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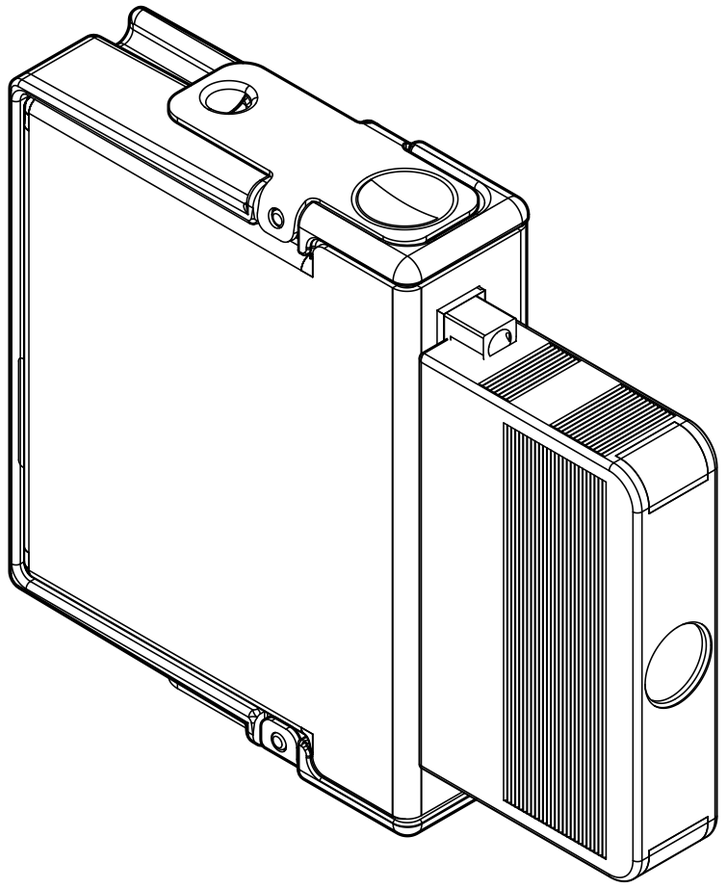
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Find the *National Instruments NI 9436* at our website: ***Click HERE***

GETTING STARTED GUIDE

NI 9436

8 DI, ±100 VDC to ±250 VDC/100 VAC to 250 VAC, Sinking/Sourcing, 20 ms



NATIONAL INSTRUMENTS™

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This document explains how to connect to the NI 9436.



Note Before you begin, complete the software and hardware installation procedures in your chassis documentation.



Note The guidelines in this document are specific to the NI 9436. The other components in the system might not meet the same safety ratings. Refer to the documentation for each component in the system to determine the safety and EMC ratings for the entire system.

Safety Guidelines

Operate the NI 9436 only as described in this document.



Caution Do not operate the NI 9436 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.

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Safety Voltages

Connect only voltages that are within the following limits:

DIa-to-DIb	250 Vrms maximum, Measurement Category II
Isolation	
Channel-to-channel	
Continuous	250 Vrms, Measurement Category II
Withstand	1,500 Vrms, verified by a 5 s dielectric withstand test
Channel-to-earth ground	
Continuous	250 Vrms, Measurement Category II
Withstand	3,000 Vrms, verified by a 5 s dielectric withstand test

Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system. This category refers to local-level electrical distribution, such as

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that provided by a standard wall outlet, for example, 115 V for U.S. or 230 V for Europe.



Caution Do not connect the NI 9436 to signals or use for measurements within Measurement Categories III or IV.

Safety Guidelines for Hazardous Voltages

If hazardous voltages are connected to the device, take the following precautions. A hazardous voltage is a voltage greater than 42.4 Vpk voltage or 60 VDC to earth ground.



Hazardous Voltage This icon denotes a warning advising you to take precautions to avoid electrical shock.



Caution Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.



Caution Do not mix hazardous voltage circuits and human-accessible circuits on the same module.



Caution Ensure that devices and circuits connected to the module are properly insulated from human contact.

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Electromagnetic Compatibility 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 or commercial 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 National Instruments could void your authority to operate it under your local regulatory rules.

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Special Conditions for Marine Applications

Some products are Lloyd's Register (LR) Type Approved for marine (shipboard) applications. To verify Lloyd's Register certification for a product, visit *ni.com/certification* and search for the LR certificate, or look for the Lloyd's Register mark on the product.



Caution In order to meet the EMC requirements for marine applications, install the product in a shielded enclosure with shielded and/or filtered power and input/output ports. In addition, take precautions when designing, selecting, and installing measurement probes and cables to ensure that the desired EMC performance is attained.

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Preparing the Environment

Ensure that the environment in which you are using the NI 9436 meets the following specifications.

Operating temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 70 °C
Operating humidity (IEC 60068-2-78)	10% RH to 90% RH, noncondensing
Pollution Degree	2
Maximum altitude	5,000 m

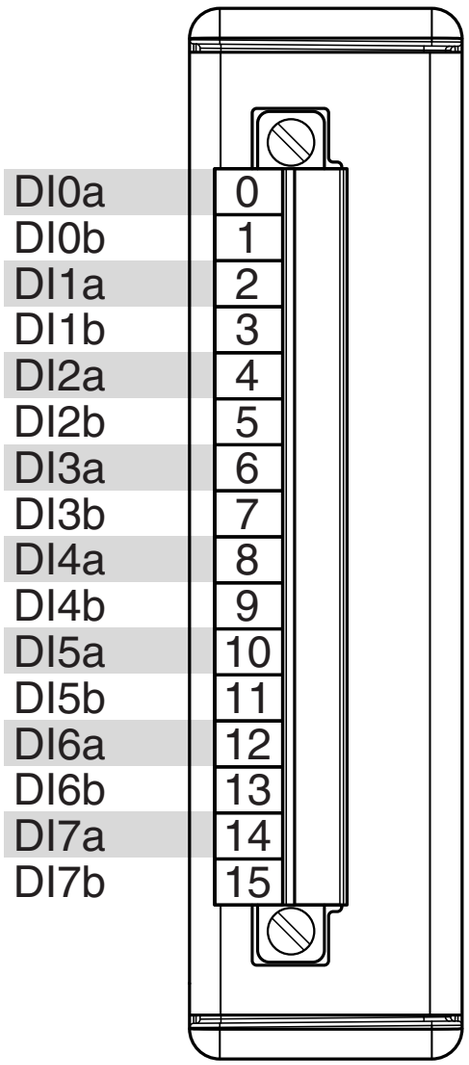
Indoor use only.



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

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NI 9436 Pinout

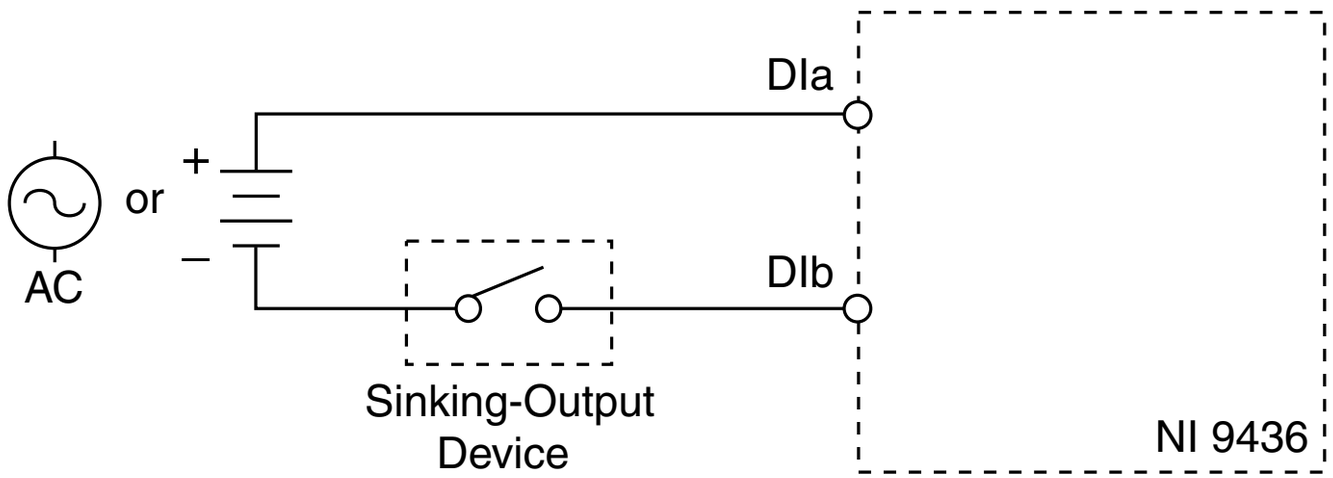


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Table 1. Signal Descriptions

Signal	Description
DIa and DIb	Digital input signal connections

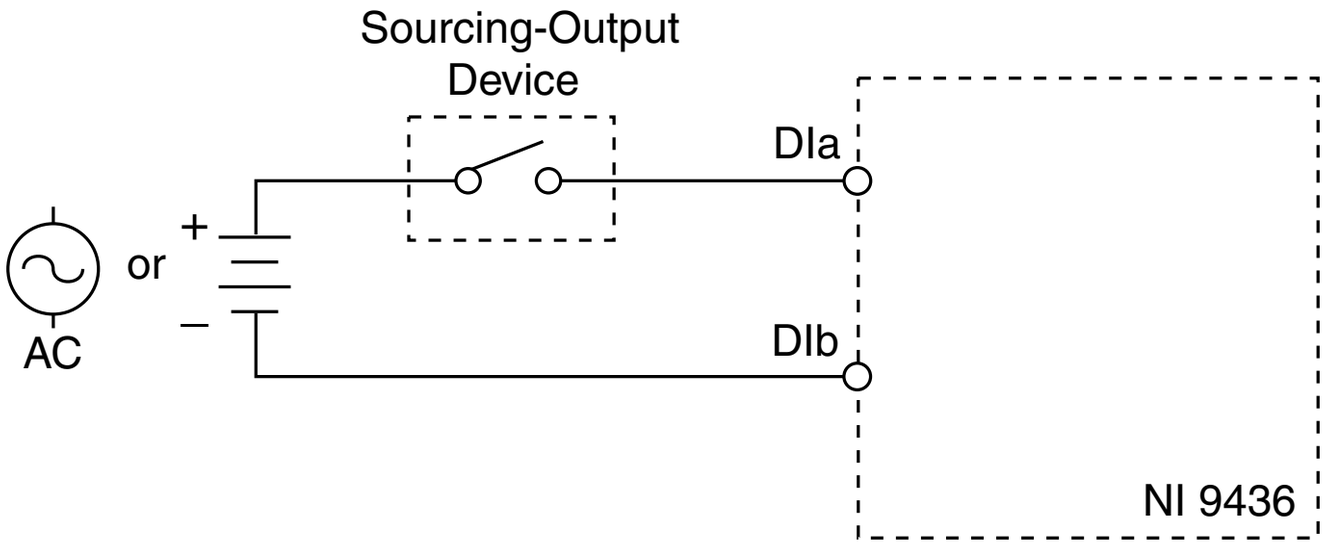
Sinking-Output Connections



The NI 9436 channel registers as ON when the sinking-output device drives the input within the input ON range. If no device is connected to DI, the channel registers as OFF.

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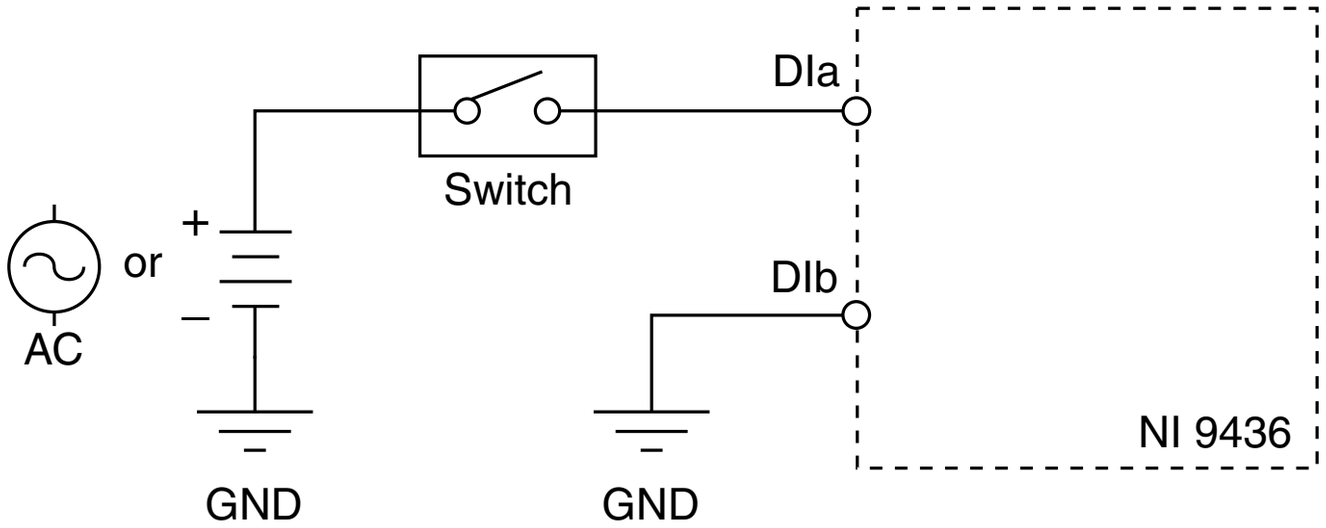
Sourcing-Output Connections



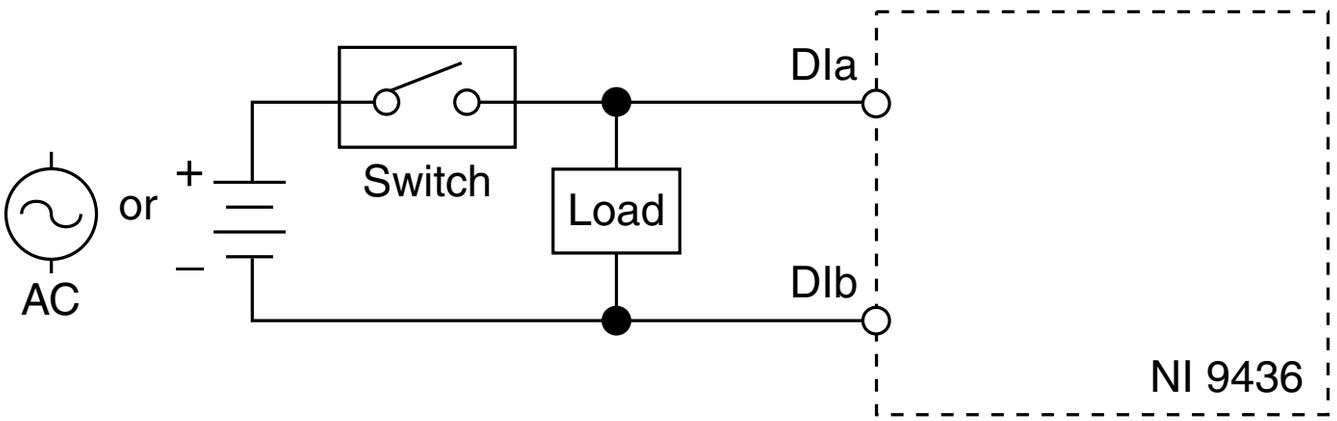
The NI 9436 channel registers as ON when the sourcing-output device drives enough current or applies enough voltage to DI. If no device is connected to DI, the channel registers as OFF.

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Switch Connections



Load Connections



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NI 9436 Connection Guidelines

Make sure that devices you connect to the NI 9436 are compatible with the module specifications.

You must use 2-wire ferrules to create a secure connection when connecting more than one wire to a single terminal on the NI 9436.

Wiring the NI 9436



Caution For safe operation with hazardous voltages, you must use the NI 9939 Connector Backshell with the 16-position screw terminal connector on the NI 9436.

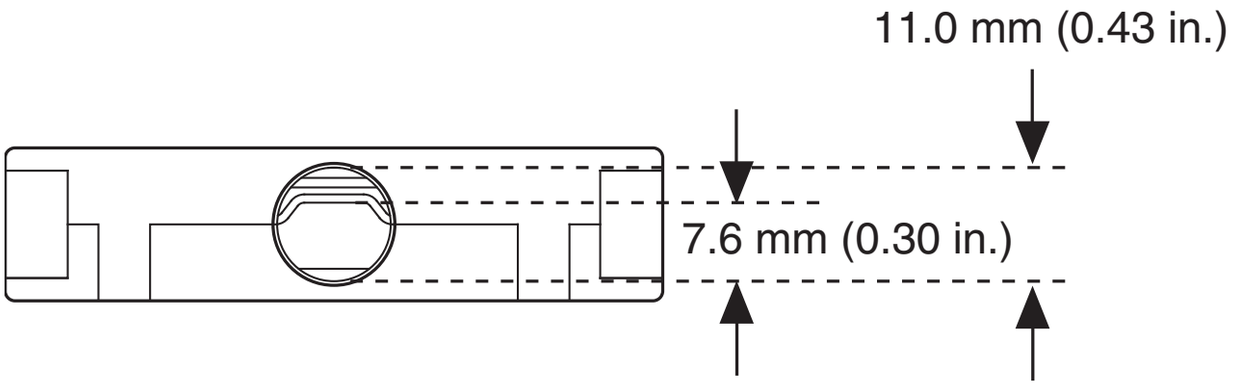
When connecting all 16 terminals, the total maximum wire diameter including insulation must not exceed 2.3 mm (0.09 in.) per wire in order to fit through the 11.0 mm (0.43 in.) opening on the NI 9939.

When connecting all 16 terminals using the cable retainer, the total maximum wire diameter including insulation must not

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exceed 1.6 mm (0.06 in.) per wire in order to fit under the 7.6 mm (0.30 in.) clearance of the NI 9939 cable retainer.

Figure 1. NI 9939 Wire Clearance Dimensions



Complete the appropriate procedure based on the total maximum wire diameter used.

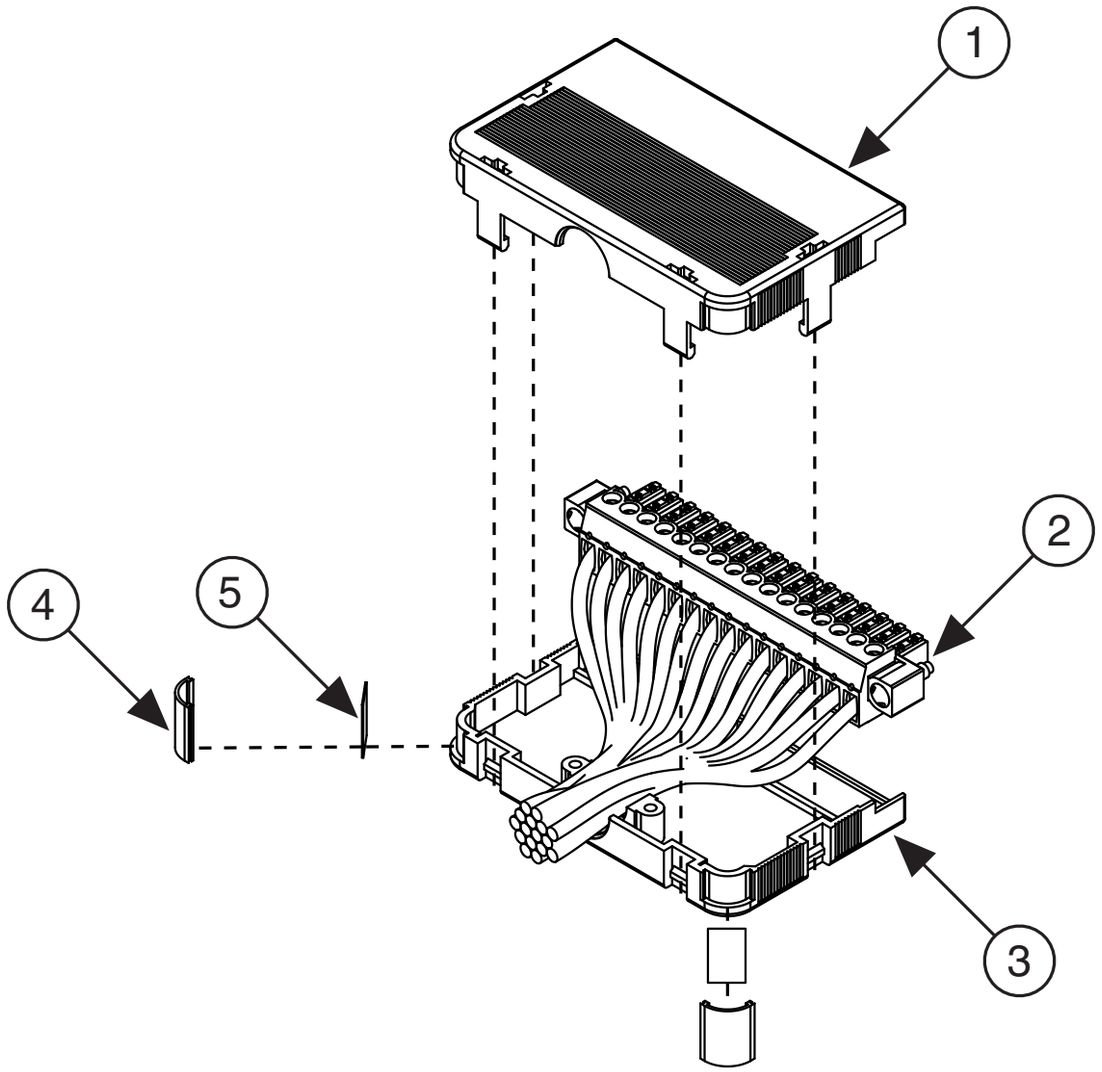
Installing the NI 9939

What to Use

- NI 9939 kit
- 0.05 mm^2 to 1.5 mm^2 (30 AWG to 14 AWG) wire with 6 mm (0.24 in.) of the insulation stripped
- Slotted screwdriver

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What to Do



1. Insert the stripped end of the wire fully into the appropriate terminal on the 16-Position Screw Terminal Connector (2) and tighten the screw. Make sure no exposed wire extends past the screw terminal.

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2. Route the wire through the NI 9939 opening and remove slack from the wiring.
3. Install the Backshell Top Enclosure (1) to the Backshell Bottom Enclosure (3).
4. Place the Label (5) in the Label Carrier (4) and attach onto the backshell.

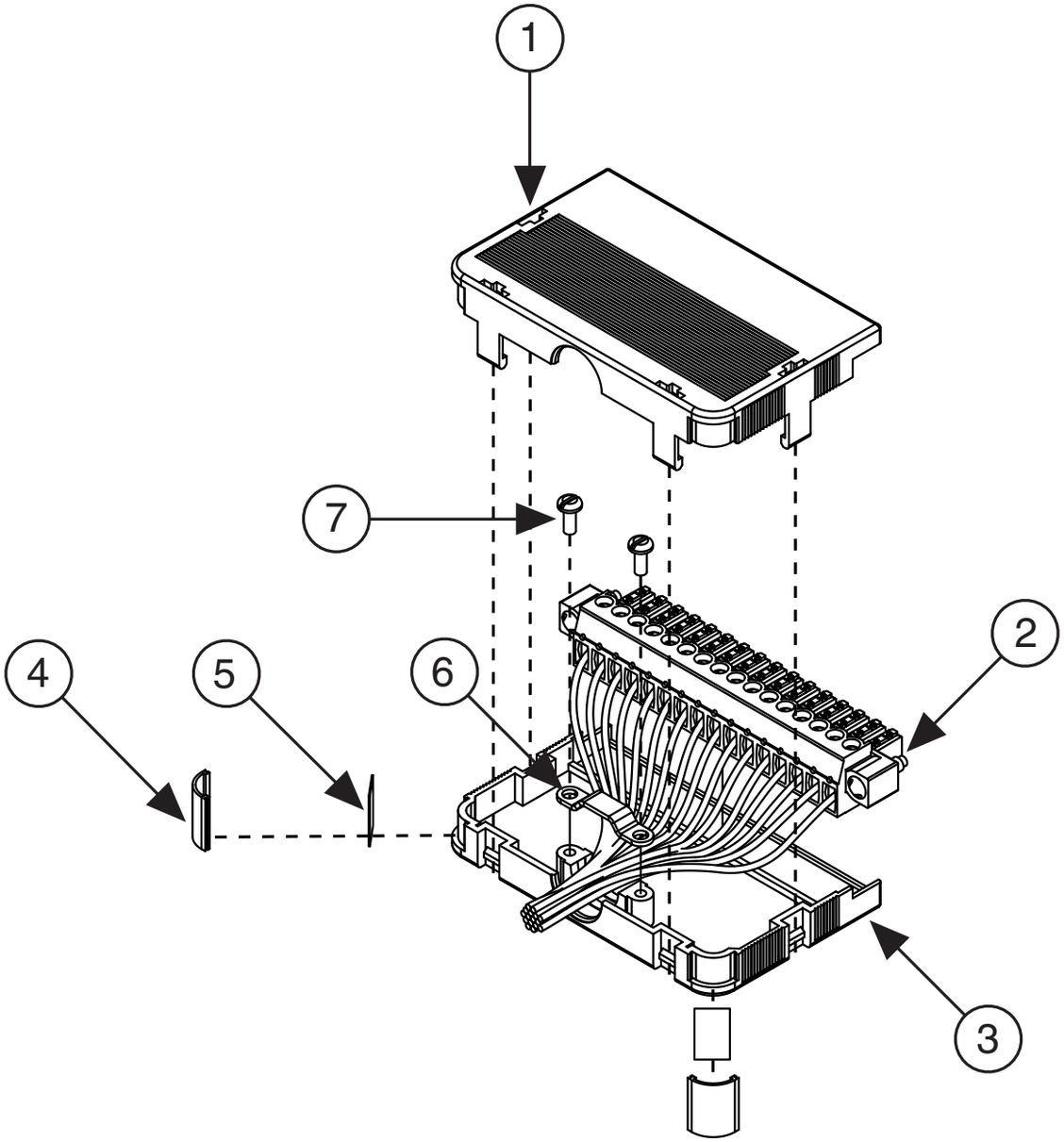
Installing the NI 9939 Using the Cable Retainer

What to Use

- NI 9939 kit
- 0.05 mm^2 to 1.5 mm^2 (30 AWG to 14 AWG) wire with 6 mm (0.24 in.) of the insulation stripped
- Slotted screwdriver

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What to Do



1. Insert the stripped end of the wire fully into the appropriate terminal on the 16-Position Screw Terminal Connector (2)

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and tighten the screw. Make sure no exposed wire extends past the screw terminal.

2. Route the wire through the NI 9939 opening, remove slack from the wiring, and secure wires using the Cable Retainer (6) and tighten the Screws (7).
3. Install the Backshell Top Enclosure (1) to the Backshell Bottom Enclosure (3).
4. Place the Label (5) in the Label Carrier (4) and attach onto the backshell.

High-Vibration Application Connections

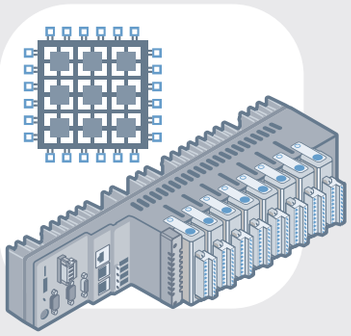
If your application is subject to high vibration, NI recommends that you follow these guidelines to protect connections to the NI 9436:

- Use ferrules to terminate wires to the detachable connector.
- Use the NI 9939 backshell kit.

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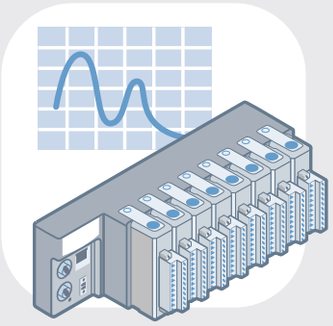
Where to Go Next

CompactRIO



- *NI 9436 Datasheet*
- *NI-RIO Help*
- *LabVIEW FPGA Help*

NI CompactDAQ



- *NI 9436 Datasheet*
- *NI-DAQmx Help*
- *LabVIEW Help*

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