

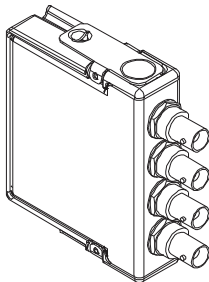
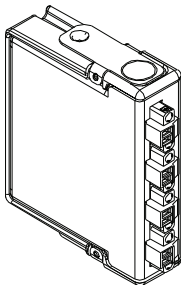
OPERATING INSTRUCTIONS AND SPECIFICATIONS

# NI 9229/9239

4-Channel,  $\pm 60$  V/ $\pm 10$  V, 24-Bit Simultaneous,  
Channel-to-Channel Isolated Analog Input Modules

Français    Deutsch    日本語    한국어    简体中文

[ni.com/manuals](http://ni.com/manuals)



This document describes how to use the National Instruments 9229 and National Instruments 9239 and includes specifications and terminal assignments. In this document, the NI 9229/9239 with screw terminal and NI 9229/9239 with BNC are referred to inclusively as the NI 9229/9239. For information about installing, configuring, and programming the system, refer to the system documentation. Visit [ni.com/info](http://ni.com/info) and enter the following Info Codes:

- `cseriesdoc`—for information about C Series and system documentation.
- `compatibility`—for information about chassis and carrier compatibility for the modules you are using.
- `rdsoftwareversion`—for information about which software you need for the modules you are using.



**Note** The safety guidelines and specifications in this document are specific to the NI 9229/9239. The other components in the system might not meet the same safety ratings and specifications. Refer to the documentation for each component in the system to determine the safety ratings and specifications for the entire system. Visit [ni.com/info](http://ni.com/info) and enter `cseriesdoc` for information about C Series documentation.

# Safety Guidelines

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Operate the NI 9229/9239 only as described in these operating instructions.



**Hot Surface** This icon denotes that the component may be hot. Touching this component may result in bodily injury.



**Caution** Do not operate the NI 9229/9239 in a manner not specified in these operating instructions. 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 National Instruments for repair.

## Safety Guidelines for Hazardous Voltages

You can connect hazardous voltages only to the NI 9229/9239 with screw terminal. Do *not* connect hazardous voltages to the NI 9229/9239 with BNC.

If hazardous voltages are connected to the module, take the following precautions. A hazardous voltage is a voltage greater than 42.4 V<sub>pk</sub> 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** Make sure that devices and circuits connected to the module are properly insulated from human contact.



**Caution** When module terminals are hazardous voltage LIVE ( $>42.4V_{pk}/60$  VDC), you must ensure that devices and circuits connected to the module are properly insulated from human contact. You must use the NI 9971 connector backshell kit to ensure that the terminals are *not* accessible.

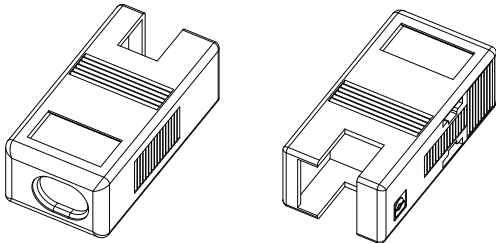
Figure 1 shows the NI 9971 connector backshell.



**Note** You can use the NI 9971 connector backshell only with the NI 9229/9239 with screw terminal.

**Figure 1.** NI 9971 Connector Backshell

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## Safety Guidelines for Hazardous Locations

The NI 9229/9239 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 9229/9239 in a potentially explosive environment. Not following these guidelines may result in serious injury or death.



**Caution** Do *not* disconnect I/O-side wires or connectors unless power has been switched off or the area is known to be nonhazardous.



**Caution** Do *not* remove modules unless power has been switched off or the area is known to be nonhazardous.



**Caution** Substitution of components may impair suitability for Class I, Division 2.



**Caution** For Division 2 and Zone 2 applications, install the system in an enclosure rated to at least IP 54 as defined by IEC 60529 and EN 60529.



**Caution** For Division 2 and Zone 2 applications, connected signals must be within the following limit:

Capacitance..... 0.01  $\mu$ F max




**Caution** For Division 2 and Zone 2 applications, connected voltage sources must be within 60 VDC to earth ground.



**Caution** For Division 2 and Zone 2 applications, install a protection device between the input signal and the NI 9229/9239 input terminal. The device must clamp all voltage sources to no more than 40% above their rated value or within 84 VDC to earth ground if there is a transient overvoltage condition.

## Special Conditions for Hazardous Locations Use in Europe

This equipment has been evaluated as Ex nA IIC T4 equipment under DEMKO Certificate No. 07 ATEX 0626664X. Each module 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 9229/9239 in Gas Group IIC hazardous locations, you must use the device in an NI chassis that has been evaluated as

Ex nC IIC T4, EEx nC IIC T4, Ex nA IIC T4, or Ex nL IIC T4 equipment.

## Electromagnetic Compatibility Guidelines

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

This product is intended for use in industrial locations. There is no guarantee that harmful interference will not occur in a particular installation, when the product is connected to a test object, or if the product is used in residential areas. To minimize the potential for the product to cause interference to radio and television reception or to experience 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.





**Caution** To ensure the specified EMC performance, operate this product only with shielded cables and accessories.



**Caution (NI 9229/9239 with screw terminal)** Electrostatic Discharge (ESD) can damage this product. To prevent damage, use industry-standard ESD prevention measures during installation, maintenance, and operation.



**Caution (NI 9229/9239 with BNC)** To ensure the specified EMC performance, you must install clamp-on ferrite beads (National Instruments part number 611484-01) in accordance with the product installation instructions. Refer to the NI 9229/9239 product page on [ni.com](http://ni.com) for purchasing information about clamp-on ferrite beads.

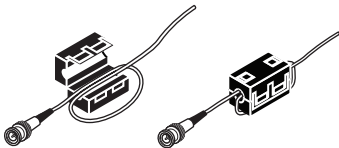
## Cable Requirements for EMC Compliance

Select and install cables for the NI 9229/9239 with BNC in accordance with the following requirements:

- Install a clamp-on ferrite bead (National Instruments part number 611461-01) on the BNC cable for each channel that you are connecting to on the NI 9229/9239.
- Clamp-on ferrites must be connected to the BNC cable as close to the module as possible with a full turn as shown in Figure 2. Placing the ferrite elsewhere on the cable noticeably impairs its effectiveness.

**Figure 2.** Installing a Ferrite

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## Special Guidelines 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](http://ni.com/certification) and search for the LR certificate, or look for the Lloyd's Register mark on the product label.

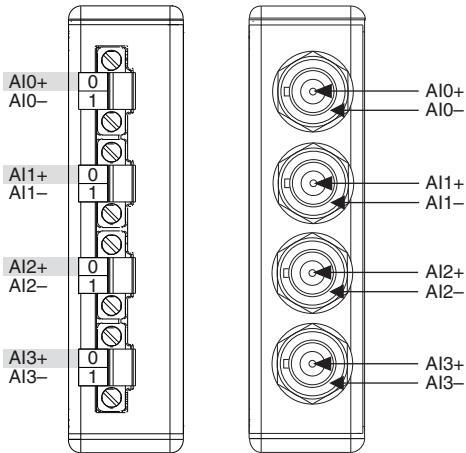


**Caution** In order to meet the EMC requirements for marine applications, install the product in a shielded enclosure with shielded and/or filtered power and input/output ports. In addition, take precautions when designing, selecting, and installing measurement probes and cables to ensure that the desired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

# Connecting the NI 9229/9239

The NI 9229/9239 provides connections for four simultaneously sampled, isolated analog input channels.

**Figure 3.** Terminal/Connector Assignments of the NI 9229/9239



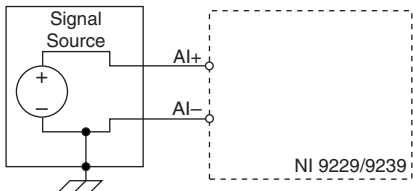
The NI 9229/9239 with screw terminal has four 2-terminal detachable screw-terminal connectors. The NI 9229/9239 with BNC has four BNC connectors.



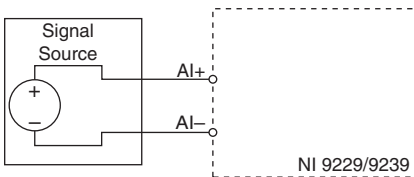
**Note** You must use 2-wire ferrules to create a secure connection when connecting more than one wire to a single terminal on the NI 9229/9239 with screw terminal.

You can connect ground-referenced or floating signal sources to the NI 9229/9239. Connect the positive signal of the signal source to the AI+ terminal or connector, and connect the negative signal of the signal source to the AI- terminal or connector. If you make a ground-referenced connection between the signal source and the NI 9229/9239, make sure the voltage on the AI+ and AI- connections are in the channel-to-earth safety voltage range to ensure proper operation of the NI 9229/9239. Refer to the [Specifications](#) section for more information about operating voltages and overvoltage protection. Refer to Figures 4 and 5 for illustrations of how to connect grounded and floating signal sources to the NI 9229/9239.

**Figure 4.** Connecting a Grounded Signal Source to the NI 9229/9239



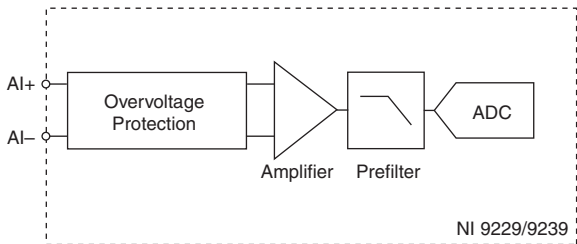
**Figure 5.** Connecting a Floating Signal Source to the NI 9229/9239



The NI 9229/9239 analog input channels are floating with respect to earth ground and each other. The incoming analog signal on each channel is conditioned, buffered, and then sampled by a 24-bit Delta-Sigma ADC.

Each channel provides an independent signal path and ADC, enabling you to sample all four channels simultaneously. Refer to Figure 6 for an illustration of the circuitry for one channel.

**Figure 6.** Input Circuitry for One Channel of the NI 9229/9239

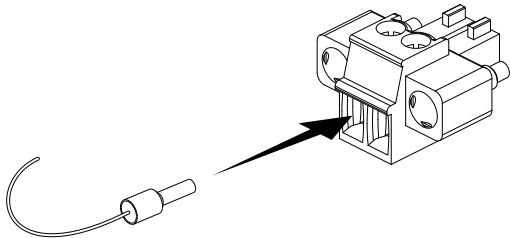


## Wiring for High-Vibration Applications

If an application using the NI 9229/9239 with screw terminal is subject to high vibration, National Instruments recommends that you either use ferrules to terminate wires to the detachable screw-terminal connector or use the NI 9971 backshell kit to protect the connections. Refer to Figure 7 for an illustration of using ferrules.

**Figure 7.** 2-Terminal Detachable Screw-Terminal Connector with Ferrule

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# Understanding NI 9229/9239 Filtering

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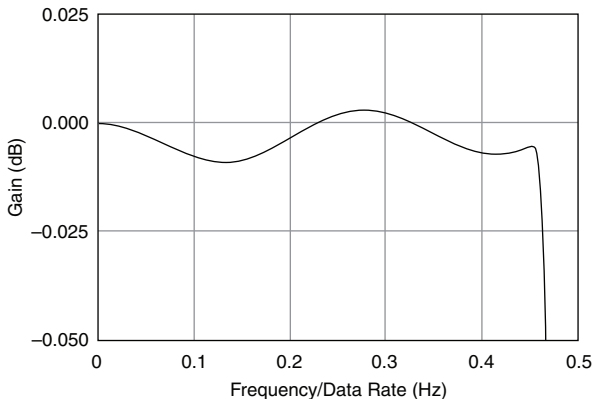
The NI 9229/9239 uses a combination of analog and digital filtering to provide an accurate representation of in-band signals while rejecting out-of-band signals. The filters discriminate between signals based on the frequency range, or bandwidth, of the signal. The three important bandwidths to consider are the passband, the stopband, and the alias-free bandwidth.

The NI 9229/9239 represents signals within the passband, as quantified primarily by passband ripple and phase nonlinearity. All signals that appear in the alias-free bandwidth are either unaliased signals or signals that have been filtered by at least the amount of the stopband rejection.

## Passband

The signals within the passband have frequency-dependent gain or attenuation. The small amount of variation in gain with respect to frequency is called the passband flatness. The digital filters of the NI 9229/9239 adjust the frequency range of the passband to match the data rate. Therefore, the amount of gain or attenuation at a given frequency depends on the data rate. Figure 8 shows typical passband flatness for the NI 9229/9239.

**Figure 8.** Typical Passband Response of the NI 9229/9239



## Stopband

The filter significantly attenuates all signals above the stopband frequency. The primary goal of the filter is to prevent aliasing. Therefore, the stopband frequency scales precisely with the data rate. The stopband rejection is the minimum amount of attenuation applied by the filter to all signals with frequencies within the stopband.

## Alias-Free Bandwidth

Any signal that appears in the alias-free bandwidth of the NI 9229/9239 is not an aliased artifact of signals at a higher frequency. The alias-free bandwidth is defined by the ability of the filter to reject frequencies above the stopband frequency, and it is equal to the data rate minus the stopband frequency.

## Understanding NI 9229/9239 Data Rates

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The frequency of a master timebase ( $f_M$ ) controls the data rate ( $f_s$ ) of the NI 9229/9239. The NI 9229/9239 includes an internal master timebase with a frequency of 12.8 MHz, but the module also can accept an external master timebase or export its own master timebase. To synchronize the data rate of an NI 9229/9239 with other modules that use master timebases to control sampling, all of the modules must share a single master timebase source. Refer to the software help for information about configuring the master timebase source for the NI 9229/9239. Visit [ni.com/info](http://ni.com/info) and enter `cseriesdoc` for information about C Series documentation.

The following equation provides the available data rates of the NI 9229/9239:

$$f_s = \frac{f_M \div 256}{n}$$

where  $n$  is any integer from 1 to 31.

However, the data rate must remain within the appropriate data rate range. Refer to the *Specifications* section for more information about the data rate range. When using the internal master timebase of 12.8 MHz, the result is data rates of 50 kS/s, 25 kS/s, 16.667 kS/s, and so on down to 1.613 kS/s, depending on the value of  $n$ . When using an external timebase with a frequency other than 12.8 MHz, the NI 9229/9239 has a different set of data rates.



**Note** The NI 9151 R Series Expansion chassis does not support sharing timebases between modules.

## Sleep Mode

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This module supports a low-power sleep mode. Support for sleep mode at the system level depends on the chassis that the module is plugged into. Refer to the chassis manual for information about support for sleep mode. If the chassis supports sleep mode, refer to

the software help for information about enabling sleep mode. Visit [ni.com/info](http://ni.com/info) and enter `cseriesdoc` for information about C Series documentation.

Typically, when a system is in sleep mode, you cannot communicate with the modules. In sleep mode, the system consumes minimal power and may dissipate less heat than it does in normal mode. Refer to the *Specifications* section for more information about power consumption and thermal dissipation.

## Specifications

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The following specifications are typical for the range -40 °C to 70 °C unless otherwise noted. All voltages are relative to the AI- signal on each channel unless otherwise noted. The specifications are the same for the NI 9229 and the NI 9239 unless otherwise noted.

### Input Characteristics

Number of channels .....	4 analog input channels
ADC resolution .....	24 bits
Type of ADC .....	Delta-Sigma (with analog prefiltering)
Sampling mode .....	Simultaneous

## Internal master timebase ( $f_M$ )

Frequency .....	12.8 MHz
Accuracy .....	$\pm 100$ ppm max

## Data rate range ( $f_s$ ) using internal master timebase

Minimum .....	1.613 kS/s
Maximum .....	50 kS/s

## Data rate range ( $f_s$ ) using external master timebase

Minimum .....	390.625 S/s
Maximum .....	51.2 kS/s

Data rates<sup>1</sup> ( $f_s$ ) .....

$$\frac{f_M \div 256}{n}, n = 1, 2, \dots, 31$$

## Input voltage ranges (AI+ to AI-)<sup>2</sup>

Module	Nominal (V)	Typical (V)	Minimum (V)
NI 9229	$\pm 60$	$\pm 62.64$	$\pm 61.5$
NI 9239	$\pm 10$	$\pm 10.52$	$\pm 10.3$

<sup>1</sup> The data rate must remain within the appropriate data rate range. Refer to the [Understanding NI 9229/9239 Data Rates](#) section for more information.

<sup>2</sup> Refer to the [Safety Guidelines](#) section for more information about safe operating voltages.

Overvoltage protection ..... $\pm 100$  V  
 Input coupling..... DC  
 Input impedance (AI+ to AI-).....  $1\text{ M}\Omega$   
 Accuracy, NI 9229

<b>Measurement Conditions</b>	<b>Percent of Reading (Gain Error)</b>	<b>Percent of Range* (Offset Error)</b>
Calibrated max (-40 °C to 70 °C)	$\pm 0.13\%$	$\pm 0.05\%$
Calibrated typ (23 °C $\pm 5$ °C)	$\pm 0.03\%$	$\pm 0.008\%$
Uncalibrated max (-40 °C to 70 °C)	$\pm 1.2\%$	$\pm 0.55\%$
Uncalibrated typ (23 °C $\pm 5$ °C)	$\pm 0.3\%$	$\pm 0.11\%$
* Range equals 62.64 V		

## Accuracy, NI 9239

Measurement Conditions	Percent of Reading (Gain Error)	Percent of Range* (Offset Error)
Calibrated max (-40 °C to 70 °C)	±0.13%	±0.06%
Calibrated typ (23 °C ±5 °C)	±0.03%	±0.008%
Uncalibrated max (-40 °C to 70 °C)	±1.4%	±0.70%
Uncalibrated typ (23 °C ±5 °C)	±0.3%	±0.11%
* Range equals 10.52 V		

### Input noise

NI 9229 ..... 320  $\mu\text{V}_{\text{rms}}$

NI 9239 ..... 70  $\mu\text{V}_{\text{rms}}$

### Stability

Gain drift ..... ±5 ppm/°C

#### Offset drift

NI 9229 ..... ±150  $\mu\text{V}/^\circ\text{C}$

NI 9239 ..... ±26  $\mu\text{V}/^\circ\text{C}$



Post calibration gain match (ch-to-ch, 20 kHz).....	0.22 dB max
Phase mismatch (ch-to-ch)	
NI 9229.....	0.045°/kHz max
NI 9239.....	0.075°/kHz max
Phase mismatch (module-to-module, max)	
NI 9229.....	$(0.045^\circ/\text{kHz} \cdot f_{in}) +$ $(360^\circ \cdot f_{in}/f_M)$
NI 9239.....	$(0.075^\circ/\text{kHz} \cdot f_{in}) +$ $(360^\circ \cdot f_{in}/f_M)$
Phase nonlinearity ( $f_s = 50$ kS/s).....	0.11° max
Input delay .....	$40/f_s + 3.3 \mu\text{s}$
Passband	
Frequency .....	$0.453 \cdot f_s$
Flatness ( $f_s = 50$ kS/s).....	$\pm 100$ mdB max
Stopband	
Frequency .....	$0.547 \cdot f_s$
Rejection.....	100 dB
Alias-free bandwidth .....	$0.453 \cdot f_s$

-3 dB prefilter bandwidth ( $f_s = 50$ kS/s).....	24.56 kHz
Crosstalk (1 kHz).....	-130 dB
CMRR ( $f_{in} = 60$ Hz)	
NI 9229.....	116 dB
NI 9239.....	126 dB
SFDR (1 kHz, -60 dBFS).....	128 dBFS
Total Harmonic Distortion (THD)	
1 kHz, -1 dBFS.....	-99 dB
1 kHz, -20 dBFS.....	-105 dB

## MTBF

NI 9229/9239

with screw terminal ..... 662,484 hours at 25 °C;  
Bellcore Issue 6, Method 1,  
Case 3, Limited Part Stress  
Method

NI 9229/9239

with BNC..... 864,132 hours at 25 °C;  
Bellcore Issue 6, Method 1,  
Case 3, Limited Part Stress  
Method



**Note** Contact NI for Bellcore MTBF specifications at other temperatures or for MIL-HDBK-217F specifications.

# Power Requirements

## Power consumption from chassis

### Active mode

NI 9229/9239 with screw terminal.....	740 mW max
NI 9229/9239 with BNC.....	800 mW max

Sleep mode ..... 25  $\mu$ W max

## Thermal dissipation

### Active mode

NI 9229/9239 with screw terminal.....	760 mW max
NI 9229/9239 with BNC.....	820 mW max

Sleep mode ..... 16 mW max

## Physical Characteristics

If you need to clean the module, wipe it with a dry towel.



**Note** For two-dimensional drawings and three-dimensional models of the C Series module and connectors, visit [ni.com/dimensions](http://ni.com/dimensions) and search by module number.

Screw-terminal wiring .....	16 AWG to 28 AWG copper conductor wire with 7 mm (0.28 in.) of insulation stripped from the end
Torque for screw terminals .....	0.22 N · m to 0.25 N · m (1.95 lb · in. to 2.21 lb · in.)
Ferrules .....	0.25 mm <sup>2</sup> to 0.5 mm <sup>2</sup>
Weight	
NI 9229/9239 with screw terminal .....	147 g (5.2 oz)
NI 9229/9239 with BNC.....	169 g (6.0 oz)

# Safety

## NI 9229/9239 with Screw Terminal Safety Voltages

Connect only voltages that are within the following limits.

### Channel-to-channel isolation

Continuous .....	250 V <sub>rms</sub> , Measurement Category II
Withstand.....	1,390 V, verified by a 5 s dielectric withstand test

### Channel-to-earth ground isolation

Continuous .....	250 V <sub>rms</sub> , Measurement Category II
Withstand.....	2,300 V, verified by a 5 s dielectric withstand test

### Division 2 and Zone 2 hazardous locations applications

(Channel-to-channel and channel-to-earth ground) .....	60 VDC, Measurement Category I
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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** If using in Division 2 or Zone 2 hazardous locations applications, do *not* connect the NI 9229/9239 with screw terminal to signals or use for measurements within Measurement Categories II, III, or 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 9229/9239 with screw terminal to signals or use for measurements within Measurement Categories III or IV.

## NI 9229/9239 with BNC Safety Voltages

Connect only voltages that are within the following limits.

### Channel-to-channel isolation

Continuous .....	60 VDC, Measurement Category I
Withstand.....	1,000 V, verified by a 5 s dielectric withstand test

### Channel-to-earth ground isolation

Continuous .....	60 VDC, Measurement Category I
Withstand.....	1,000 V, verified by a 5 s dielectric withstand test

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 9229/9239 with BNC to signals or use for measurements within Measurement Categories II, III, or IV.

## Hazardous Locations

U.S. (UL) .....	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, AEx nA IIC T4
Canada (C-UL) .....	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, Ex nA IIC T4
Europe (DEMKO) .....	Ex nA IIC T4

## Safety Standards

This product meets the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1



**Note** For UL and other safety certifications, refer to the product label or the [Online Product Certification](#) section.

## Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Industrial immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions



**Note** In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.



**Note** Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.



**Note** For EMC declarations and certifications, refer to the *Online Product Certification* section.

## CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

## Online Product Certification

To obtain product certifications and the Declaration of Conformity (DoC) for this product, visit [ni.com/certification](http://ni.com/certification), search by module number or product line, and click the appropriate link in the Certification column.

## Shock and Vibration

To meet these specifications, you must panel mount the system. If you are using the NI 9229/9239 with screw terminal, you also must either affix ferrules to the ends of the terminal wires or use the NI 9971 backshell kit to protect the connections.

### Operating vibration

Random (IEC 60068-2-64)..... 5 g<sub>rms</sub>, 10 Hz to 500 Hz

Sinusoidal (IEC 60068-2-6) ..... 5 g, 10 Hz to 500 Hz

### Operating shock

(IEC 60068-2-27)..... 30 g, 11 ms half sine,  
50 g, 3 ms half sine,  
18 shocks at 6 orientations

## Environmental

Refer to the manual for the chassis you are using for more information about meeting these specifications.

### Operating temperature

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

### Storage temperature

(IEC 60068-2-1, IEC 60068-2-2) ..... -40 °C to 85 °C

Ingress protection..... IP 40

Operating humidity (IEC 60068-2-56).....	10% to 90% RH, noncondensing
Storage humidity (IEC 60068-2-56).....	5% to 95% RH, noncondensing
Pollution Degree .....	2
Maximum altitude.....	2,000 m

Indoor use only.

## Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Minimize Our Environmental Impact* Web page at [ni.com/environment](http://ni.com/environment). This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

## Waste Electrical and Electronic Equipment (WEEE)



**EU Customers** At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit [ni.com/environment/weee](http://ni.com/environment/weee).

## 电子信息产品污染控制管理办法（中国 RoHS）



**中国客户** National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china).)

## Calibration

You can obtain the calibration certificate and information about calibration services for the NI 9229/9239 at [ni.com/calibration](http://ni.com/calibration).

Calibration interval ..... 1 year

## Where to Go for Support

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