PCIe-7856 Getting Started

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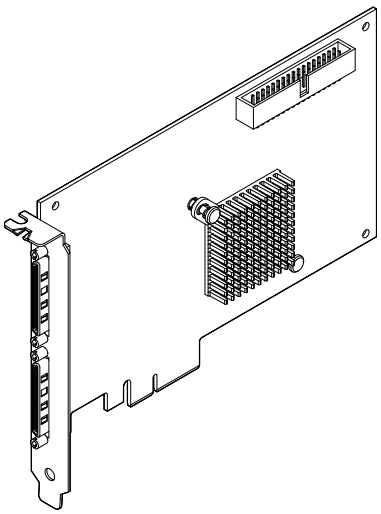
Contents

Getting Started

Learn how to start using the PCIe-7856.



Safety Guidelines

Caution Do not operate the PCIe-7856 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to NI for repair.

EMC Guidelines

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

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential areas. To minimize interference with radio and television reception and prevent 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 NI could void your authority to operate it under your local regulatory rules.

Operate this product only with shielded cables and accessories.

The length of all I/O cables must be no longer than 3 m (10 ft).

Preparing the Environment

Ensure that the environment in which you are using the NI PCIe-7856 meets the following specifications.

Note Refer to the device specifications on ni.com/manuals for complete specifications.

Storage Environment

Temperature	
Operating[1]	0 °C to 55 °C
Storage	-20 °C to 70 °C

1. For PCI Express adapter cards without integrated air movers, NI defines the local operational ambient environment to be 25 mm(1 in.) upstream of the leading edge of the card with system airflow of at least 0.4 m/s(80 LFM) for half length cards and 0.6 m/s(120 LFM) for three-quarter length cards. For more information about the local operational ambient environment definition for PCI Express adapter cards, visit ni.com/info and enter the Info Code pcielocalambient.

Humidity	
Operating	10% RH to 90% RH, noncondensing
Storage	5% RH to 95% RH, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m (at 25 °C ambient temperature)

Unpacking the Kit

Notice To prevent electrostatic discharge (ESD) from damaging the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis.

1. Touch the antistatic package to a metal part of the computer chassis.
2. Remove the device from the package and inspect the device for loose components or any other sign of damage.

   Notice Never touch the exposed pins of connectors.

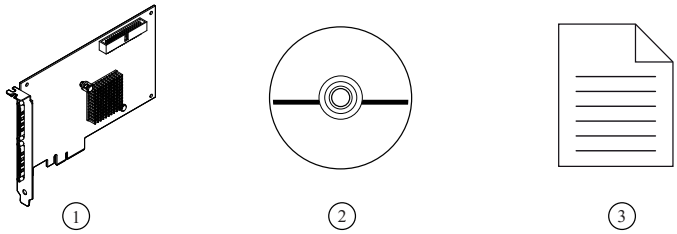
   Note Do not install a device if it appears damaged in any way.
3. Unpack any other items and documentation from the kit.

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

Verifying the Kit Contents

Verify that the following items are included in the PCIe-7856 kit.

Figure 1. PCIe-7856 Kit Contents



1. Hardware
2. NI-RIO Media
3. Getting Started Guide

Installing Software on the Host Computer

Before using the PCIe-7856, you must install the following application software and device drivers on the host computer.

1. LabVIEW 2018 SP1 or later
2. LabVIEW FPGA Module 2018 or later
3. NI R Series Multifunction RIO Device Drivers January 2019 or later

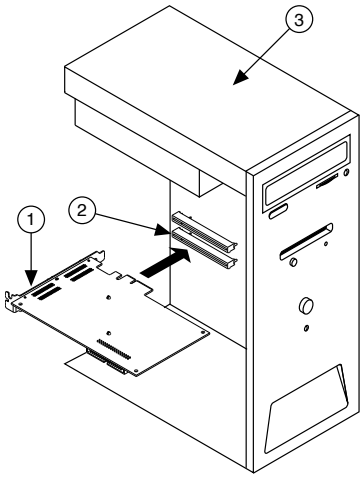
Visit ni.com/info and enter the Info Code `softwareversion` for minimum software support information.

Installing the PCIe-7856

1. Power off and unplug the computer.
2. Access the computer system expansion slots. This step might require you to remove one or more access panels on the computer case.
3. Locate a compatible slot and remove the corresponding slot cover on the computer back panel.
4. Touch any metal part of the computer to discharge any static electricity.
5. Insert the PCIe-7856 into the applicable PCI Express system slot. Gently rock the PCIe-7856 into place. Do not force the device into place.
   You cannot install PCI Express devices in PCI slots. PCI Express devices support up-

plugging into a PCI Express slot of higher lane width. For more information, refer to ni.com/pciexpress.

Figure 2. Installing a PCI Express Device



1. PCI Express Device
2. PCI Express System Slot
3. PC with PCI Express Slot

6. Secure the module mounting bracket to the computer back panel rail.
7. Replace any access panels on the computer case.
8. Plug in and power on your computer.
9. If applicable, install accessories and/or terminal blocks as described in the installation guides.
10. Attach sensors and signal lines to the device, terminal block, or accessory terminals.

Verifying Hardware Installation

You can verify that the system recognizes the PCIe-7856 by using Measurement & Automation Explorer (MAX).

1. Launch MAX by navigating to **Start** » **All Programs** » **National Instruments** » **MAX** or by clicking the MAX desktop icon.
2. Expand **Devices and Interfaces**.
3. Verify that the device appears under **Devices and Interfaces**.
   If the device does not appear, press <F5> to refresh the view in MAX. If the device does not appear after refreshing the view, visit ni.com/support for troubleshooting information.

Pinout

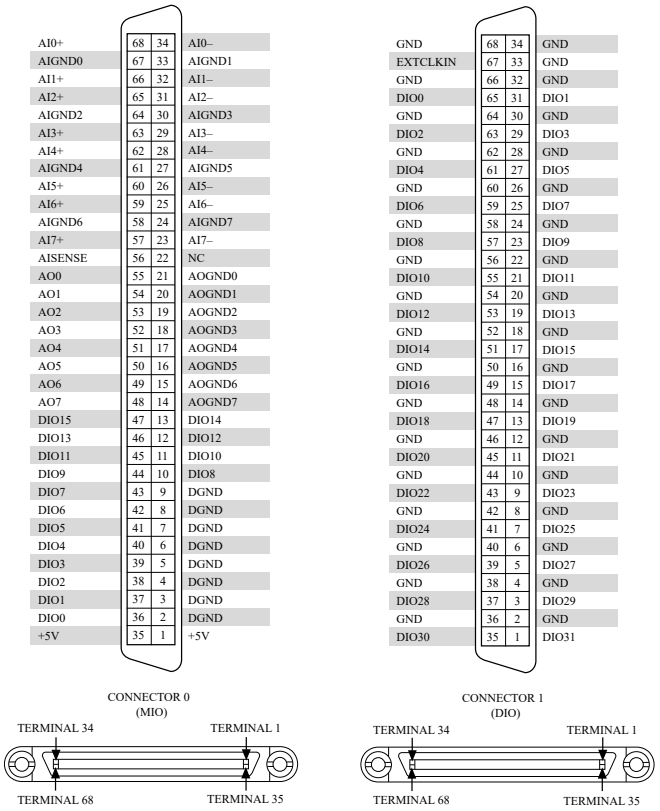


Table 1. PCIe-7856 Signal Descriptions

Signal	Description
AI+	Positive analog input signal connection
AI-	Negative analog input signal connection
AISENSE	Reference connection for NRSE measurements
AIGND	Ground reference for the analog input signal
AO	Analog output signal connection
AOGND	Ground reference for the analog output signal
DIO	Digital input/output signal connection
DGND	Ground reference for the digital signal
EXTCLKIN	External clock input source that can be used for source synchronous acquisitions. The provided

Signal	Description
	clock source must be stable and glitch-free.
GND	Ground connection
Supply (+5 V_{out})	5 V power output connection for external devices
NC	No connection

The PCIe-7856 is protected from overvoltage and overcurrent conditions.

Note Refer to the device specifications, available at ni.com/manuals for more information.

NI Services

Visit ni.com/support to find support resources including documentation, downloads, and troubleshooting and application development self-help such as tutorials and examples.

Visit ni.com/services to learn about NI service offerings such as calibration options, repair, and replacement.

Visit ni.com/register to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

NI corporate headquarters is located at 11500 N Mopac Expwy, Austin, TX, 78759-3504, USA.