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USER GUIDE AND SPECIFICATIONS

NI PCIe-8236

GigE Vision Interface Device with Power over Ethernet

The NI PCIe-8236 (NI 8236) is a GigE Vision interface device for PCI Express (PCIe). The NI 8236 supports Power over Ethernet (PoE). This document describes how to install and configure the necessary hardware and software to use the NI 8236.

Note You must install all required software before installing the hardware.

To access NI 8236 documentation after installation, navigate to **Start»All Programs» National Instruments»Vision»Documentation.**

The most recent versions of product documentation are available at `ni.com/manuals`. Visit `ni.com/updates` for the latest version of NI 8236 software.

Contents

Required Components 2
- Optional Components 2

Safety Information 2
Electromagnetic Compatibility Guidelines 3
Installing the Software 4
Installing the Hardware 4
- Unpacking 4
- Installing 5
- Confirming the Device is Recognized 6

Ethernet Ports on the NI 8236 7
Where Do I Go From Here? 8
Specifications 8
- Gigabit Ethernet Interface 8
- Power over Ethernet 8
- PCI Express Interface 8
- Power Requirements 9
- Physical Characteristics 9
- Environment 9
- Safety 9
- Electromagnetic Compatibility 9
- CE Compliance 10
- Environmental Management 10

Where to Go for Support 11

NATIONAL INSTRUMENTS

Required Components

The following items are necessary to set up and use the NI 8236:

- ☐ NI 8236 image acquisition device
- ☐ GigE Vision camera
- ☐ Shielded Ethernet cable
- ☐ Computer running Microsoft Windows 7 (32-bit or 64-bit versions)/Vista (32-bit or 64-bit versions)/XP (32-bit) with at least one available x4 or larger PCIe slot.
- ☐ The following software packages:
  - LabVIEW 2011 or later
  - NI-IMAQdx 4.1 or later driver software, included with NI Vision Acquisition Software February 2013

Optional Components

- ☐ Available 4-pin ATX peripheral power connector on computer's power supply for PoE
- ☐ The following software packages:
  - NI Vision Development Module
  - NI Vision Builder for Automated Inspection 2012 SP1 or later

Safety Information

Caution The following paragraphs contain important safety information you *must* follow when installing and operating the device.

Do *not* operate the device in a manner not specified in the documentation. Misuse of the device may result in a hazard and may compromise the safety protection built into the device. If the device is damaged, turn it off and do *not* use it until service-trained personnel can check its safety. If necessary, return the device to National Instruments for repair.

Keep away from live circuits. Do *not* remove equipment covers or shields unless you are trained to do so. If signal wires are connected to the device, hazardous voltages can exist even when the equipment is turned off. To avoid a shock hazard, do *not* perform procedures involving cover or shield removal unless you are qualified to do so. Disconnect all field power prior to removing covers or shields.

Because of the danger of introducing additional hazards, do *not* install unauthorized parts or modify the device. Use the device only with the chassis, modules, accessories, and cables specified in the installation instructions. All covers and filler panels *must* be installed while operating the device.

This is a pollution degree 2 device. Do *not* operate the device in an explosive atmosphere or where flammable gases or fumes may be present. Operate the device only at or below the pollution degree stated in the specifications. Pollution consists of any foreign matter—solid, liquid, or gas—that may reduce dielectric strength or surface resistivity. The following is a description of pollution degrees.

- Pollution Degree 1—No pollution or only dry, nonconductive pollution occurs. The pollution has no effect.
- Pollution Degree 2—Normally only nonconductive pollution occurs. Occasionally, nonconductive pollution becomes conductive because of condensation.
- Pollution Degree 3—Conductive pollution or dry, nonconductive pollution occurs. Nonconductive pollution becomes conductive because of condensation.

Clean the device and accessories by brushing off light dust with a soft, nonmetallic brush. Remove other contaminants with a stiff, nonmetallic brush. The unit *must* be completely dry and free from contaminants before returning it to service.

You *must* insulate signal connections for the maximum voltage for which the device is rated. Do *not* exceed the maximum ratings for the device. Remove power from signal lines before connection to or disconnection from the device.

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) as stated in the product specifications. These requirements and limits are designed to provide reasonable protection against harmful interference when the product is operated in its intended operational electromagnetic environment.

This product is intended for use in industrial locations. There is no guarantee that harmful interference will not occur in a particular installation, when the product is connected to a test object, or if the product is used in residential areas. To minimize the potential for the product to cause interference to radio and television reception or to experience unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by National Instruments could void your authority to operate it under your local regulatory rules.

Caution To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

Installing the Software

Before installing the NI 8236 you must install the application software and device driver. Install the software in the following order:

1. **LabVIEW**—Refer to the *LabVIEW Release Notes* for installation instructions for LabVIEW and system requirements for the LabVIEW software. Refer to the *LabVIEW Upgrade Notes* for additional information about upgrading to the most recent version of LabVIEW.

   After installation, documentation for LabVIEW is available by selecting **Start» All Programs»National Instruments»LabVIEW»LabVIEW Manuals**.
2. **NI-IMAQdx**—Refer to the *NI Vision Acquisition Software Release Notes* on the NI Vision Acquisition Software installation media for system requirements and installation instructions for the NI-IMAQdx driver.

   After installation, documentation for the NI-IMAQdx driver software is available by selecting **Start»All Programs»National Instruments»Vision»Documentation» NI-IMAQdx**.
3. **(Optional) NI Vision Development Module**—Refer to the *NI Vision Development Module Readme* on the NI Vision Development Module installation media for system requirements and installation instructions.

   After installation, documentation for the NI Vision Development Module is available by selecting **Start»All Programs»National Instruments»Vision»Documentation» NI Vision**.

Installing the Hardware

This section describes how to unpack and install the device. You must install the software before installing the hardware.

Caution Electrostatic Discharge (ESD) can damage this product. To prevent damage, use industry-standard ESD prevention measures during installation, maintenance, and operation.

Unpacking

The device ships in an antistatic package to prevent electrostatic discharge from damaging device components. To avoid such damage in handling the device, take the following precautions:

1. Ground yourself using a grounding strap or by touching a grounded object, such as the computer chassis.
2. Touch the antistatic package to a metal part of the computer chassis before removing the device from the package.

Caution *Never* touch the exposed pins of connectors.

3. Remove the device from the package and inspect it for loose components or any other signs of damage. Notify National Instruments if the device appears damaged in any way. Do not install a damaged device in the computer.

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

Installing

The following are general instructions for installation. Refer to the documentation provided by your computer manufacturer for specific instructions and warnings.

1. Power off and unplug the computer.

Caution To protect yourself and the hardware from electrical hazards, the computer *must* remain unplugged until the installation is complete.

2. Remove the computer cover to expose the expansion slots.

Caution Installing a PCIe device into any non-PCIe slot can damage both the computer motherboard and the device. If you are unsure of the difference between connector types, do not install the device. Refer to the documentation provided by your computer manufacturer to determine the correct slot in which to install the device.

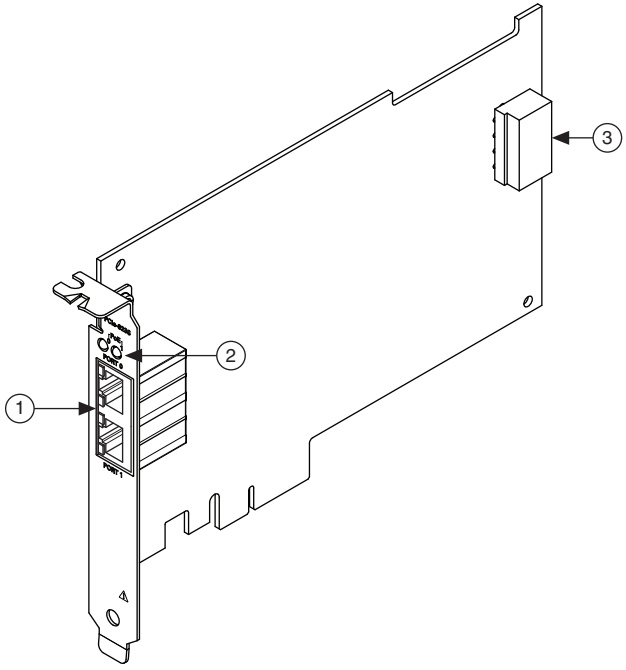
3. Touch a metal part of the computer to discharge any static electricity that might be on your clothes or body. Static electricity can damage the device.
4. Choose an unused x4 or larger PCIe slot, and remove the corresponding expansion slot cover on the back panel of the computer.
5. Remove the device from the antistatic package and gently rock the device into the PCIe slot. The connection may be tight, but do *not* force the device into place.

Note Check that the bracket of your device aligns with the hole in the back panel rail of the computer chassis.

6. Secure the device mounting bracket to the back panel rail of the computer.
7. (Optional) Connect an available 4-pin peripheral ATX power connector from the computer's power supply to the PoE power input on the device. Refer to Figure 1 for the location of the power connection.
8. Replace the computer cover.

9. Connect an Ethernet cable to a GigE Vision camera, then connect the camera to the NI 8236 front panel. Refer to Figure 1 for the location of the Ethernet ports.
10. Plug in and power on the computer.

Figure 1. NI 8236 Connections and Indicators



1 Gigabit Ethernet Ports
2 PoE Indicator LEDs
3 PoE Power Connection

Note The first time you start the development computer after installing the hardware, allow several seconds for the drivers to load.

The NI 8236 is now installed and the camera is now connected.

Confirming the Device is Recognized

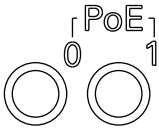
To confirm that the device is properly installed and the hardware is recognized, complete the following steps:

1. Ensure a compatible GigE Vision camera is connected.
2. Select **Start»All Programs»National Instruments»Measurement & Automation Explorer** to open Measurement & Automation Explorer (MAX).
3. Expand **Devices and Interfaces**.
4. Verify that the attached camera appears under **Devices and Interfaces»NI-IMAQdx Devices**.

Ethernet Ports on the NI 8236

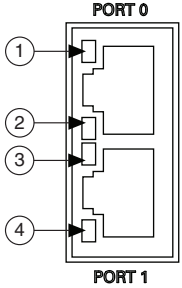
The NI 8236 provides two standard Gigabit Ethernet ports (Port 0 and Port 1) to acquire images from GigE Vision cameras. The NI 8236 can power PoE-capable cameras when connected to the power supply of the computer. When the NI 8236 is providing PoE, the LED that corresponds to the port will be lit. Figure 2 depicts the PoE LEDs on the NI 8236.

Figure 2. PoE LEDs on the NI 8236



Each Ethernet port on the NI 8236 has two Ethernet LEDs that indicate the connectivity status of the port. See Figure 3 for the location of these LEDs.

Figure 3. Ethernet LEDs on the NI 8236



1 Port 0 Activity/Link LED
2 Port 0 Speed LED
3 Port 1 Activity/Link LED
4 Port 1 Speed LED

Refer to Table 1 for information on what the status of an Ethernet LED indicates.

Table 1. Ethernet LED Status Definitions on the NI 8236

LED	Status	Definition
Activity/Link	Unlit	No link has been established
	Solid	A link has been negotiated
	Blinking	Activity on the link
Speed	Unlit	No link, or 10 Mbps link
	Green	100 Mbps link
	Amber	1,000 Mbps link

Where Do I Go From Here?

The following documents and resources contain information you may find helpful as you use the NI 8236 in an application.

- *National Instruments Example Finder*—LabVIEW contains an extensive library of VIs and example programs. To access the NI Example Finder, open LabVIEW and select **Help» Find Examples**.
- *NI Developer Zone*—Visit the NI Developer Zone at `ni.com/zone` for the latest example programs, tutorials, technical presentations, and a community area where you can share ideas, questions, and source code with developers around the world.
- *NI Vision Builder for Automated Inspection Tutorial*—Refer to the *NI Vision Builder for Automated Inspection Tutorial* for information about basic vision techniques using Vision Builder AI. If Vision Builder AI is installed, access the tutorial by selecting **Start» All Programs»National Instruments»Vision Builder AI»Documentation**.

Specifications

The following specifications apply to the NI 8236 image acquisition device. These specifications are typical at 25 °C, unless otherwise stated.

Gigabit Ethernet Interface

Standard ..... IEEE 802.3
10BASE-T, 100BASE-TX, 1000BASE-T

Number of ports 2

Interface RJ45

Speed ..... 10, 100, 1000 Mbps

Power over Ethernet

Standard ..... IEEE 802.3af compatible

Supported power classes ..... 0, 1, 2, and 3

Power output ..... 15.4 W per port

Isolation ..... IEEE 802.3af compliant, Environment A

PCI Express Interface

PCI Express compliance 1.1

Native link width x4

Up-plugging link width availability x8, x16

Power Requirements

+12 V ATX peripheral (PoE inputs) ..... 6.3 A peak, 4.1 A continuous

+12 V PCIe ..... 0.34 A

+3.3 V PCIe ..... 0.74 A

Physical Characteristics

Dimensions ..... 11.1 cm × 16.8 cm (4.4 in. × 6.6 in.)

Weight ..... 150 g (5.29 oz)

Environment

The NI 8236 is intended for indoor use only.

Operating temperature ..... 0 °C to 55 °C

Storage temperature ..... –20 °C to 70 °C

Relative humidity ..... 5% to 90%, noncondensing

Pollution Degree 2

Caution Do *not* use the NI 8236 for connection to signals within Measurement Categories II, III, or IV.

Measurement Category I

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 considerations, refer to the product label, or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions

- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2004/108/EC; Electromagnetic Compatibility Directive
- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Minimize Our Environmental Impact* 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 and Electronic Equipment, visit `ni.com/environment/weee`.

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Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At `ni.com/support` you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

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

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374010A-01 Feb13

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