



NATIONAL INSTRUMENTS NI-9263 4 Channel Analog Output Module User Guide

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NI-9263 4 Channel Analog Output Module



Product Information: NI-9927 Getting Started Guide for NI 9263

The NI-9927 Getting Started Guide provides instructions on how to connect to the NI 9263 device. The guide refers to both the NI 9263 with screw terminal and the NI 9263 with spring terminal as the NI 9263. It is important to note that the safety guidelines provided in the guide are specific to the NI 9263 and other components in the system might not meet the same safety ratings. Therefore, it is recommended to refer to the documentation for each component in the system to determine the safety and EMC ratings for the entire system.

Safety Guidelines

It is essential to operate the NI 9263 only as described in this document. Operating the product in a manner not specified in the document can result in a hazard, and product misuse can compromise the safety protection built into the product. If the product is damaged, it should be returned to NI for repair.

Hazardous Voltage

The NI-9927 guide includes a warning icon advising users to take precautions when dealing with hazardous voltage. A hazardous voltage is a voltage greater than 42.4 Vpk voltage or 60 VDC to earth ground. If hazardous voltages are connected to the device, qualified personnel adhering to local electrical standards should perform wiring. Hazardous voltage circuits and human-accessible circuits should not be mixed on the same module. Devices and circuits connected to the module should be properly insulated from human contact. When module terminals are hazardous voltage LIVE (>42.4 Vpk/60 VDC), users must ensure that devices and circuits connected to the module are correctly insulated from human contact. To ensure that the terminals are not accessible, users must use the NI 9927 connector backshell kit with the NI 9263 with screw terminal and the NI 9981 connector backshell kit with the NI 9263 with spring terminal.

Safety Voltages

Users should connect only voltages that are within the specified limits:

Channel-to-channel	Channel-to-earth ground
Continuous	None
Withstand	250 Vrms, Measurement Category II
	2,300 Vrms, verified by a 5 s dielectric withstand test
	60 VDC, Measurement Category I

Measurement Category I is for measurements performed on circuits not directly connected to the electrical

distribution system referred to as MAINS voltage. Do not connect the NI 9263 to signals or use for measurements within Measurement Categories II, III, or IV. Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Product Usage Instructions

Before using the NI 9263 device, complete the software and hardware installation procedures in your chassis documentation. Once installed, follow the instructions provided in the NI-9927 guide for connecting to the NI 9263 device. Ensure that you adhere to the safety guidelines provided in the guide when operating the device. Connect only voltages that are within the specified limits and avoid connecting to signals or using for measurements within Measurement Categories II, III, or IV.

This document explains how to connect to the NI 9263. In this document, the NI 9263 with screw terminal and the NI 9263 with spring terminal are referred to inclusively as the NI 9263.



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 9263. 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 9263 only as described in this document.



Caution:

Do not operate the NI 9263 in a manner not specified in the guide as product misuse can result in a hazard. If the product is damaged, return it to NI for repair.

Hazardous Voltage

This icon denotes a warning advising you to take precautions to avoid electrical Shock with the NI 9263 with screw terminal and the NI 9263 with spring terminal

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.



Note: 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. You must use the NI 9927 connector backshell kit with the NI 9263 with screw terminal and the NI 9981 connector backshell kit with the NI 9263 with spring terminal to ensure that the terminals are not accessible.

Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-channel	None
Channel-to-earth ground	
Continuous	250 Vrms, Measurement Category II
Withstand	2,300 Vrms, verified by a 5 s dielectric withstand test
Division 2 and Zone 2 hazardous locations applications (Channel-to-earth ground)	60 VDC, Measurement Category I

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.



Caution: Do not connect the NI 9263 to signals or use for measurements within Measurement Categories II, III, or IV.



Note: Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

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.

Safety Guidelines for Hazardous Locations

The NI 9263 is suitable for use in Class I, Division 2, Groups A, B, C, D, T4 hazardous locations; Class I, Zone 2, AEx nA IIC T4 and Ex nA IIC T4 hazardous locations; and nonhazardous locations only. Follow these guidelines if you are installing the NI 9263 in a potentially explosive environment. Not following these guidelines may result in serious injury or death.



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.



Note: 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. You must use the NI 9927 connector backshell kit with the NI 9263 with screw terminal and the NI 9981 connector backshell kit with the NI 9263 with spring terminal to ensure that the terminals are not accessible.

Safety Voltages

Connect only voltages that are within the following limits:

- Channel-to-channel None
Channel-to-earth ground
- Continuous
250 Vrms, Measurement Category II
- Withstand
2,300 Vrms, verified by a 5 s dielectric withstand test
- Division 2 and Zone 2 hazardous locations applications (Channel-to-earth ground)
60 VDC, Measurement Category I

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.



Caution: Do not connect the NI 9263 to signals or use for measurements within Measurement Categories II, III, or IV.



Note: Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

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.



Caution: Do not connect the NI 9263 to signals or use for measurements within Measurement Categories III or IV.

Special Conditions for Hazardous Locations Use in Europe and Internationally

The NI 9263 has been evaluated as Ex nA IIC T4 Gc equipment under DEMKO Certificate No. 03 ATEX 0324020X and is IECEx UL 14.0089X certified. Each NI 9263 is marked II 3G and is suitable for use in Zone 2 hazardous locations, in ambient temperatures of $-40\text{ }^{\circ}\text{C} \leq T_a \leq 70\text{ }^{\circ}\text{C}$. If you are using the NI 9263 in Gas Group IIC hazardous locations, you must use the device in an NI chassis that has been evaluated as Ex nC IIC T4, Ex IIC T4, Ex nA IIC T4, or Ex nL IIC T4 equipment.



Caution: You must make sure that transient disturbances do not exceed 140% of the rated voltage.



Caution: The system shall only be used in an area of not more than Pollution Degree 2, as defined in IEC 60664-1.



Caution: The system shall be mounted in an ATEX/IECEx-certified enclosure with a minimum ingress protection rating of at least IP54 as defined in IEC/EN 60079-15.



Caution: The enclosure must have a door or cover accessible only by the use of a tool.

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 9263 meets the following specifications.

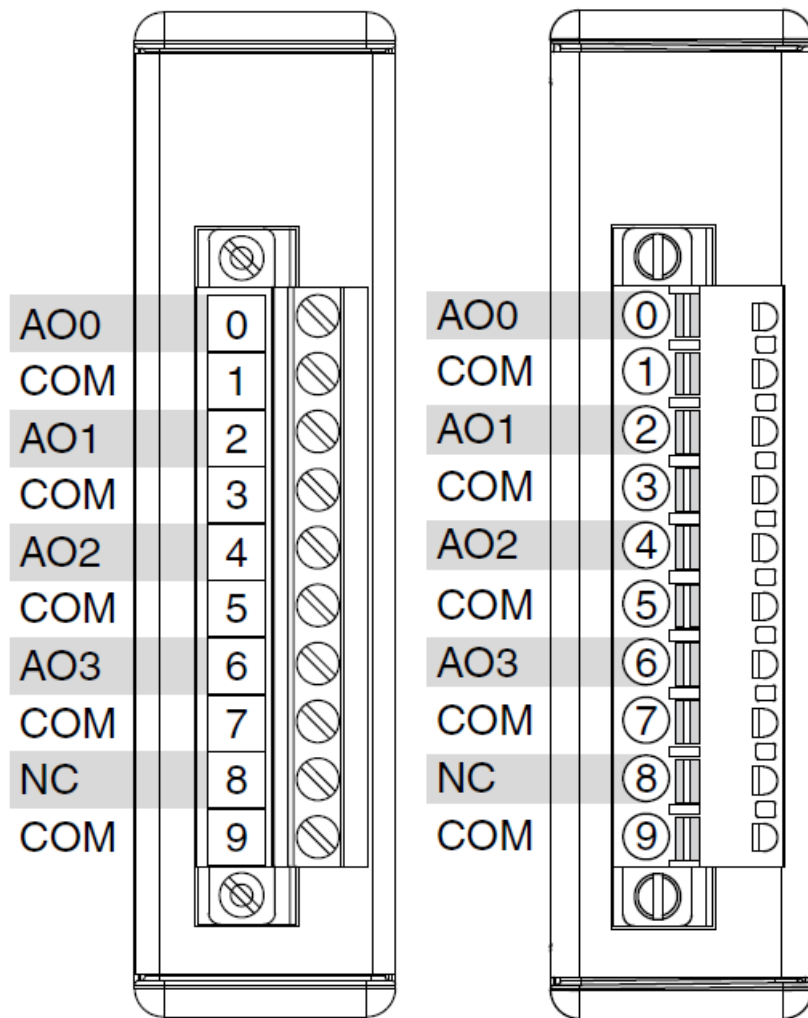
- Operating temperature (IEC 60068-2-1, IEC 60068-2-2) -40 °C to 70 °C
- Operating humidity (IEC 60068-2-78) 10% RH to 90% RH, noncondensing
- Pollution Degree 2
- Maximum altitude 2,000 m

Indoor use only.



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

NI 9263 Pinout



Note: You must use 2-wire ferrules to create a secure connection when connecting more than one wire to a single terminal on the NI 9263.

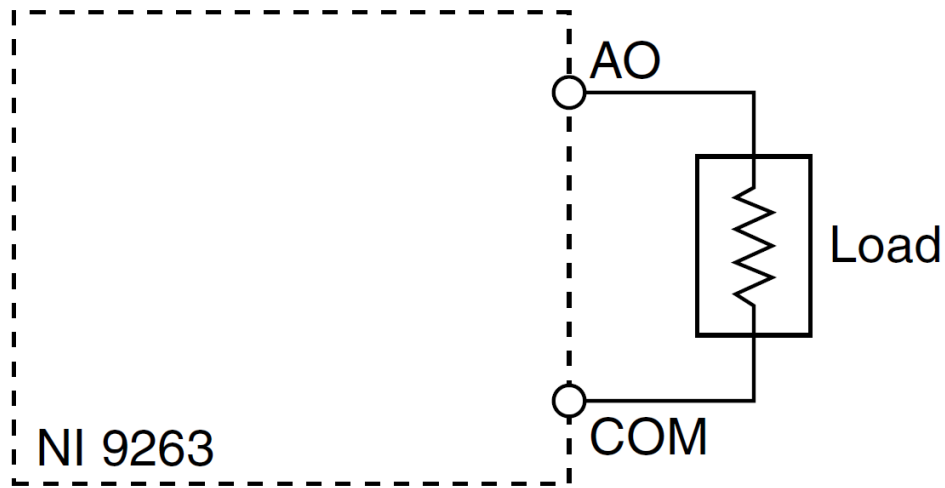
Table 1. Signal Descriptions

Signal	Description
AI	Analog input signal connection
COM	Common reference connection
NC	No connection

Connecting a Load

You can connect a load to each channel of the NI 9263.

Figure 1. Connecting a Load to the NI 9263



When the NI 9263 powers on, the channels output the startup voltage. You can configure the startup voltage in software.

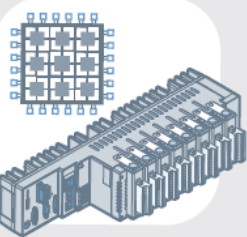
High-Vibration Application Connections




If your application is subject to high vibration, NI recommends that you follow these guidelines to protect connections to the NI 9263:

- Use ferrules to terminate wires to the detachable connector.
- Use the NI 9927 backshell kit with the NI 9263 with screw terminal or the NI 9981 backshell kit with the NI 9263 with spring terminal.

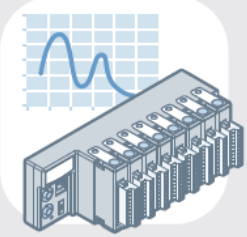
Where to Go Next




CompactRIO




-  [NI 9263 Datasheet](#)
-  [NI-RIO Help](#)
-  [LabVIEW FPGA Help](#)

NI CompactDAQ




-  [NI 9263 Datasheet](#)
-  [NI-DAQmx Help](#)
-  [LabVIEW Help](#)

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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.

NI corporate headquarters is located at

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NI-9263 4 Channel Analog Output Module, NI-9263, 4 Channel Analog Output Module, Analog
Output Module, Output Module, Module

References

- [NI Engineer Ambitiously - NI](#)
- [NI Calibration Services - NI](#)
- [NI Product Certifications - NI](#)
- [NI Using Info Codes - NI](#)
- [NI Trade Compliance - NI](#)
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