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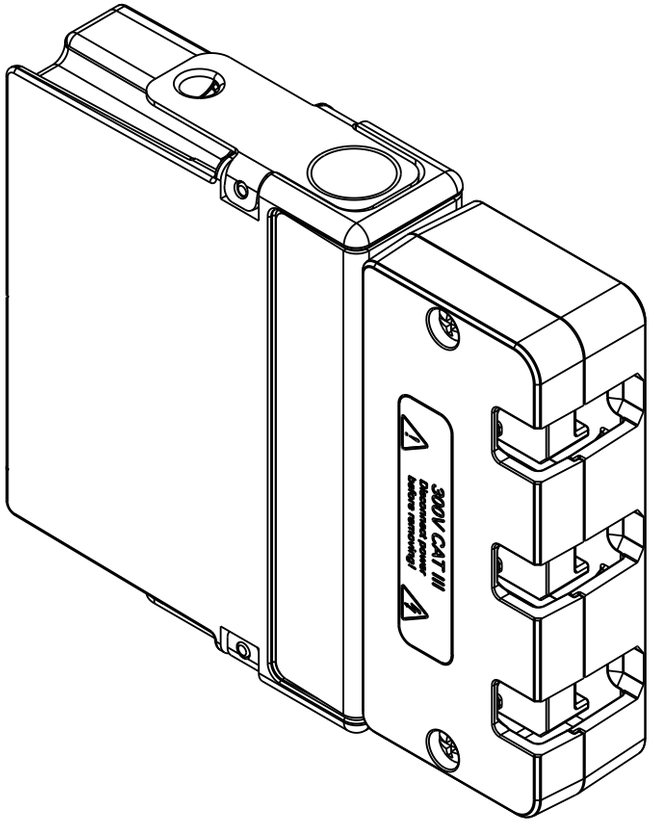
GETTING STARTED GUIDE

NI 9246

3-Channel, 20 Arms Continuous, 24-Bit, Analog Input Module



NATIONAL INSTRUMENTS™

This document explains how to connect to the NI 9246.

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 9246. 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 9246 only as described in this document.

Caution Do not operate the NI 9246 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.

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.

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.

Caution When module terminals are hazardous voltage LIVE (>42.4 Vpk/60 VDC), you must ensure that devices and circuits connected to the module are properly insulated from human contact.

Safety Voltages

Connect only voltages that are within the following limits:

Maximum working voltage, channel-to-earth ground

Continuous

Up to 2,000 m altitude	300 Vrms, Measurement Category III
Up to 5,000 m altitude	150 Vrms, Measurement Category III or 300 Vrms, Measurement Category II

Maximum working voltage, channel-to-channel

Continuous

Up to 2,000 m altitude	480 Vrms, Measurement Category III
Up to 5,000 m altitude	300 Vrms, Measurement Category III or 480 Vrms, Measurement Category II

Withstand

Channel-to-channel.....3510 Vrms, verified by a 5 s dielectric withstand test

Channel-to-earth ground.....3510 Vrms, verified by a 5 s dielectric withstand test

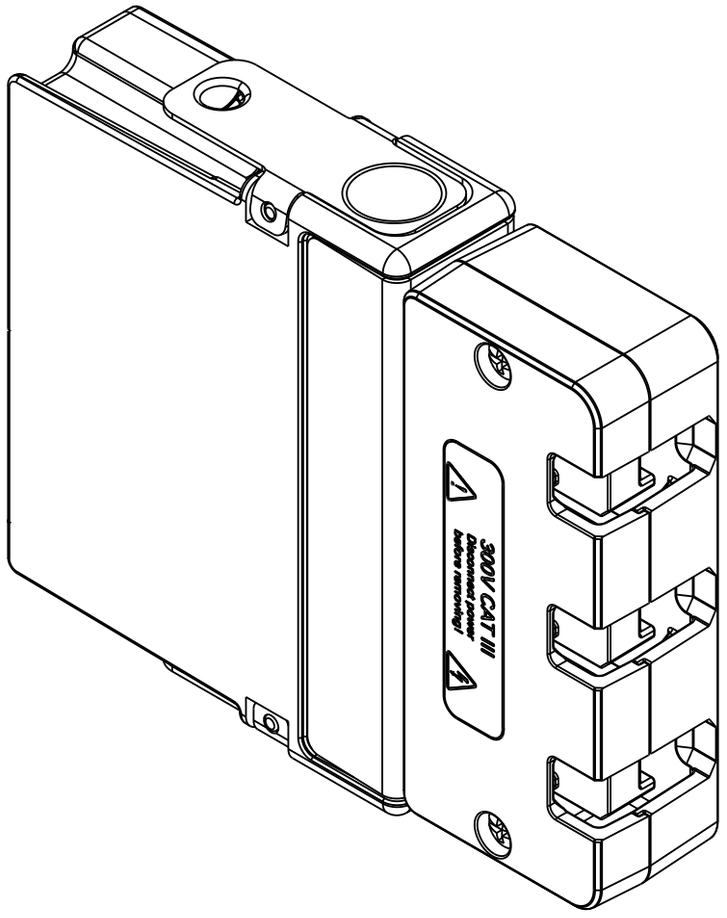
Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system. This category refers to local-level electrical distribution, such as that provided by a standard wall outlet, for example, 115 V for U.S. or 230 V for Europe.

Measurement Category III is for measurements performed in the building installation at the distribution level. This category refers to measurements on hard-wired hardware such as hardware in fixed installations, distribution boards, and circuit breakers. Other examples are wiring, including cables, bus bars, junction boxes, switches, socket outlets in the fixed installation, and stationary motors with permanent connections to fixed installations.

Caution Do not connect the NI 9246 to signals or use for measurements within Measurement Category IV.

Caution The NI 9246 ships with a connector backshell to ensure that the terminals are not accessible. Do not operate the device without first installing this backshell.

Figure 1. NI 9246 with Backshell



Related Information

Installing the NI 9246 Backshell on page 14

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.

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.

Preparing the Environment

Ensure that the environment in which you are using the NI 9246 meets the following specifications.

Operating temperature.....-40 °C to 70 °C
(IEC 60068-2-1, IEC 60068-2-2)

Operating humidity.....10% RH to 90% RH,
(IEC 60068-2-78) noncondensing

Pollution Degree.....2

Maximum altitude.....5,000 m

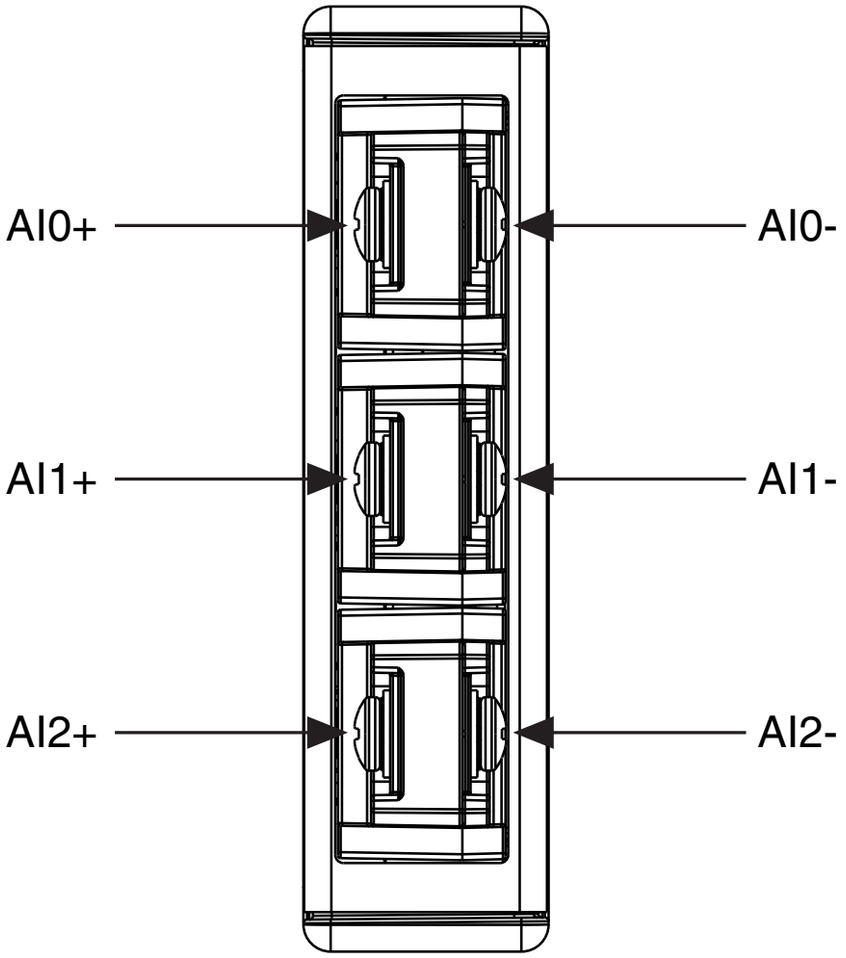
Indoor use only.

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

Connecting the NI 9246

The NI 9246 provides connection for three analog input channels.

Figure 2. NI 9246 Pinout



Note The NI 9246 does not measure DC currents.

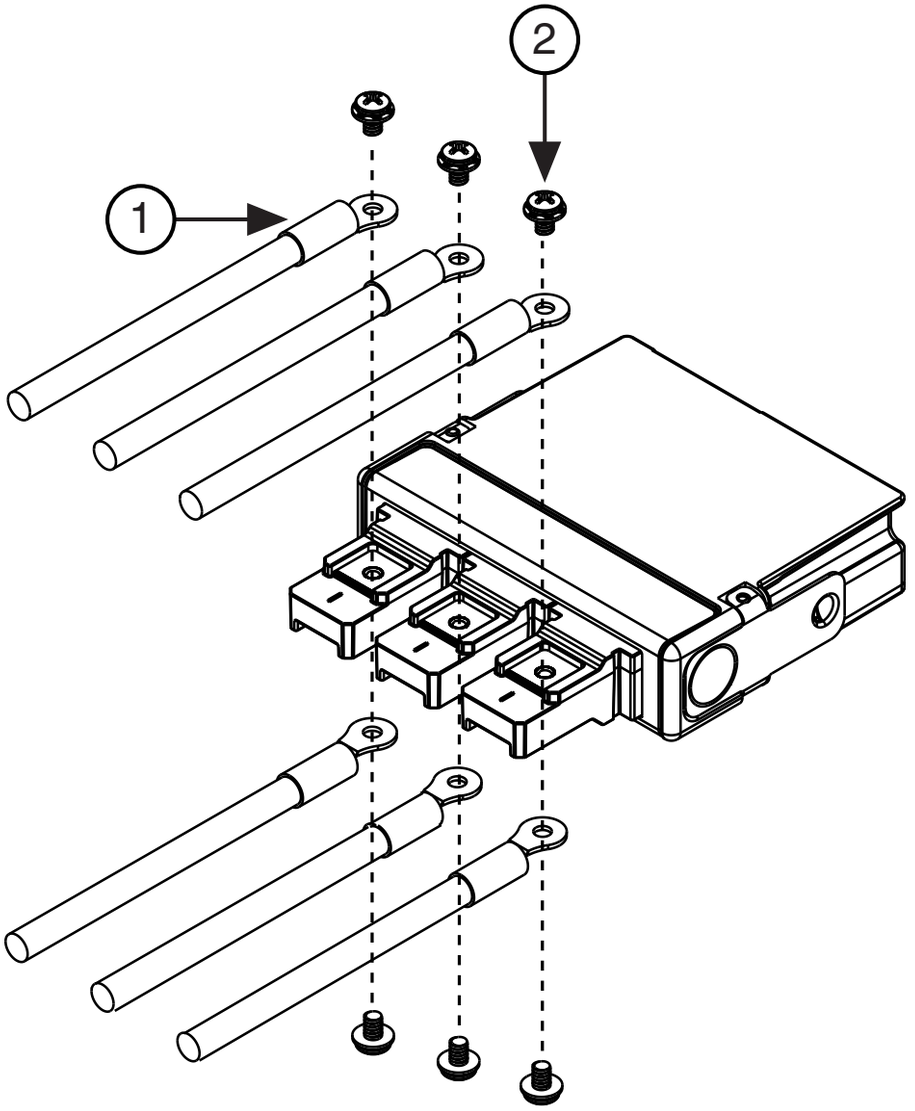
Caution Connecting a DC current source to the NI 9246 outside of the specifications stated in the *NI 9246 Datasheet* may lead to invalid measurements.

Refer to the datasheet on *ni.com/manuals* for the NI 9246 specifications.

Connecting Cables Using Ring Lug Connectors

Complete the following steps to connect cables using ring lug connectors. Use 5.26 mm^2 (10 AWG) cables.

Figure 3. Installing Cables

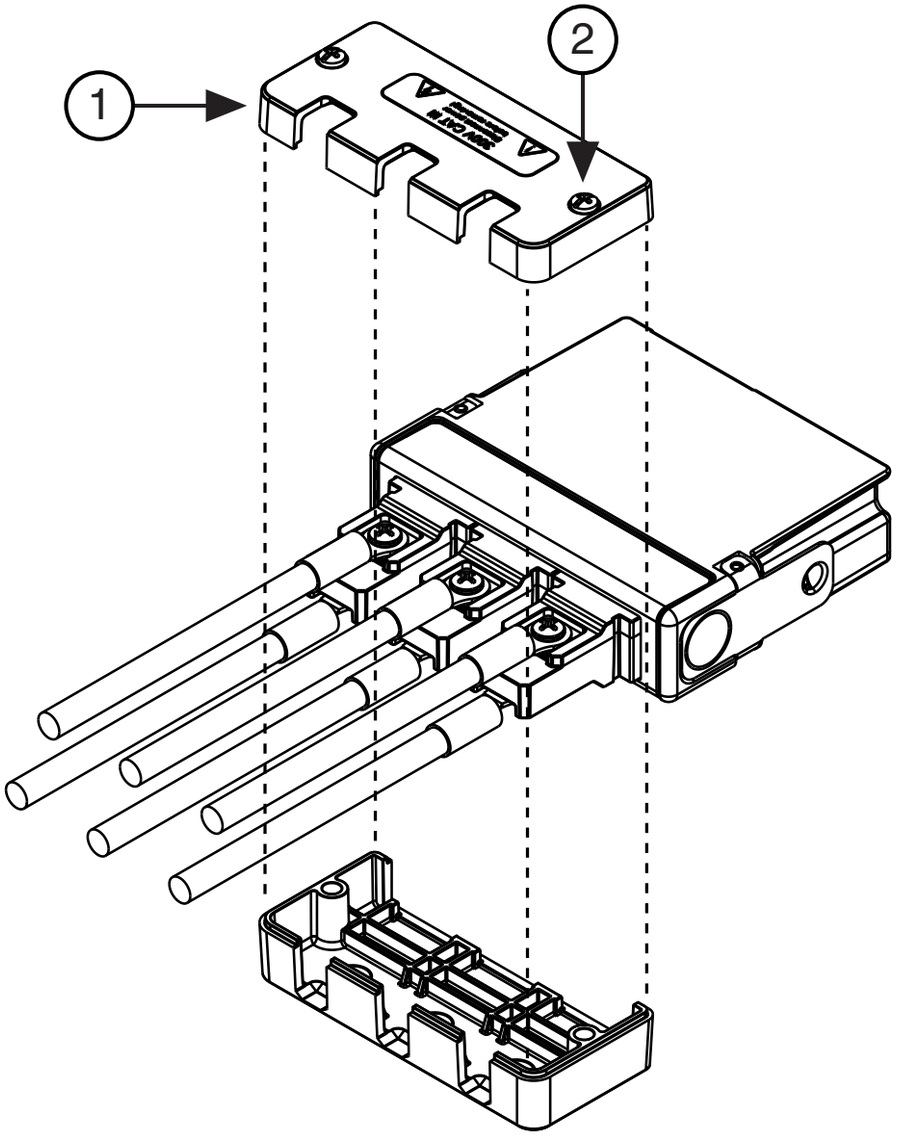


1. Align the cables with the device terminals.
2. Secure the cables using the ring lug screws. Tighten the screws to 1.36 N · m (12 lb · in.) torque.

Installing the NI 9246 Backshell

Complete the following steps to install the NI 9246 backshell.

Figure 4. Connector Backshell Installation



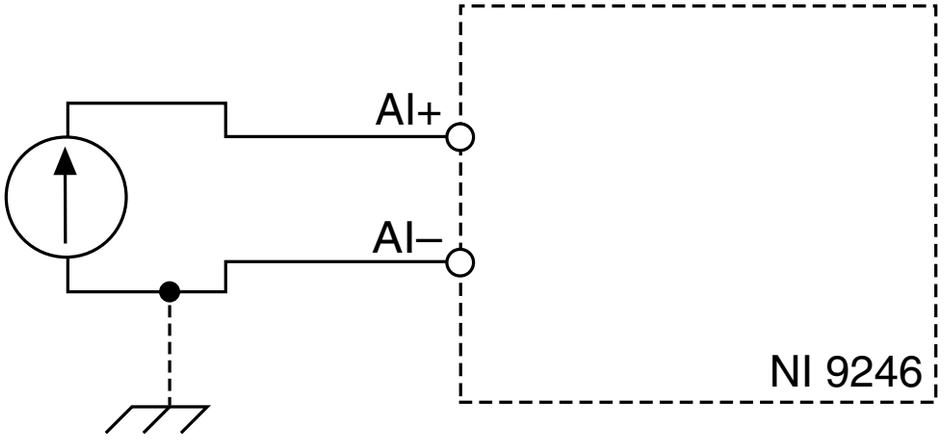
1. Align the backshell components with the device terminals.
2. Secure the backshell using the captive screws. Tighten to 0.45 N · m (4 lb · in.) torque.

Connecting Phase Measurements

You can connect three-phase measurement configurations and single-phase measurement configurations to the NI 9246.

You can connect a current source to the NI 9246 for single-phase measurements. For grounded current sources, connect to the chassis ground.

Figure 5. Connecting a Grounded or Floating Current Source



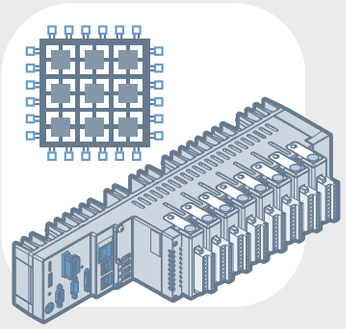
For three-phase measurements, connect three current sources to the NI 9246.

High-Vibration Applications

Proper strain relief of 5.26 mm^2 (10 AWG) cable is required to meet the shock and vibration performance specifications stated in the *NI 9246 Datasheet* on *ni.com/manuals*. Strain relieve all cabling as close to the chassis mounting plate as possible to reduce the stresses exerted on the module. Ensure that you do not directionally bias the module when applying strain relief.

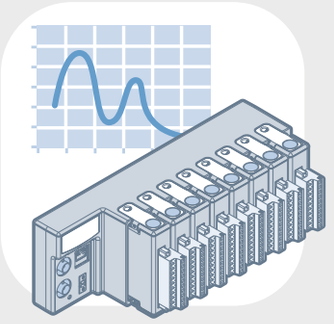
Where to Go Next

CompactRIO



- NI 9246 Datasheet
- NI-RIO Help
- LabVIEW FPGA Help

NI CompactDAQ



- NI 9246 Datasheet
- NI-DAQmx Help
- LabVIEW Help

RELATED INFORMATION

C Series Documentation & Resources
ni.com/info⇨ cseriesdoc

Services
ni.com/services

Located at ni.com/manuals

Installs with the software

Worldwide Support and Services

The National Instruments website 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.

Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

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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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