NI-9228 Getting Started

2025-03-21

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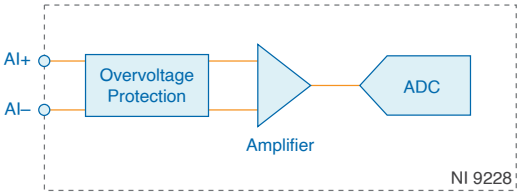
NI-9228 Block Diagram



- Input signals on each channel are conditioned, buffered, and then sampled by an ADC.
- Each AI channel provides an independent signal path and ADC, enabling you to sample all channels simultaneously.

NI-9228 Pinout

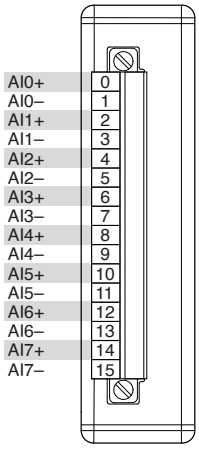
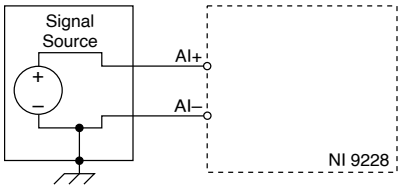


Table 1. Signal Descriptions

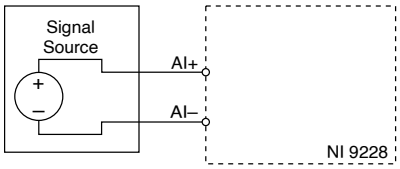
Signal	Description
AI+	Positive analog input signal connection
AI-	Negative analog input signal connection

Grounded Connections



Make sure the voltage on the AI+ and AI- connections are in the channel-to-earth safety voltage range to ensure proper operation.

Floating Connections



NI-9228 Connection Guidelines

- Make sure that devices you connect to the NI-9228 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-9228.

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-9228:

- Use ferrules to terminate wires to the detachable connector.
- Use the cRIO-9939 screw terminal connector backshell kit.

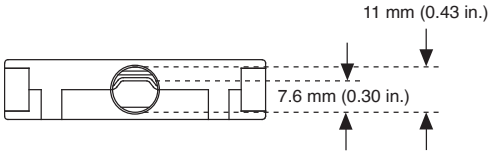
Wiring the NI-9939

> **Caution** For safe operation with hazardous voltages, you must use the cRIO-9939 screw terminal connector backshell kit with the 16-position screw terminal connector on the NI-9228.

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 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



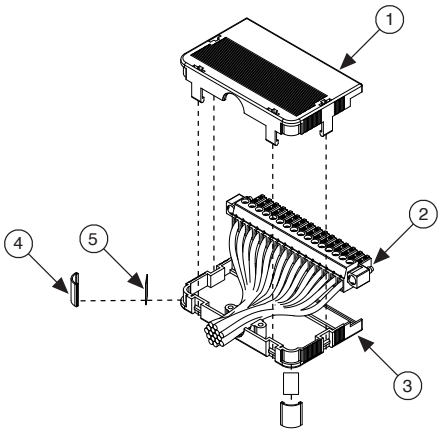
Complete the appropriate procedure based on the total maximum wire diameter used.

Installing the NI-9939

What to Use

- cRIO-9939 screw terminal connector backshell 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

What to Do



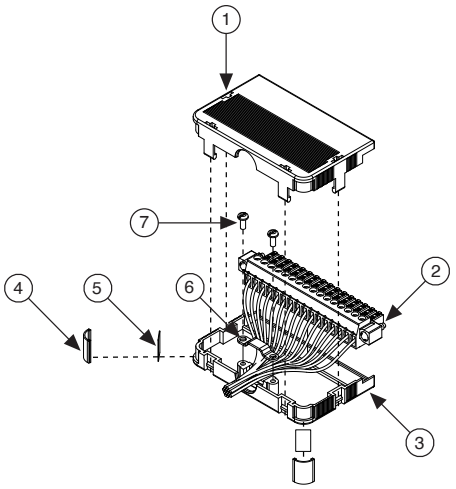
1. Insert the stripped end of the wire fully into the appropriate terminal on the 16-Position Screw Terminal Connector (2) and tighten the screw. Make sure no exposed wire extends past the screw terminal.
2. Route the wire through the NI-9939 opening and remove slack from the wiring.
3. Install the Backshell 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

- cRIO-9939 screw terminal connector backshell 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

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.
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.

Timing Modes

The NI-9228 supports high resolution, medium resolution, high speed, and medium speed timing modes. High resolution timing mode optimizes noise and rejects power line frequencies. Medium resolution timing mode has a higher sample rate when compared with high resolution, and also rejects power line frequencies. High speed timing mode optimizes sample rate and signal bandwidth, whereas medium speed timing mode has lower noise when compared to high speed timing mode.

Conformal Coating

The NI-9228 is available with conformal coating for additional protection in corrosive and condensing environments, including environments with molds and dust.

In addition to the environmental specifications listed in the ***NI-9228 Safety, Environmental, and Regulatory Information***, the NI-9228 with conformal coating meets the following specification for the device temperature range. To meet

this specification, you must follow the appropriate setup requirements for condensing environments. Refer to ***Conformal Coating and NI RIO Products*** for more information about conformal coating and the setup requirements for condensing environments.

Operating humidity (IEC 60068-2-30 Test Db)	80 to 100% RH, condensing

Related information:

- Conformal Coating and NI RIO Products