock. Most operating systems also include a way to change this setting. Use <-> and <Tab> to change these values.

**Advanced Setup Menu**

This menu contains BIOS settings that normally do not require modification. If you have specific problems such as unbootable disks or resource conflicts, you may need to examine these settings.

⚠️ **Caution** Changing settings in this menu may result in an unstable or unbootable controller. If this happens, follow the procedures outlined in the System CMOS section to restore BIOS settings to their factory defaults.
The Advanced setup menu includes the following settings and submenus:

- **SATA Configuration**—Use this setting to access the SATA Configuration submenu. Refer to the SATA Configuration Submenu section for more information.

- **CPU Configuration**—Use this setting to access the CPU Configuration submenu. Refer to the CPU Configuration Submenu section for more information.

- **Video Configuration**—Use this setting to access the Video Configuration submenu. Refer to the Video Configuration Submenu section for more information.

- **ExpressCard Configuration**—Use this setting to access the ExpressCard Configuration submenu. Refer to the ExpressCard Configuration Submenu section for more information.

- **USB Configuration**—Use this setting to access the USB Configuration submenu. Refer to the USB Configuration Submenu section for more information.

- **Serial/Parallel Port Configuration**—Use this setting to access the Serial/Parallel Port Configuration submenu. Refer to the Serial/Parallel Port Configuration Submenu section for more information.

- **Trigger Router Configuration**—Use this setting to access the Trigger Router Configuration submenu. Refer to the Trigger Router Configuration Submenu section for more information.

**SATA Configuration Submenu**

Use this submenu to apply alternate settings to the hard disk drive (HDD) interfaces. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **SATA Controller**—This setting specifies whether or not the onboard SATA controller is enabled or disabled. The default value is Enabled.
  - **SATA Mode Selection**—This setting determines whether AHCI mode is enabled or disabled for the SATA port. Some operating systems, such as Windows 2000, do not support AHCI mode. You can use this setting to disable AHCI mode so that non-compatible OSes function correctly. The default value is AHCI.

- **Serial ATA Port 0**—This item displays the onboard SATA drive detected in the system.
Chapter 2  Installation and Configuration

CPU Configuration Submenu

Use this submenu to apply alternate settings to the CPU. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **Core Multi-Processing Controller**—This setting specifies whether or not the second core of the processor is enabled or disabled. The default value is **Enabled**.

- **CPU Virtualization**—This setting determines whether the Intel VT-x virtualization support is enabled or disabled. A virtual machine monitor (VMM) can utilize the additional hardware capabilities provided by the VT-x processor extensions. The default value is **Enabled**.

- **Processor Type, Speed, and Number of Cores**—These values indicate the type of processor used in the NI PXI-8108 controller, the speed of the processor, and the number of processor cores.

Video Configuration Submenu

Use this submenu to apply alternate settings to the video configuration. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **Primary Display**—This setting specifies which video adapter the BIOS should use as the primary adapter if more than one is present. To use an external video adapter as the primary graphics adapter, choose **Add-in PCI Video**. The default value is **Onboard Video**.

- **Total Graphics Memory**—This setting specifies the amount of system memory to allocate as graphics memory for use by the onboard video device. The default value is **256 MB**.

- **DDC Routing**—This setting determines how the monitor DDC is routed. Use this setting to select whether or not the DDC is routed for an analog monitor or a DVI monitor. In order to use a DVI monitor, this setting must be set to **DVI**. An analog monitor, however, will function with this option set to either **Analog** or **DVI**. The DDC communication path is only enabled when set to **Analog** for an analog monitor, so certain advanced features of your analog monitor may only be enabled when routing DDC to **Analog**. The default setting is **DVI**.
ExpressCard Configuration Submenu

Use this submenu to apply alternate settings to the ExpressCard configuration. These settings determine how much memory space, I/O space, and PCI bus numbers will be pre-allocated for the ExpressCard port, allowing non-PCI Express-aware operating systems to support hot-plugging ExpressCard devices. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **Reserved Buses**—This setting determines the number of PCI buses that will be reserved by the BIOS for ExpressCard PCI-PCI bridges that may be hot-plugged in the ExpressCard slot. The default value for this setting is 8 PCI buses.
- **Reserved Memory**—This setting determines the amount of memory space, in bytes, that will be reserved by the BIOS for PCI-PCI bridges that may be hot-plugged in the ExpressCard slot. The default value for this setting is 32M bytes of memory.
- **Reserved I/O**—This setting determines the amount of I/O space, in bytes, that will be reserved by the BIOS for PCI-PCI bridges that may be hot-plugged in the ExpressCard slot. The default value for this setting is 4K bytes of I/O space.

USB Configuration Submenu

Use this submenu to apply alternate configurations to the USB ports. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **USB Devices**—This item lists the total number of devices detected in the system, categorized by device type.
- **Legacy USB Support**—This setting specifies whether or not legacy USB support is enabled. Legacy USB support refers to the ability to use a USB keyboard and mouse during system boot or in a legacy operating system such as DOS. The default value is Enabled.

  **Note** Certain real-time applications may require you to disable this setting to reduce loop time jitter. When the controller is configured to boot LabVIEW RT, legacy USB support is automatically disabled.

- **Device Reset Delay**—This setting specifies the number of seconds the Power-On Self Test will wait for a USB mass storage device to start. The default is 20 seconds.
In addition, the following option is available for each detected device if a USB mass storage device is present:

- **Emulation Type**—This setting specifies how the BIOS will present the USB mass storage device to the system. This option can be used to present a USB mass storage device as a floppy, Zip, hard disk, or CD-ROM drive. The default is **Auto**, which allows the BIOS to treat small USB flash disk drives as floppy drives and larger USB flash disk drives as hard disk drives.

### Serial/Parallel Port Configuration Submenu

Use this submenu to apply alternate configurations to the serial and parallel ports. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **Serial Port 0 Configuration**—Use this setting to access the **Serial Port 0 Configuration** submenu. Refer to the **Serial Port 0 Configuration Submenu** section for more information.

- **Parallel Port Configuration**—Use this setting to access the **Parallel Port Configuration** submenu. Refer to the **Parallel Port Configuration Submenu** section for more information.

### Serial Port 0 Configuration Submenu

- **Serial Port**—This setting enables or disables the onboard serial port. The default value is **Enabled**.

- **Device Settings**—This item displays the current base address and interrupt request level (IRQ) information for the onboard serial port.

- **Change Settings**—This setting changes the base address and interrupt request level (IRQ) information for the onboard serial port. The default value is **Auto**.

### Parallel Port Configuration Submenu

- **Parallel Port**—This setting enables or disables the onboard parallel port. The default value is **Enabled**.

- **Device Settings**—This item displays the current base address and interrupt request level (IRQ) information for the onboard parallel port.

- **Device Mode**—This setting enables alternate modes of operation for the parallel port. Usually the default setting works for all applications. The default is **STD Printer Mode**.
• **Change Settings**—This setting changes the base address and interrupt request level (IRQ) information for the onboard parallel port. The default value is *Auto*. Note that the options available vary based upon the **Device Mode** selected for the parallel port.

**Trigger Router Configuration Submenu**

Use this submenu to program the front panel trigger router configuration. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration possible.

- **Route Front Panel Trigger**—This setting specifies how the front panel SMB trigger should be routed. The front panel trigger can be routed to **System Reset**, allowing an external trigger to reset the system. The default value is *Disabled*.

**LabVIEW RT Options Setup Menu**

Use this menu to configure boot options for LabVIEW RT if it is installed on the controller. If you are not using LabVIEW RT, you should leave these settings at default.

**Note** The settings below override the behavior of the switches on SW1. Refer to the **LabVIEW RT Configuration Switches** section for more information. To use the settings from the switches, select **Use Switch Setting** for each option.

- **Boot Configuration**—This setting selects whether the controller should boot LabVIEW RT, LabVIEW RT Safe Mode, or an installed OS such as Windows XP. The default is **Use Switch Setting**.

- **Reset IP Address**—If the controller is deployed to a different subnet from which it was originally configured, or if the current IP address is invalid, use this switch to reset the IP address and other TCP/IP settings to their factory defaults during LabVIEW RT startup. The default is **Use Switch Setting**.

**Note** By default, the target will automatically attempt to connect to the network using DHCP. If the target is unable to initiate a DHCP connection, the target connects to the network with a link-local IP address or 169.254.x.x.

- **Disable Startup VI**—If the controller becomes inaccessible because of a startup VI, this switch can prevent VIs from automatically running at startup. The default is **Use Switch Setting**.
Chapter 2 Installation and Configuration

Boot Setup Menu

Use this menu to configure settings related to the boot process and boot device priority.

- **Boot Settings Configuration**—Use this setting to access the Boot Settings Configuration submenu. Refer to the Boot Settings Configuration Submenu section for more information.

- **SCSI Drive Boot**—This setting specifies whether or not boot support is enabled for legacy mass storage devices, such as SCSI drives. When enabled, legacy mass storage controllers with boot support will be displayed in the Boot Option Priorities menu. The default value is Enabled.

- **PXE Network Boot**—This setting specifies whether or not the PXE network boot agent is enabled. When enabled, the Intel Boot Agent will be displayed in the Boot Option Priorities menu, allowing you to boot from a PXE server on the local subnet. Note that the Intel Boot Agent device is named IBA GE Slot 00c9 v1310 in the Boot Option Priorities menu. The system must be restarted for this setting to take effect. The default value is Disabled.

- **Boot Option Priorities**—These settings specify the order in which the BIOS checks for bootable devices, including the local hard disk drive, removable devices such as USB flash disk drives or USB CD-ROM drives, or the PXE network boot agent. The BIOS will first attempt to boot from the device associated with 1st Boot Device, followed by 2nd Boot Device, and 3rd Boot Device. If multiple boot devices are not present, the BIOS setup utility will not display all of these configuration options. To select a boot device, press <Enter> on the desired configuration option and select a boot device from the resulting menu. You can also disable certain boot devices by selecting Disabled.

  **Note** Only one device of a given type will be shown in this list. If more than one device of the same type exists, use the Device BBS Priorities submenus to re-order the priority of devices of the same type.

The following submenus will be displayed if one or more bootable devices of the corresponding type is present:

- **Hard Drive BBS Priorities**—Use this setting to access the Hard Drive BBS Priorities submenu to re-order or disable bootable hard drive devices. Refer to the Hard Drive BBS Priorities Submenu section for more information.
• **CD/DVD ROM Drive BBS Priorities**—Use this setting to access the CD/DVD ROM Drive BBS Priorities submenu to re-order or disable bootable CD/DVD ROM drive devices. Refer to the **CD/DVD ROM Drive BBS Priorities Submenu** section for more information.

• **Floppy Drive BBS Priorities**—Use this setting to access the Floppy Drive BBS Priorities submenu to re-order or disable bootable floppy drive devices. Refer to the **Floppy Drive BBS Priorities Submenu** section for more information.

• **Network Device BBS Priorities**—Use this setting to access the Network Device BBS Priorities submenu to re-order or disable bootable network devices. Refer to the **Network Device BBS Priorities Submenu** section for more information.

**Boot Settings Configuration Submenu**

Use this submenu to apply alternate configurations to boot settings. Normally, you do not need to modify these settings, as the factory default settings provide the most compatible and optimal configuration.

• **Quiet Boot**—This setting enables or disables the splash screen during the boot process. The default value is **Enabled**.

• **Setup Prompt Timeout**—This setting specifies the number of seconds the system will wait for a BIOS Setup menu keypress (the <Del> key). The default value is **1** second.

• **Bootup NumLock State**—This setting specifies the power-on state of the keyboard NumLock setting. The default value is **On**.

**Hard Drive BBS Priorities Submenu**

• **Boot Option #1, Boot Option #2, Boot Option #3**—These settings specify the boot priority of hard drive devices. The highest priority device is displayed on the main **Boot Option Priorities** list. Optionally, each device can also be **Disabled** if the device should never be used as a boot device.

**CD/DVD ROM Drive BBS Priorities Submenu**

• **Boot Option #1, Boot Option #2, Boot Option #3**—These settings specify the boot priority of CD/DVD ROM drive devices. The highest priority device is displayed on the main **Boot Option Priorities** list. Optionally, each device can also be **Disabled** if the device should never be used as a boot device.
Chapter 2  Installation and Configuration

Floppy Drive BBS Priorities Submenu

- **Boot Option #1, Boot Option #2, Boot Option #3**—These settings specify the boot priority of floppy drive devices. The highest priority device is displayed on the main Boot Option Priorities list. Optionally, each device can also be Disabled if the device should never be used as a boot device.

Network Device BBS Priorities Submenu

- **Boot Option #1, Boot Option #2, Boot Option #3**—These settings specify the boot priority of network devices. The highest priority device is displayed on the main Boot Option Priorities list. Optionally, each device can also be Disabled if the device should never be used as a boot device.

Security Menu

Use this menu to enable BIOS security options.

- **Setup Administrator Password**—This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator’s password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.

- **User Password**—This setting specifies a password that must be entered to access the BIOS Setup Utility or to boot the system. If only the User’s password is set, then this is a power on password and must be entered to boot or enter the BIOS setup program. In the BIOS setup program, the User will have Administrator rights. By default, no password is specified.
Save & Exit Menu

The **Save & Exit** setup menu includes all available options for exiting, saving, and loading the BIOS default configuration. As an alternative to this screen, press <F9> to load optimal BIOS default settings and <F10> to save changes and exit setup.

The **Exit** setup menu includes the following settings:

- **Save Changes and Reset**—Any changes made to BIOS settings are stored in NVRAM. The setup program then exits and reboots the controller. The <F10> key can also be used to select this option.

- **Discard Changes and Reset**—Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller. The <Esc> key can also be used to select this option.

- **Save Changes**—Changes made to BIOS settings during this session are committed to NVRAM. The setup program remains active, allowing further changes.

- **Discard Changes**—Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The BIOS setup continues to be active.

- **Restore Factory Defaults**—This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting. Notice that any nondefault settings such as boot order, passwords, and so on, are also restored to their factory defaults. The <F9> key can also be used to select this option.

- **Save As User Defaults**—This option saves a copy of the current BIOS settings as the User Defaults. This option is useful for preserving custom BIOS setup configurations.

- **Restore User Defaults**—This option restores all BIOS settings to the user defaults. This option is useful for restoring previously preserved custom BIOS setup configurations.

- **Boot Override**—This option lists all possible bootable devices and allows the user to override the **Boot Option Priorities** list for the current boot. If no changes have been made to the BIOS setup options, the system will continue booting to the selected device without first rebooting. If BIOS setup options have been changed and saved, a reboot will be required and the boot override selection will not be valid.
System CMOS

The NI PXI-8108 contains a backed-up memory used to store BIOS configuration information.

Complete the following steps to clear the CMOS contents:
1. Power off the chassis.
2. Remove the controller from the chassis.
3. Press and hold down push-button switch SW2 for 2 to 3 seconds. The switch location is shown in Figure 2-3.
4. Reinstall the controller in the chassis.
LabVIEW RT Installation

This section explains software installation and switch configuration for LabVIEW RT on your PXI controller.

LabVIEW RT Software Installation

The following section describes the necessary steps to get your PXI embedded controller setup to run LabVIEW Real-Time. In this section you will configure the boot mode of the controller, verify or change IP settings, and install LabVIEW Real-Time software.

Complete the following steps to install the LabVIEW RT software.

1. Boot the NI PXI embedded controller into the real-time operating system. Refer to the LabVIEW RT Configuration Switches section or the LabVIEW RT Options Setup Menu section in this manual to configure the controller for booting into LabVIEW RT. The PXI controller will automatically boot into LabVIEW RT Safe Mode when no software is installed. LabVIEW RT Safe Mode loads with the basic real-time operating system and will automatically attempt to connect to the network using DHCP. If DHCP is not available, it will then connect to the network with a link-local IP address.

   Tip   You can connect a monitor to the desktop PC to display startup messages such as the IP address and MAC address.

2. Open Measurement & Automation Explorer (MAX) on another computer in the same subnet and expand the Remote Systems branch. MAX lists the PXI controller as the model name of the controller followed by the MAC address (for example, NI-PXI-8108 00802f108562).

3. Click on the appropriate PXI controller entry to access the Network Settings tab in the right pane view.

4. (Optional) Enter a name for the RT target in the Name text box.

5. Set the network configuration options of the RT target in the IP Settings section and click the Apply button.

   For information about configuring network settings, refer to the Configuring Network Settings book, accessible by browsing to MAX Remote Systems Help»LabVIEW Real-Time Target Configuration»Configuring Network Settings from the Contents tab of MAX Help.
Note When any IP or identification settings are changed, you will be prompted to reboot the controller for the changes to take effect. Click Yes to automatically reboot the RT target. You may also reboot the controller by right-clicking on the target name under Remote Systems and selecting Reboot.

After rebooting the PXI controller it will appear in the Remote Systems category with the assigned name.

Figure 2-4 shows the RT Series PXI target, PXI-8106, configured to automatically obtain an IP address from a DHCP server, as indicated in the IP Settings section of the figure.

6. Expand the PXI controller view in the Remote Systems branch and select Software.

7. Click the Add/Remove Software button in the toolbar to launch the LabVIEW Real-Time Software Wizard.
8. Install the LabVIEW Real-Time software and device drivers that you require on the RT target. Refer to the NI Web site at ni.com/info and enter the info code etspc for the latest information about supported software.

After installation of the software the controller will automatically reboot and you will now be able to program it using LabVIEW Real-Time.

**Note** Refer to the RT Getting Started Guide available on your host computer for more information about setting up your RT target.

### LabVIEW RT Configuration Switches

Use the LabVIEW RT configuration switches to configure LabVIEW RT if it is installed on the controller. If you are not using LabVIEW RT, these switches should remain in the OFF position. The controller reads these switches only after a system reset.

**Note** You must reboot the controller for any changes to take place.

The NI PXI-8108 controller includes the following LabVIEW RT configuration switches:

- **Switch 1—Boot LabVIEW RT**: Set this switch to ON to boot LabVIEW RT.

- **Switch 2—Boot Safe Mode**: Set this switch to ON to boot LabVIEW RT into safe mode to reconfigure TCP/IP settings and to download or update software from a host computer. This switch overrides the behavior of Switch 1. Booting the controller into safe mode does not start the embedded LabVIEW RT engine. After changing the settings or software, reboot the controller with this switch OFF to resume normal operation.

- **Switch 3—Disable Startup VI**: Set this switch to ON to prevent VIs from automatically running at startup if the controller becomes inaccessible because of a startup VI.

- **Switch 4—Reset IP Address**: Set this switch to ON to reset the IP address and other TCP/IP settings to their factory defaults. Use this switch if moving the controller to a different subnet or if the current TCP/IP settings are valid.

**Note** By default, the target will automatically attempt to connect to the network using DHCP. If the target is unable to initiate a DHCP connection, the target connects to the network with a link-local IP address or 169.254.x.x.
Figure 2-5 shows the location of the LabVIEW RT configuration switches. The switches are shown in the OFF position.
Drivers and Software

Files and Directories Installed on Your Hard Drive

Your hard drive includes a directory called images in its root that contains software and soft copies of manuals for the installed devices. The directory structure under the images directory is logically organized into several levels.

In the images directory, you will find a manuals directory, an os directory, and a drivers directory.

The manuals directory contains quick reference guides, technical reference manuals, and National Instruments software manuals, all in Adobe Acrobat format. To access any manual, change your directory to c:\images\manuals and list the contents of that directory. You will see several files, one corresponding to each device.

The os directory contains a subdirectory corresponding to the operating system installed on your controller.

The rest of the directories correspond to each device in your controller. Within each of these directories are the drivers for the devices. These files and directories are copied exactly from the manufacturer distribution disks, so the naming conventions vary from device to device.

PXI Features

PXI Trigger Connectivity

The SMB connector on the NI PXI-8108 front panel can connect to or from any PXI backplane trigger line. A trigger allocation process is needed to prevent two resources from connecting to the same trigger line, resulting in the trigger being double-driven and possibly damaging the hardware. At the time of this manual’s publication, this software is not yet available for Windows. Contact National Instruments for more information.
Chapter 2  Installation and Configuration

Chassis Configuration

Configuration of the PXI system is handled through Measurement & Automation Explorer (MAX), included with the software pre-installed on your controller. MAX creates the pxisys.ini file, which defines the layout and parameters of your PXI system.

The configuration steps for single or multiple-chassis systems are the same. An example of a multichassis configuration is shown in Figure 2-6.

Figure 2-6. Multichassis Configuration in MAX
Basic PXI System Configuration

1. Launch MAX.
2. In the Configuration tree, click the Devices and Interfaces branch to expand it.
3. If the PXI system controller has not yet been configured, it is labeled PXI System (Unidentified). Right-click this entry to display the pop-up menu, then select the appropriate controller model from the Identify As submenu.
4. Click the PXI System controller. The chassis (or multiple chassis, in a multichassis configuration) is listed below it. Identify each chassis by right-clicking its entry, then selecting the appropriate chassis model through the Identify As submenu. Further expanding the PXI System branch shows all devices in the system that can be recognized by NI-VISA. When your controller and all your chassis are identified, a pxisys.ini file is generated.

Device drivers and other utility software read the pxisys.ini file to obtain system information. For detailed information about initialization files, refer to the PXI specification at www.pxisa.org.

Upgrading RAM

You can change the amount of installed RAM on the NI PXI-8108 by upgrading the SO-DIMM.

National Instruments offers the following types of SO-DIMMs for use with the NI PXI-8108 controller.

- PC2-6400 1 GB, 128 MB × 64, 1.18 in. max
- PC2-6400 2 GB, 256 MB × 64, 1.18 in. max

Note  National Instruments has tested and verified that the DDR2 SO-DIMMs we sell work with the NI PXI-8108. We recommend you purchase your DDR2 SO-DIMM modules from National Instruments. Other off-the-shelf DDR2 SO-DIMM modules are not guaranteed to work properly.
Hard Drive Recovery

The NI PXI-8108 controller ships with an OS Recovery CD that allows you to reinstall your operating system onto your hard drive through an external CD-ROM such as a USB CD-ROM drive. Boot the PXI controller using the OS re-installation CD to recover the OS. You also may need to reinstall other software after using the CD to recover the OS. For more information on these tools refer to KnowledgeBase 2ZKC02OK at ni.com/support.

Note Recovering the OS erases the contents of your hard disk. Back up any files you want to keep.
Installing an OS

NI PXI-8108 controllers include a pre-installed OS. In some cases, you may want to install a different OS. When doing so, consider the following guidelines.

Installing from a CD-ROM

The NI PXI-8108 supports the installation of Windows 7, XP, and Vista from a USB CD-ROM.

As an alternative to a USB CD-ROM drive, you can use an external SCSI CD-ROM with a PXI-SCSI adapter.

Note For additional assistance with installing or changing an operating system, refer to KnowledgeBase 2ZKC02OK: Hard Drive Recovery and OS Installation for PXI and VXI Controllers at ni.com/support.

ExpressCard

This section provides information on the installation and removal of ExpressCard modules.

Installing an ExpressCard

You can install an ExpressCard module while the NI PXI-8108 is running. The NI PXI-8108 will automatically detect the card. ExpressCards are generally marked with a symbol or a label to indicate which end to insert into the slot. The cards are keyed to prevent incorrect insertion.

To install an ExpressCard, complete the following steps.
1. Hold the card so the top side is facing left.
2. Insert the card until it is completely seated in its connector. The connector has an automatic eject mechanism. If you insert the card and it is ejected, simply re-insert the card until it is seated.

If you encounter too much resistance, do not force the card. Check the card orientation and try again.

The PXI-8108 will automatically recognize the ExpressCard and load the appropriate driver(s). Third-party cards may require that you install additional drivers. Contact your ExpressCard vendor for more information.
Removing an ExpressCard

To remove the ExpressCard module push in the module and then release to eject the card. Slide the card out of the slot.

⚠️ Caution To avoid data loss and other potential issues, stop communication with your ExpressCard device before removing it from the PXI-8108. In Windows, use the Safely Remove Hardware tool to safely stop the ExpressCard.
I/O Information

Front Panel Connectors

Table 3-1 lists various I/O interfaces and their corresponding NI PXI-8108 external connectors, bus interfaces, and functions.

<table>
<thead>
<tr>
<th>I/O Interface</th>
<th>External Connector</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video</td>
<td>DVI-I (24-pin DSUB)</td>
<td>Intel Extreme Graphics controller</td>
</tr>
<tr>
<td>Serial</td>
<td>COM1 (9-pin DSUB)</td>
<td>16550 RS-232 serial port</td>
</tr>
<tr>
<td>Ethernet</td>
<td>LAN (RJ45)</td>
<td>10/100/1000 Ethernet connection</td>
</tr>
<tr>
<td>Parallel</td>
<td>Parallel Port (36-pin champ)</td>
<td>IEEE 1284</td>
</tr>
<tr>
<td>USB (four ports)</td>
<td>USB 4-pin Series A stacked receptacle</td>
<td>Hi-Speed USB</td>
</tr>
<tr>
<td>PXI trigger</td>
<td>Trigger (SMB)</td>
<td>Routing PXI triggers to or from the backplane trigger bus</td>
</tr>
<tr>
<td>GPIB Controller</td>
<td>GPIB (25-pin Micro D)</td>
<td>General-Purpose Interface Bus, IEEE 488.1</td>
</tr>
<tr>
<td>ExpressCard/34 module</td>
<td>ExpressCard/34 slot</td>
<td>ExpressCard/34 Expansion</td>
</tr>
</tbody>
</table>
Figure 3-1 shows the front panel layout and dimensions of the NI PXI-8108. Dimensions are in inches [millimeters].

Figure 3-1. NI PXI-8108 Front Panel Layout and Dimensions
DVI-I

Figure 3-2 shows the location and pinouts for the DVI-I connector on the NI PXI-8108. Table 3-2 lists and describes the DVI-I connector signals.

![DVI-I Connector Location and Pinout](image)

**Table 3-2. DVI-I Connector Signals**

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TMDS Data2–</td>
</tr>
<tr>
<td>2</td>
<td>TMDS Data2+</td>
</tr>
<tr>
<td>3</td>
<td>TMDS Data2/4 Shield</td>
</tr>
<tr>
<td>4</td>
<td>Reserved</td>
</tr>
<tr>
<td>5</td>
<td>Reserved</td>
</tr>
<tr>
<td>6</td>
<td>DDC Clock [SCL]</td>
</tr>
<tr>
<td>7</td>
<td>DDC Data [SDA]</td>
</tr>
<tr>
<td>8</td>
<td>Analog vertical sync</td>
</tr>
<tr>
<td>9</td>
<td>TMDS Data1–</td>
</tr>
<tr>
<td>10</td>
<td>TMDS Data1+</td>
</tr>
</tbody>
</table>
### Table 3-2. DVI-I Connector Signals (Continued)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>TMDS Data1/3 Shield</td>
</tr>
<tr>
<td>12</td>
<td>Reserved</td>
</tr>
<tr>
<td>13</td>
<td>Reserved</td>
</tr>
<tr>
<td>14</td>
<td>+5 V Power</td>
</tr>
<tr>
<td>15</td>
<td>Ground (for +5 V)</td>
</tr>
<tr>
<td>16</td>
<td>Hot Plug Detect</td>
</tr>
<tr>
<td>17</td>
<td>TMDS Data0–</td>
</tr>
<tr>
<td>18</td>
<td>TMDSData0+</td>
</tr>
<tr>
<td>19</td>
<td>TMDS Data0/5 Shield</td>
</tr>
<tr>
<td>20</td>
<td>Reserved</td>
</tr>
<tr>
<td>21</td>
<td>Reserved</td>
</tr>
<tr>
<td>22</td>
<td>TMDS Clock Shield</td>
</tr>
<tr>
<td>23</td>
<td>TMDS Clock+</td>
</tr>
<tr>
<td>24</td>
<td>TMDS Clock–</td>
</tr>
<tr>
<td>C1</td>
<td>Analog Red</td>
</tr>
<tr>
<td>C2</td>
<td>Analog Green</td>
</tr>
<tr>
<td>C3</td>
<td>Analog Blue</td>
</tr>
<tr>
<td>C4</td>
<td>Analog Horizontal Sync</td>
</tr>
<tr>
<td>C5</td>
<td>Analog GND Return: (analog R, G, B)</td>
</tr>
</tbody>
</table>
Figure 3-3 shows the location and pinouts for the COM1 connector on the NI PXI-8108. Table 3-3 lists and describes the COM1 connector signal.

![COM1 Connector Location and Pinout](image)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DCD</td>
<td>Data Carrier Detect</td>
</tr>
<tr>
<td>2</td>
<td>RXD</td>
<td>Receive Data</td>
</tr>
<tr>
<td>3</td>
<td>TXD</td>
<td>Transmit Data</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
<td>Data Terminal Ready</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
<td>Data Set Ready</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>Ready to Send</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>Clear to Send</td>
</tr>
<tr>
<td>9</td>
<td>RI</td>
<td>Ring Indicator</td>
</tr>
</tbody>
</table>
Ethernet

Figure 3-4 shows the location and pinouts for the Ethernet connector on the NI PXI-8108. Table 3-4 lists and describes the Ethernet connector signals.

Note The Ethernet controller can perform automatic crossover, thus eliminating the need for crossover cables.
Table 3-5. 10/100/1000 LAN Connector LED States

<table>
<thead>
<tr>
<th>LED</th>
<th>Color</th>
<th>LED State</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top</td>
<td>Green</td>
<td>Off</td>
<td>LAN link is not established.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On (steady state)</td>
<td>LAN link is established.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On (brighter and pulsing)</td>
<td>The controller is communicating with another computer on the LAN.</td>
</tr>
<tr>
<td>Bottom</td>
<td>Unlit</td>
<td>Off</td>
<td>10 Mbit/sec data rate is selected.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>On</td>
<td>100 Mbit/sec data rate is selected.</td>
</tr>
<tr>
<td></td>
<td>Green</td>
<td>On</td>
<td>1000 Mbit/sec data rate is selected.</td>
</tr>
<tr>
<td></td>
<td>Orange</td>
<td>On</td>
<td>1000 Mbit/sec data rate is selected.</td>
</tr>
</tbody>
</table>

Parallel Port

Figure 3-5 shows the location and pinouts for the IEEE 1284 (parallel) connector on the NI PXI-8108. Table 3-6 lists and describes the IEEE 1284 connector signals.

Parallel port adapter cables are available from National Instruments, part number 777169-01.
### Table 3-6. Parallel Port Connector Signals

<table>
<thead>
<tr>
<th>Pin</th>
<th>Default Configuration (LPT)</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>BUSY</td>
<td>Device Busy</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>SLCT</td>
<td>Select</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>ACK#</td>
<td>Acknowledge</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>FAULT# (ERROR#)</td>
<td>Fault</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PAPEREND</td>
<td>Paper End</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PD0</td>
<td>Data Bit 0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PD1</td>
<td>Data Bit 1</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PD 2</td>
<td>Data Bit 2</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>PD3</td>
<td>Data Bit 3</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PD4</td>
<td>Data Bit 4</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>PD5</td>
<td>Data Bit 5</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PD6</td>
<td>Data Bit 6</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>PD7</td>
<td>Data Bit 7</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>INIT#</td>
<td>Initialize Printer</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>STROBE#</td>
<td>Strobe</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>SLCTIN#</td>
<td>Select Input</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>AUTOFD#</td>
<td>Auto Line Feed</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>+5V</td>
<td>+5 V</td>
<td></td>
</tr>
<tr>
<td>19–35</td>
<td>GND</td>
<td>Ground</td>
<td></td>
</tr>
<tr>
<td>36</td>
<td>NC</td>
<td>Not Connected</td>
<td></td>
</tr>
</tbody>
</table>
Universal Serial Bus

Figure 3-6 shows the location and pinouts for the Universal Serial Bus (USB) connectors on the NI PXI-8108. Table 3-7 lists and describes the USB connector signals.

![Figure 3-6. USB Connector Location and Pinout](image)

Table 3-7. USB Connector Signals

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VCC</td>
<td>Cable Power (+5 V)</td>
</tr>
<tr>
<td>2</td>
<td>D–</td>
<td>USB Data –</td>
</tr>
<tr>
<td>3</td>
<td>D+</td>
<td>USB Data +</td>
</tr>
<tr>
<td>4</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>

**Note**  Install a noise-suppression ferrite (included in your shipping kit) onto the external USB cable when using a USB mouse or keyboard to ensure that your device meets all EMC standards applicable to your country. Install the ferrite across the body of the USB cable, approximately 50–75 mm (2–3 in.) from the end of the cable. Refer to Figure 3-7 for an illustration of this procedure.
Trigger

The TRIG connector is the software-controlled trigger connection for routing PXI triggers to or from the backplane trigger bus.

Figure 3-8 shows the TRIG connector location on the NI PXI-8108. Table 3-8 lists and describes the trigger connector signals.
GPIB (IEEE 488.2)

Figure 3-9 shows the location and pinouts for the GPIB connector on the NI PXI-8108. Table 3-9 lists and describes the GPIB connector signals.

National Instruments provides a GPIB mating connector, part number 183285-0R2.

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TRIG</td>
<td>Trigger</td>
</tr>
<tr>
<td>2</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DIO1#</td>
<td>Data Bit 1</td>
</tr>
<tr>
<td>2</td>
<td>DIO2#</td>
<td>Data Bit 2</td>
</tr>
<tr>
<td>3</td>
<td>DIO3#</td>
<td>Data Bit 3</td>
</tr>
<tr>
<td>4</td>
<td>DIO4#</td>
<td>Data Bit 4</td>
</tr>
<tr>
<td>5</td>
<td>EOI#</td>
<td>End or Identify</td>
</tr>
</tbody>
</table>
## Table 3-9. GPIB Connector Signals (Continued)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>DAV#</td>
<td>Data Valid</td>
</tr>
<tr>
<td>7</td>
<td>NRFD#</td>
<td>Not Ready for Data</td>
</tr>
<tr>
<td>8</td>
<td>NDAC#</td>
<td>Not Data Accepted</td>
</tr>
<tr>
<td>9</td>
<td>IFC#</td>
<td>Interface Clear</td>
</tr>
<tr>
<td>10</td>
<td>SRQ#</td>
<td>Service Request</td>
</tr>
<tr>
<td>11</td>
<td>ATN#</td>
<td>Attention</td>
</tr>
<tr>
<td>12</td>
<td>SHIELD</td>
<td>Chassis ground</td>
</tr>
<tr>
<td>13</td>
<td>DIO5#</td>
<td>Data Bit 5</td>
</tr>
<tr>
<td>14</td>
<td>DIO6#</td>
<td>Data Bit 6</td>
</tr>
<tr>
<td>15</td>
<td>DIO7#</td>
<td>Data Bit 7</td>
</tr>
<tr>
<td>16</td>
<td>DIO8#</td>
<td>Data Bit 8</td>
</tr>
<tr>
<td>17</td>
<td>REN#</td>
<td>Remote Enable</td>
</tr>
<tr>
<td>18–25</td>
<td>GND</td>
<td>Logic Ground</td>
</tr>
</tbody>
</table>
ExpressCard/34 Slot

The NI PXI-8108 controller is equipped with an ExpressCard/34 slot on the front panel, which provides I/O expansion and options for removable storage, Ethernet, and a variety of other I/O.

Figure 3-10 shows the location and pinouts for the ExpressCard/34 slot on the NI PXI-8108. Table 3-10 lists and describes the ExpressCard connector signals.

![Figure 3-10. ExpressCard/34 Slot Location and Pinout](image)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>2</td>
<td>USB Data –</td>
<td>USB Data –</td>
</tr>
<tr>
<td>3</td>
<td>USB Data +</td>
<td>USB Data +</td>
</tr>
<tr>
<td>4</td>
<td>CPUSB#</td>
<td>USB Presence</td>
</tr>
<tr>
<td>5</td>
<td>RESERVED</td>
<td>Reserved by spec for future use</td>
</tr>
<tr>
<td>6</td>
<td>RESERVED</td>
<td>Reserved by spec for future use</td>
</tr>
<tr>
<td>7</td>
<td>SMBCLK</td>
<td>SMBus Clock</td>
</tr>
<tr>
<td>8</td>
<td>SMBDATA</td>
<td>SMBus Data</td>
</tr>
</tbody>
</table>
Table 3-10. ExpressCard Connector Signals (Continued)

<table>
<thead>
<tr>
<th>Pin</th>
<th>Signal Name</th>
<th>Signal Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>+1.5V</td>
<td>Power</td>
</tr>
<tr>
<td>10</td>
<td>+1.5V</td>
<td>Power</td>
</tr>
<tr>
<td>11</td>
<td>WAKE#</td>
<td>PE Wake</td>
</tr>
<tr>
<td>12</td>
<td>+3.3VAUX</td>
<td>Power</td>
</tr>
<tr>
<td>13</td>
<td>PERST#</td>
<td>PE Reset</td>
</tr>
<tr>
<td>14</td>
<td>+3.3V</td>
<td>Power</td>
</tr>
<tr>
<td>15</td>
<td>+3.3V</td>
<td>Power</td>
</tr>
<tr>
<td>16</td>
<td>CLKREQ#</td>
<td>Clock Request</td>
</tr>
<tr>
<td>17</td>
<td>CPPE#</td>
<td>PE Presence</td>
</tr>
<tr>
<td>18</td>
<td>REFCLK–</td>
<td>Reference Clock –</td>
</tr>
<tr>
<td>19</td>
<td>REFCLK+</td>
<td>Reference Clock +</td>
</tr>
<tr>
<td>20</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>21</td>
<td>PERn</td>
<td>PE Data Receive –</td>
</tr>
<tr>
<td>22</td>
<td>PERp</td>
<td>PE Data Receive +</td>
</tr>
<tr>
<td>23</td>
<td>GND</td>
<td>Ground</td>
</tr>
<tr>
<td>24</td>
<td>PETn</td>
<td>PE Data Transmit –</td>
</tr>
<tr>
<td>25</td>
<td>PETp</td>
<td>PE Data Transmit +</td>
</tr>
<tr>
<td>26</td>
<td>GND</td>
<td>Ground</td>
</tr>
</tbody>
</table>
Front Panel Features

The NI PXI-8108 controller has the following front-panel features:

- A controller reset pushbutton (press the button to generate a reset to the controller)
- Two front panel LEDs that show PC status
  - The POWER OK LED indicates the power status of the controller. The LED will indicate one of the following states:
    - **ON steady**—PXI and onboard power is on and within regulation limits
    - **Blinking**—One of the PXI or onboard supplies is operating outside of the normal limits, or is not functioning.
    - **OFF**—The power to the controller is off.
  - The DRIVE LED indicates when an access to the internal hard disk is occurring.

Data Storage

The NI PXI-8108 has the following data storage features:

- 2.5 in. SATA notebook internal hard drive
- USB storage support—USB CD-ROM, mass storage device, or floppy drive
Common Configuration Questions

This chapter answers common configuration questions you may have when using the NI PXI-8108 embedded controller.

General Questions

What do the LEDs on the NI PXI-8108 front panel mean?
Refer to the LED status descriptions in the Front Panel Features section of Chapter 3, I/O Information.

How do I check the configuration of the memory, hard drive, time/date, and so on?
You can view these parameters in the BIOS setup. To enter the BIOS setup, reboot the NI PXI-8108 and press <Delete> during the memory tests. Refer to the Accessing BIOS Setup Utility section of Chapter 2, Installation and Configuration, for more information.

Can I use the internal hard drive and an external hard drive at the same time?
Yes.

Boot Options

What devices can I boot from?
The NI PXI-8108 can boot from the following devices:

• The internal hard drive
• An external SCSI hard drive or CD-ROM if an SCSI adapter, such as the PXI-8214, is used
• A network PXE server on the same subnet
Chapter 4 Common Configuration Questions

- An external USB mass storage device such as a USB hard drive or CD-ROM
- An external USB floppy drive
- Most PCI-based boards that provide an Option ROM

Note There are some limitations when booting from a USB device. Windows XP can be installed from a USB CD-ROM, but earlier versions of Windows cannot. The NI PXI-8108 BIOS configures the USB devices so that they will work in a DOS environment.

How do I configure the controller to boot from these devices?

There are two methods.

- Enter Setup and select the Boot menu. You will see a list of all bootable devices, ordered by device type. You can set the boot order using <+> and <->. Set the order by device type and set the order for the devices listed within the device type.
- To boot from a different device without permanently changing the boot order, press <F10> during POST. After the BIOS completes the POST and just before the controller boots the OS, the Boot menu is displayed. You can select the device type you want to boot from.

Cables and Connections

How do I plug both a PS/2 mouse and PS/2 keyboard into the controller?

The NI PXI-8108 has no PS/2 connector, and you need to use a USB Y-splitter cable as shown in Figure 4-1, or a similar device, to connect both a PS/2 mouse and PS/2 keyboard. National Instruments part number 778713-01 is such a cable and is available through the online catalog at ni.com/products.

Figure 4-1. Y-Splitter Cable
What if I don’t have a Y-splitter cable? Can I still use a mouse and keyboard?

If you do not have a Y-splitter cable, plug a USB keyboard into any USB connector. You can also plug a USB mouse into any USB connector.

How do I connect a standard 25-pin LPT cable to the NI PXI-8108?

The NI PXI-8108 uses a type C LPT connector. Most parallel port devices use a type A connector. To use a device with a standard type A LPT connector, you need to use a type C-to-type-A LPT adapter. Parallel port adapter cables, National Instruments part number 777169-01, are available through the online catalog at ni.com/products.

How do I connect a VGA monitor to the NI PXI-8108?

A VGA-to-DVI-I adapter (National Instruments part number 762559-01) is included with your kit. You can use this adapter to connect a VGA monitor to the DVI-I port.

Software Driver Installation

How do I install or reinstall the video driver?

Refer to KnowledgeBase 3H3COSD8 at ni.com/support.

How do I install or reinstall the Ethernet driver?

Refer to KnowledgeBase 3H3COSD8 at ni.com/support.

How do I install or reinstall the GPIB driver?

The NI-488.2 driver for your GPIB port is installed by default when your controller is first shipped from the factory. To change the default installed driver, complete the following steps:

1. Download the latest GPIB driver from ni.com/downloads.
2. Install the driver and verify that the driver has properly detected the GPIB driver in the Device Manager. If you need more assistance, refer to ni.com/support/install.
How do I install software from a CD?

The compact size of the NI PXI-8108 does not allow for an integrated CD-ROM drive. You have the following options:

- **USB CD-ROM**—You can install from a USB CD-ROM using a bootable installation CD.
- **SCSI CD-ROM**—Other types of CD-ROM drives are available. Check with the vendor to make sure Windows XP supports the drive.
- **Mapped network drive**—You can use the Ethernet to connect to another computer. If you share the CD-ROM drive on the other computer, you can map the shared CD-ROM drive to a drive letter on the NI PXI-8108.

### Upgrade Information

**How do I upgrade system memory?**

You can change the amount of installed RAM on the NI PXI-8108 by upgrading the DDR2 SO-DIMM.

To upgrade the RAM, remove the NI PXI-8108 from the PXI chassis.

National Instruments offers the following types of SO-DIMMs for use with the NI PXI-8108 controller.

- **PC2-6400 1 GB, 128 MB × 64, 1.18 in. max**
- **PC2-6400 2 GB, 256 MB × 64, 1.18 in. max**

**Note** National Instruments has conducted thermal testing as well as mechanical shock and vibration testing, and has verified that the DDR2 SO-DIMMs we sell work with the NI PXI-8108. We recommend you purchase your DDR2 SO-DIMM modules from National Instruments. Other off-the-shelf DDR2 SO-DIMM modules are not guaranteed to work properly.
**How do I flash a new BIOS?**

You can download the new BIOS from ftp.ni.com/support/pxi. For more information, refer to KnowledgeBase 2GIGKD0Z.

**Where do I get the latest software drivers?**

The latest National Instruments software is available from ni.com/downloads. For peripheral drivers, refer to KnowledgeBase 3H3COSD8 at ni.com.

**My NI PXI-8108 does not have an internal floppy drive. Is there a way to use an external drive?**

Yes. The NI PXI-8108 controller supports and can boot from USB floppy drives. A USB floppy drive will not work with Windows NT4, but will work with Windows 2000 or Windows XP. Refer to the *Boot Options* section for more information.

A USB floppy drive is available from National Instruments, part number 778492-02.
PXI Configuration

How do I use the SMB trigger on the front panel?
For details, refer to the PXI Features section of Chapter 2, Installation and Configuration.

Why doesn’t the NI PXI-8108 work with the PXI-8220 or PXI-8221?
A serialized IRQ conflict with the PXI-8220/8221 and the NI PXI-8108 prevents PC cards using ISA interrupts from working with the NI PXI-8108 controller. For more information, refer to KnowledgeBase 2G3ED80Z at ni.com/support.
This chapter answers common troubleshooting questions you may have when using the NI PXI-8108 embedded computer.

What if the NI PXI-8108 does not boot?
Several problems can cause a controller not to boot. Here are some things to look for and possible solutions.

Things to Notice:
- Which LEDs come on? The Power OK LED should stay lit. The Drive LED should blink during boot as the disk is accessed.
- Was the display installed prior to power-on? What appears on the display? Does it hang at some particular point (BIOS, Operating System, and so on)? If nothing appears on the screen, try a different monitor. Does your monitor work with a different PC? If it hangs, note the last screen output that you saw for reference when consulting National Instruments technical support.
- What has changed about the system? Did you recently move the system? Was there electrical storm activity? Did you recently add a new module, memory chip, or piece of software?

Things to Try:
- Make sure the chassis is plugged in to a working power source.
- Check any fuses or circuit breakers in the chassis or other power supply (possibly an uninterruptible power supply).
- Make sure the controller module is firmly seated in the chassis.
- Remove all other modules from the chassis.
- Remove any nonessential cables or devices.
- Try the controller in a different chassis.
- Try a similar controller in this same chassis.
- Clear the CMOS. (Refer to the System CMOS section of Chapter 2, Installation and Configuration.)
- Recover the hard drive on the controller. (Refer to the Hard Drive Recovery section of Chapter 2, Installation and Configuration.)
My controller boots fine until I get to Windows, at which point I cannot read the screen. This may include garbled output, white screen, black screen, or an out of synch message from the monitor.

This problem usually results from having the video card output set past the limits of the monitor. You will need to boot Windows in Safe Mode. To do this, reboot the controller. As Windows begins to boot, hold down <F8>. You should now be able to reset the video driver to lower settings. Try setting the resolution to 640 × 480 and the refresh rate to 60 Hz. Once you reboot, you can raise these values again, using the test option in Windows. These settings are accessible through the Advanced tab of the Display item in the Control Panel. Alternately, you can try a different monitor, preferably a newer and larger one.

If the system has been booted to Windows without a monitor attached, the driver may have defaulted to the video output connector being disabled. Press <Ctrl-Alt-F1> to re-enable the video display in Windows. Press <Ctrl-Alt-F4> to re-enable a DVI display. For more information, refer to KnowledgeBase 3OHCFRD8 at ni.com/support.

My system boots fine as long as a particular module is not in my chassis.

The most common cause of this is a damaged module. Try the module in a different chassis or with a different controller. Also, remove any external cables or terminal blocks connected to the system. If the module does not work in these cases, it is likely damaged. Contact the module manufacturer for further troubleshooting.

Refer to the KnowledgeBase or product manuals section at ni.com for more information specific to the chassis and controller with which you are having difficulties.

My CMOS is corrupted. How do I set it back to default?

1. Enter the BIOS setup program as described in the Accessing BIOS Setup Utility section of Chapter 2, Installation and Configuration.
2. Check the battery utility.
3. Press <F9> to load BIOS defaults.
4. Answer Y (Yes) to the verification prompt.
5. Select Save and Exit Setup.
As an alternative method, complete the following steps:

1. Power off the chassis.
2. Remove the controller from the chassis.
3. Press and hold down push-button switch SW2 for 2 to 3 seconds. The switch location is shown in Figure 5-1.
4. Reinstall the controller in the chassis.

Figure 5-1. Clearing the CMOS Contents
# Specifications

This appendix lists the electrical, mechanical, and environmental specifications of the NI PXI-8108 embedded computer.

## Features

<table>
<thead>
<tr>
<th>NI PXI-8108</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>Intel® Core™ 2 Duo processor T9400 (2.53 GHz dual core processor), 800 MHz FSB</td>
</tr>
<tr>
<td>On-die L2 cache</td>
<td>6 MB</td>
</tr>
<tr>
<td>Single-Channel DDR2 RAM, PC2 6400</td>
<td>1 GB Standard 4 GB Maximum</td>
</tr>
<tr>
<td>Hard Drive</td>
<td>80 GB Serial ATA, minimum</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10/100/1000 BaseTX</td>
</tr>
<tr>
<td>GPIB (IEEE 488 Controller)</td>
<td>Yes</td>
</tr>
<tr>
<td>Serial Ports (RS-232)</td>
<td>Yes (1)</td>
</tr>
<tr>
<td>Parallel Port</td>
<td>Yes (1)</td>
</tr>
<tr>
<td>Hi-Speed USB (2.0) Ports</td>
<td>Yes (4)</td>
</tr>
<tr>
<td>ExpressCard/34 Slot</td>
<td>Yes</td>
</tr>
<tr>
<td>PS/2 Keyboard/Mouse Connector</td>
<td>No</td>
</tr>
<tr>
<td>PXI Trigger Bus Input/Output</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Appendix A Specifications

Electrical

<table>
<thead>
<tr>
<th>Voltage (V)</th>
<th>Current (A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+3.3</td>
<td>2 A</td>
</tr>
<tr>
<td>+5 (+5 V_{DC} and +5 V_{IO})*</td>
<td>6 A</td>
</tr>
<tr>
<td>+12</td>
<td>.1 A</td>
</tr>
<tr>
<td>–12</td>
<td>0 A</td>
</tr>
</tbody>
</table>

* Does not include any attached USB devices or ExpressCard.

Physical

Board dimensions ......................... PXI 3U-size module
8.1 cm × 13 cm × 21.6 cm
(3.2 in. × 5.1 in. × 8.5 in.)

Slot requirements .......................... One system slot plus
three controller expansion slots

Compatibility ............................... Fully compatible with PXI specification

Weight ......................................... 0.914 kg (2.02 lb) typical

Environment

Maximum altitude ......................... 2,000 m (at 25 °C ambient temperature)

Pollution Degree ......................... 2

Indoor use only.
Operating Environment

Ambient temperature

Base................................................. 5 to 50 °C\(^2\)

(Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)

Extended temperature..................... 0 to 55 °C

(Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2)

Relative humidity............................ 10% to 90%, noncondensing

(Tested in accordance with IEC-60068-2-56.)

Caution  Clean the NI PXI-8108 with a soft nonmetallic brush. Make sure that the device is completely dry and free from contaminants before powering-on the controller again.

Storage Environment

Ambient temperature

Base................................................. –40 to 65 °C

(Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Extended temperature..................... –40 to 70 °C

( Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity............................ 5% to 95%, noncondensing

(Tested in accordance with IEC-60068-2-56.)

---

1 For chassis that are not available in the online catalog at ni.com, contact National Instruments for supported operating temperatures.

2 5 to 40 °C for the PXI-1000B DC.
Shock and Vibration

Operational shock ......................................30 g peak, half-sine, 11 ms pulse
(Tested in accordance with
IEC-60068-2-27. Test profile
developed in accordance with
MIL-PRF-28800F.)

Random vibration
Operating ..................................................5 to 500 Hz, 0.3 g_{rms}
(with solid-state hard drive)
Nonoperating ..........................................5 to 500 Hz, 2.4 g_{rms}
(Tested in accordance with
IEC-60068-2-64. Nonoperating
test profile exceeds the
requirements of
MIL-PRF-28800F, Class 3.)

Note Specifications are subject to change without notice.

Safety

This product is designed to 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 is designed to meet the requirements of the following
standards of EMC 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 device with shielded cabling.

CE Compliance

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

Refer to the product Declaration of Conformity (DoC) for 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 Electrical and Electronic Equipment, visit ni.com/environment/weee.
Battery Replacement and Disposal

Battery Directive  This device contains a long-life coin cell battery. If you need to replace it, use the Return Material Authorization (RMA) process or contact an authorized National Instruments service representative. For more information about compliance with the EU Battery Directive 2006/66/EC about Batteries and Accumulators and Waste Batteries and Accumulators, visit ni.com/environment/batterydirective.

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.)
Technical Support and Professional Services

Visit the following sections of the award-winning National Instruments Web site at ni.com for technical support and professional services:

- **Support**—Technical support at ni.com/support includes the following resources:
  - **Self-Help Technical Resources**—For answers and solutions, visit ni.com/support for software drivers and updates, a searchable KnowledgeBase, product manuals, step-by-step troubleshooting wizards, thousands of example programs, tutorials, application notes, instrument drivers, and so on. Registered users also receive access to the NI Discussion Forums at ni.com/forums. NI Applications Engineers make sure every question submitted online receives an answer.
  - **Standard Service Program Membership**—This program entitles members to direct access to NI Applications Engineers via phone and email for one-to-one technical support as well as exclusive access to on demand training modules via the Services Resource Center. NI offers complementary membership for a full year after purchase, after which you may renew to continue your benefits.

    For information about other technical support options in your area, visit ni.com/services, or contact your local office at ni.com/contact.

- **Training and Certification**—Visit ni.com/training for self-paced training, eLearning virtual classrooms, interactive CDs, and Certification program information. You also can register for instructor-led, hands-on courses at locations around the world.

- **System Integration**—If you have time constraints, limited in-house technical resources, or other project challenges, National Instruments Alliance Partner members can help. To learn more, call your local NI office or visit ni.com/alliance.
• **Declaration of Conformity (DoC)**—A 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 electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting [ni.com/certification](http://ni.com/certification).

If you searched [ni.com](http://ni.com) and could not find the answers you need, contact your local office or NI corporate headquarters. Phone numbers for our worldwide offices are listed at the front of this manual. You also can visit the Worldwide Offices section of [ni.com/niglobal](http://ni.com/niglobal) to access the branch office Web sites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.
Glossary

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Prefix</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>n</td>
<td>nano</td>
<td>$10^{-9}$</td>
</tr>
<tr>
<td>μ</td>
<td>micro</td>
<td>$10^{-6}$</td>
</tr>
<tr>
<td>m</td>
<td>milli</td>
<td>$10^{-3}$</td>
</tr>
<tr>
<td>k</td>
<td>kilo</td>
<td>$10^{3}$</td>
</tr>
<tr>
<td>M</td>
<td>mega</td>
<td>$10^{6}$</td>
</tr>
<tr>
<td>G</td>
<td>giga</td>
<td>$10^{9}$</td>
</tr>
<tr>
<td>T</td>
<td>tera</td>
<td>$10^{12}$</td>
</tr>
</tbody>
</table>

Symbols

° Degrees.
Ω Ohms.
% Percent.

A

A Amperes.
AC Alternating Current.
ASIC Application-specific integrated circuit.
**B**

B  Bytes.

backplane  An assembly, typically a printed circuit board, with connectors and signal paths that bus the connector pins.

BIOS  Basic Input/Output System—BIOS functions are the fundamental level of any PC or compatible computer. BIOS functions embody the basic operations needed for successful use of the computer’s hardware resources.

**C**

C  Celsius.

cache  Small portion of high-speed memory used for temporary storage of frequently used data.

CMOS  Complementary Metal Oxide Semiconductor—A type of integrated circuit.

CompactPCI  An adaptation of the PCI specification for industrial and/or embedded applications that require a more robust mechanical form factor than desktop PCI. CompactPCI provides a standard form factor for those applications requiring the high performance of PCI as well as the small size and ruggedness of a rack-mount system.

Controller  An embedded computer module which configures and accesses a series of devices connected to a chassis backplane.

**D**

DC  Direct Current.

DDR2  Double Data Rate, 2nd generation.

DIMM  Dual In-line Memory Module.

DMA  Direct Memory Access—A method by which data is transferred between devices and internal memory without intervention of the central processing unit.
<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>DRAM</td>
<td>Dynamic RAM (Random Access Memory)—Storage that the computer must refresh at frequent intervals.</td>
</tr>
<tr>
<td>DVI-I</td>
<td>Direct Video Interface, Integrated—A video technology enabling the use of both analog and digital video signals.</td>
</tr>
<tr>
<td>E</td>
<td>ECP - Extended Capabilities Parallel.</td>
</tr>
<tr>
<td>EEPROM</td>
<td>Electronically Erasable Programmable Read Only Memory.</td>
</tr>
<tr>
<td>EMC</td>
<td>Electromagnetic Compatibility.</td>
</tr>
<tr>
<td>EMI</td>
<td>Electromagnetic interference.</td>
</tr>
<tr>
<td>EPP</td>
<td>Enhanced Parallel Port.</td>
</tr>
<tr>
<td>expansion ROM</td>
<td>An onboard EEPROM that may contain device-specific initialization and system boot functionality.</td>
</tr>
<tr>
<td>F</td>
<td>FCC - Federal Communications Commission.</td>
</tr>
<tr>
<td>G</td>
<td>Grams.</td>
</tr>
<tr>
<td>g</td>
<td>1. Grams. 2. A measure of acceleration equal to 9.8 m/s².</td>
</tr>
<tr>
<td>GPIB</td>
<td>General Purpose Interface Bus (IEEE 488).</td>
</tr>
<tr>
<td>gmax</td>
<td>A measure of random vibration—The root mean square of acceleration levels in a random vibration test profile.</td>
</tr>
<tr>
<td>H</td>
<td>Hz - Hertz—Cycles per second.</td>
</tr>
<tr>
<td><strong>I</strong></td>
<td><strong>I/O</strong></td>
</tr>
<tr>
<td></td>
<td><strong>IDE</strong></td>
</tr>
<tr>
<td></td>
<td><strong>IEEE</strong></td>
</tr>
<tr>
<td></td>
<td><strong>in.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>instrument driver</strong></td>
</tr>
<tr>
<td></td>
<td><strong>interrupt</strong></td>
</tr>
<tr>
<td></td>
<td><strong>interrupt level</strong></td>
</tr>
<tr>
<td></td>
<td><strong>IRQ#</strong></td>
</tr>
<tr>
<td></td>
<td><strong>ISA</strong></td>
</tr>
<tr>
<td><strong>K</strong></td>
<td><strong>kB</strong></td>
</tr>
<tr>
<td><strong>L</strong></td>
<td><strong>LAN</strong></td>
</tr>
<tr>
<td></td>
<td><strong>LED</strong></td>
</tr>
<tr>
<td><strong>M</strong></td>
<td><strong>m</strong></td>
</tr>
<tr>
<td></td>
<td><strong>master</strong></td>
</tr>
</tbody>
</table>
MB
Megabytes of memory.

MTBF
Mean time between failure.

MTTR
Mean time to repair.

NI-488 or NI-488.2
The National Instruments software for GPIB systems.

NI-DAQ
The National Instruments software for data acquisition instruments.

NI-VISA
The National Instruments implementation of the VISA standard—An interface-independent software that provides a unified programming interface for VXI, GPIB, and serial instruments.

NMI
Non-maskable interrupt—High-priority interrupt that cannot be disabled. It is used to report malfunctions such as parity, bus and math coprocessor errors.

PCI
Peripheral Component Interconnect—The PCI bus is a high-performance 32-bit or 64-bit bus with multiplexed address and data lines.

PCI Express
Peripheral Component Interconnect Express—A faster, serialized version of the PCI bus.

PCMCIA
Personal Computer Memory Card International Association.

Peripheral
Any hardware device connected to a computer, such as a monitor, keyboard, printer, plotter, disk or tape drive, graphics tablet, scanner, mouse, and so on.

POSC
Power On Self Configuration.

PXI
PCI eXtensions for Instrumentation—An open implementation of CompactPCI that adds electrical features that meet the high-performance requirements of instrumentation applications by providing triggering, local buses, and system clock capabilities. PXI also offers two-way interoperability with CompactPCI products.
**Glossary**

**R**

RAM Random Access Memory—the computer’s primary workspace.

RAMDAC Random Access Memory Digital to Analog Converter—the VGA controller chip that maintains the color palette and converts data from memory into analog signals for the monitor.

resource Hardware settings used by devices in a computer system, including ISA interrupt level, DMA channel, and I/O address.

RMS Root mean squared. See also \( g_{rms} \).

RTC Real Time Clock—An electronic circuit that maintains the time of day and also can provide timing signals for timesharing operations.

**S**

s Seconds.

slave A functional part of a PXI device that detects data transfer cycles initiated by a PXI bus master and responds to the transfers when the address specifies one of the device’s registers.

SO-DIMM Small Outline Dual In-line Memory Module.

SRAM Static RAM—A memory chip that requires power to hold its content. It does not require refresh circuitry as a dynamic RAM chip, but it does take up more space and uses more power.

**U**

USB Universal Serial Bus.
V

V Volts.

VGA Video Graphics Array—The minimum video display standard for all PCs.

W

W Watts.
Index

A
Advanced Setup menu, 2-6

B
basic PXI system configuration, 2-23
BIOS
  checking settings, 4-1
  flashing new BIOS, 4-5
  setup
    Advanced Setup menu, 2-6
    Boot Settings Configuration menu, 2-13
    Boot Setup menu, 2-12
    CD/DVD ROM Drive BBS Priorities Configuration menu, 2-13
    CPU configuration menu, 2-8
    entering, 2-5
    ExpressCard Configuration menu, 2-9
    Floppy Drive BBS Priorities Configuration menu, 2-14
    Hard Drive BBS Priorities Configuration menu, 2-13
    LabVIEW RT options menu, 2-11
    Main Setup menu, 2-6
    Network Device BBS Priorities Configuration menu, 2-14
    SATA Configuration menu, 2-7
    Save & Exit menu, 2-15
    Serial/Parallel Port Configuration menu, 2-10
      Parallel Port menu, 2-10
      Serial Port 0 menu, 2-10
    Trigger Router Configuration menu, 2-11
    USB configuration menu, 2-9
    Video Configuration menu, 2-8
  boot options, configuring controller, 4-2
  Boot Settings Configuration menu, 2-13
  Boot Setup menu, 2-12

C
CD/DVD ROM Drive BBS Priorities menu, 2-13
CD-ROM drive, installing software from, 4-4
CE compliance specifications, A-5
chipset
  ICH9M, 1-4
  Mobile Intel GM45 Express, 1-4
CMOS
  clearing contents (figure), 2-16, 5-3
  setting back to default, 5-2
COM1 connector
  connector locations and pinout (figure), 3-5
  connector signals (table), 3-5
common configuration questions
  boot options, 4-1
  chassis configuration, 2-22
  figure, 2-22
  driver installation, 4-3
  general questions, 4-1
  PXI configuration, 4-6
  upgrade information, 4-4
CompactPCI specification, 1-1
configuration, common questions
  boot options, 4-1
  cables and connections, 4-2
  chassis configuration, 2-22
    figure, 2-22
  driver installation, 4-3
  general questions, 4-1
  PXI configuration, 4-6
  upgrade information, 4-4
connectors
  COM1 connector and signals, 3-5
  DVI-I connector and signals, 3-3
  Ethernet connector and signals, 3-6
  ExpressCard connector and signals, 3-13
  GPIB connector and signals, 3-11
  parallel port connector and signals, 3-7
  peripheral expansion overview
    (table), 3-1
  trigger connector and signals, 3-10
  Universal Serial Bus (USB) connector
    and signals, 3-9
conventions used in the manual, ix
CPU Configuration menu, 2-8

D
  data storage, 3-15
  DDR2 SO-DIMMs
    from National Instruments (note), 2-23,
      4-4
    installing, 2-23, 4-4
      figure, 2-24, 4-5
  Declaration of Conformity (NDI resources), B-2
  diagnostic tools (NI resources), B-1
  directories and files installed on hard
    drive, 2-21
  documentation
    conventions used in manual, ix
    how to use this documentation set, ix
    NI resources, B-1
    related documentation, x
  DRIVE LED, 3-15
  drivers, 2-21
    installation
      GPIB (IEEE 488.2), 4-3
      video, 4-3
  NI resources, B-1
  obtaining latest drivers, 4-5
  DVI-I
    connector signals (table), 3-3
    location and pinout (figure), 3-3
    overview (table), 3-1
E
  electrical specifications, A-2
  electromagnetic compatibility, A-4
  environmental management
    specifications, A-5
    WEEE information, A-5
  Ethernet, connector
    location and pinout (figure), 3-6
    signals (table), 3-6
  examples (NI resources), B-1
  ExpressCard, 2-25, 3-13
    configuration menu, 2-9
    connector
      location and pinout (figure), 3-13
      signals (table), 3-13
    installing a module, 2-25
    removing a module, 2-26
    slot, 1-4
Index

F
features, A-1
files and directories installed on hard drive, 2-21
Floppy Drive BBS Priorities menu, 2-14
floppy drive, using external floppy drive, 4-5
front panel
  connectors, 3-1
  dimensions, 3-2
  features, 3-15
functional description of NI PXI-8108, 1-2
functional overview of NI PXI-8108, 1-2

G
Gigabit Ethernet, 1-4
GPIB (IEEE 488.2), 3-11
  block, 1-4
  connector
    location and pinout (figure), 3-11
    signals (table), 3-11
  driver installation, 4-3

H
hard drive, 3-15
  files and directories installed on, 2-21
  recovery, 2-24
hard drive BBS priorities menu, 2-13
help, technical support, B-1

I
IDE controller, using SCSI hard drive in addition, 4-1
IEEE 488.2, 3-11
images directory, 2-21
installation
  See also configuration
    injector/ejector handle position (caution), 2-2
    NI PXI-8108 installed in a PXI chassis (figure), 2-4
    procedure, 2-1
    removing NI PXI-8108 from PXI chassis, 2-4
    removing protective screw caps (figure), 2-2
    installing an OS, 2-25
  instrument drivers (NI resources), B-1

K
keyboard, plugging PS/2 mouse and keyboard into controller, 4-2
KnowledgeBase, B-1

L
LabVIEW, 1-4
  RT configuration switches, 2-19
    (figure), 2-20
  RT installation and configuration, 2-17
  RT network settings (figure), 2-18
  RT options menu, 2-11
  RT software installation, 2-17
LabWindows/CVI, 1-5
LEDs, front panel LEDs, 3-15, 4-1
Linux support, 1-6
LPT cable, connecting to NI PXI-8108, 4-3
Index

M
Main Setup menu, 2-6
manuals directory, 2-21
mating connector
  GPIB (IEEE 488.2), 3-11
  parallel port, 3-7
Measurement Studio, 1-5
modular instruments, 1-5
mouse, plugging PS/2 mouse and keyboard into controller, 4-2
multichassis configuration in MAX (figure), 2-22

N
National Instruments
  software, 1-4
  support and services, B-1
Network Device BBS Priorities menu, 2-14
NI PXI-8108
  benefits of PXI, 1-1
  BIOS setup, 2-5
  block diagram, 1-3
  connectors, 3-1
    COM1 connector and signals, 3-5
    DVI-I connector and signals (table), 3-3
    ExpressCard connector and signals, 3-13
    GPIB (IEEE 488.2) connector and signals, 3-11
    parallel port connector and signals, 3-7
    trigger connector and signals, 3-10
    Universal Serial Bus (USB) connector and signals, 3-9
  data storage, 3-15
  description, 1-2
  front panel
    dimensions, 3-2
    features, 3-15
    LEDs, 4-1
    system reset pushbutton, 3-15
  functional overview, 1-2
  hard drive recovery, 2-24
  installing DDR SO-DIMMs (figure), 2-24, 4-5
  installing in a PXI chassis, 2-1 figure, 2-4
  logic blocks, 1-3
  peripheral expansion overview (table), 3-1
  PXI trigger connectivity, 2-21
  removing from a PXI chassis, 2-4
  software, 1-4
  specifications, A-1
  troubleshooting, 5-1
  upgrading RAM, 2-23, 4-4
  NI support and services, B-1
  NI-DAQmx, 1-5
  NI-VISA, 1-6

O
operating environment specifications, A-2, A-3
OS
  installation from CD-ROM, 2-25
  installation overview, 2-25
os directory, 2-21
P
parallel port
connector
  location and pinout (figure), 3-7
  signals (table), 3-8
  overview (table), 3-1
peripheral expansion overview (table), 3-1
physical specifications, A-2
POWER OK LED, 3-15
programming examples (NI resources), B-1
protective screw caps, removing (figure), 2-2
PS/2, plugging PS/2 mouse and keyboard into controller, 4-2
PXI
  connectors, function (logic block), 1-4
  features, 2-21
  trigger connectivity, 2-21
PXI-8220/PXI-8221, using NI PXI-8108 with, 4-6
pxisys.ini file, 2-22

R
RAM
  DDR2 SO-DIMMs
    from National Instruments (note), 2-23, 4-4
    upgrading, 2-23, 4-4
recycling hardware, A-5
related documentation, x

S
safety specifications, A-4
SATA
  block, 1-4
  Configuration menu, 2-7
Save & Exit menu, 2-15
serial port, 3-1
  See also COM1 connector
Serial/Parallel Port Configuration menu, 2-10
  Parallel Port menu, 2-10
  Serial Port 0 menu, 2-10
shock and vibration specifications, A-4
SMB to PXI trigger, 1-4
socket 479 1 CPU, 1-3
SO-DIMM logic block, 1-3
software
  See also drivers
    installed on your hard drive, 2-21
    installing from CD-ROM, 4-4
LabVIEW, 1-4
LabWindows/CVI, 1-5
Measurement Studio, 1-5
National Instruments software, 1-4
NI resources, B-1
NI-DAQmx, 1-5
NI-VISA, 1-6
specifications
  CE compliance, A-5
  electrical, A-2
  electromagnetic compatibility, A-4
  environmental management, A-5
    battery replacement and disposal, A-6
    WEEE information, A-5
  features, A-1
  online product certification, A-5
  operating environment, A-2, A-3
  physical, A-2
  safety, A-4
  shock and vibration, A-4
  storage environment, A-3
storage environment specifications, A-3
super I/O logic block, 1-4
support, technical, B-1
system CMOS, 2-16
system reset pushbutton, 3-15
Index

T

technical support, B-1
training and certification (NI resources), B-1
trigger, 3-10, 4-6
    connector
        location and pinout (figure), 3-10
        signals (table), 3-11
Trigger Router Configuration menu, 2-11
troubleshooting
    CMOS reset, 5-2
    controller does not boot, 5-1
    damaged module, 5-2
    NI resources, B-1
    video display, 5-2

U

Universal Serial Bus (USB), 3-1, 3-9
    connector
        function, 1-4
        location and pinout (figure), 3-9
        signals (table), 3-9
        overview (table), 3-1
USB configuration menu, 2-9

V

video, 3-1
    driver installation, 4-3
Video Configuration menu, 2-8

W

watchdog timer, 1-4
Web resources, B-1
WEEE information, A-5

Y

Y-splitter cable
    figure, 4-2
    using mouse and keyboard without, 4-3
    using with PS/2 mouse and keyboard, 2-3