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**NI-9252**

# NI 9252

8 AI,  $\pm 10$  V, 24 bit, 50 kS/s/ch Simultaneous

Read this document and the documents listed in the additional resources section about installation, configuration, and operation of this equipment before you install, configure, operate, or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

 **Note** In this document, the NI 9252 with screw terminal and the NI 9252 with DSUB are referred to inclusively as the NI 9252. The information in this document applies to all versions of the NI 9252 unless otherwise specified.

## Icons

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*Notice*—Take precautions to avoid data loss, loss of signal integrity, degradation of performance, or damage to the model.



*Caution*—Take precautions to avoid injury. Consult the model documentation for cautionary statements when you see this icon printed on the model. Cautionary statements are localized into French for compliance with Canadian requirements.



*Shock Warning*—Take precautions to avoid electrical shock.

## Safety

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**Caution** Observe all instructions and cautions in the user documentation. Using the model in a manner not specified can damage the model and compromise the built-in safety protection. Return damaged models to NI for repair.




**Attention** Suivez toutes les instructions et respectez toutes les mises en garde de la documentation utilisateur. L'utilisation d'un modèle de toute autre façon que celle spécifiée risque de l'endommager et de compromettre la protection de sécurité intégrée. Renvoyez les modèles endommagés à NI pour réparation.





**Caution** The protection provided by the NI 9252 can be impaired if it is used in a manner not described in the user documentation.


 **Attention** La protection apportée par le NI 9252 risque d'être endommagée s'il est utilisé d'une autre façon que celle décrite dans la documentation utilisateur.


## Cautions for Hazardous Locations


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


 **Attention** Ne déconnectez les fils d'alimentation, les fils côté E/S et les connecteurs du contrôleur que s'il est hors tension ou que vous savez que l'endroit n'est pas dangereux.


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


 **Attention** N'installer ou ne retirer l'appareil que s'il est hors tension ou s'il se trouve dans une zone non dangereuse.


 **Caution** Substitution of components may impair suitability for use in explosive atmospheres.


 **Attention** Si des composants sont substitués, le système risque de ne plus être conforme pour une utilisation dans une atmosphère explosive.


 **Caution** The equipment shall be installed in an enclosure that provides a degree of protection not less than IP54 in accordance with IEC/EN 60079-15.


 **Attention** L'équipement doit être installé dans un boîtier offrant un degré de protection IP54 minimum conformément à la norme IEC/EN 60079-15.


 **Caution** Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value at the supply terminals to the equipment.

 **Attention** La protection contre les phénomènes transitoires doit être fournie à un niveau ne dépassant pas 140 % de la valeur de la tension nominale de crête aux bornes d'alimentation de l'équipement.

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


 **Attention** Le système ne doit être utilisé que dans des endroits ne dépassant pas le degré de pollution 2 défini dans la norme IEC/EN 60664-1.


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


 **Attention** Le coffret doit disposer d'une porte ou d'un couvercle accessible uniquement à l'aide d'un outil.


## 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 V peak voltage or 60 V DC in DRY LOCATIONS, and 22.6 V peak or 35 V DC in WET LOCATIONS.


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


 **Attention** S'assurer que le câblage à tension dangereuse est effectué par du personnel qualifié respectant les normes électriques locales.


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


 **Attention** Ne pas combiner des circuits de tension dangereuse et des circuits accessibles aux personnes sur le même module.

 **Caution** When device terminals are hazardous voltage LIVE, you must ensure that devices and circuits connected to the device are properly insulated from human contact.


 **Attention** Lorsqu'une haute tension dangereuse est appliquée aux bornes de l'appareil, s'assurer que les appareils et les circuits auxquels il est connecté sont correctement isolés de tout contact humain.

 **Caution** All wiring must be insulated for the highest voltage used.

 **Attention** Tout le câblage doit être isolé pour la plus haute tension utilisée.

 **Notice** The terminal block contains a plastic insert to prevent accidental wire contact with the metal enclosure.

## Safety Guidelines for Hazardous Locations

Follow these guidelines if you are installing the device in a potentially explosive environment. The device has been evaluated as compliant with the ATEX directive and is IECEx certified. Each device is marked  II 3G and is suitable for use in Zone 2

hazardous locations, in ambient temperatures of  $-40\text{ }^{\circ}\text{C} \leq T_a \leq 70\text{ }^{\circ}\text{C}$ . The device is suitable for use in non-hazardous locations and the following hazardous locations.

U.S. (UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, AEx nA IIC T4 Gc
Canada (C-UL)	Class I, Division 2, Groups A, B, C, D, T4; Ex nA IIC T4 Gc
Europe (ATEX) and International (IECEx)	Ex nA IIC T4 Gc; DEMKO 12 ATEX 1202658X; IECEx UL 14.0089X

## NI 9252 with Screw Terminal Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-channel isolation	None
Channel-to-earth ground isolation	
Up to 3,000 m altitude	
Continuous	250 V RMS, Measurement Category II
Withstand	3,000 V RMS, verified by a 5 s dielectric withstand test
Up to 5,000 m altitude	
Continuous	60 V DC, Measurement Category I
Withstand	1,000 V RMS, verified by a 5 s dielectric withstand test
Overvoltage protection	$\pm 30\text{ V}$ , between any two pins of the connector <sup>1</sup>



**Caution** When using the NI 9252 with screw terminal above 3,000 m or in explosive atmospheres, do not connect the NI 9252 with screw terminal to signals or use for measurements within Measurement Categories II, III, or IV.



**Attention** Lorsque vous utilisez le NI 9252 with screw terminal à une altitude supérieure à 3 000 m ou dans des atmosphères explosibles, ne le connectez pas à

<sup>1</sup> Up to 4 channels simultaneously.

des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure II, III ou IV.



**Caution** Do not connect the NI 9252 with screw terminal to signals or use for measurements within Measurement Categories III or IV.



**Attention** Ne connectez pas le NI 9252 with screw terminal à des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure III ou 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.

## NI 9252 with DSUB Isolation Voltages

Channel-to-channel	None
Channel-to-earth ground isolation	
Up to 3,000 m altitude	
Continuous	60 V DC, Measurement Category I
Withstand	1,000 V RMS, verified by a 5 s dielectric withstand test
Up to 5,000 m altitude	
Continuous	60 V DC, Measurement Category I
Withstand	860 V RMS



**Caution** Do not connect the NI 9252 with DSUB to signals or use for measurements within Measurement Categories II, III, or IV.



**Attention** Ne connectez pas le NI 9252 with DSUB à des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure II, III ou IV.

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.



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

## Safety Compliance and Hazardous Locations Standards

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1
- EN 60079-0:2012, EN 60079-15:2010
- IEC 60079-0: Ed 6, IEC 60079-15; Ed 4
- UL 60079-0; Ed 6, UL 60079-15; Ed 4
- CSA C22.2 No. 60079-0, CSA C22.2 No. 60079-15



**Note** For UL and other safety certifications, refer to the product label or the *Product Certifications and Declarations* section.

## EMC Guidelines

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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 NI could void your authority to operate it under your local regulatory rules.


## EMC Notices

Refer to the following notices for cables, accessories, and prevention measures necessary to ensure the specified EMC performance.




**Notice** For EMC declarations and certifications, and additional information, refer to the *Product Certifications and Declarations* section.

 **Notice** Changes or modifications to the product not expressly approved by NI could void your authority to operate the product under your local regulatory rules.

 **Notice** Operate the NI 9252 with DSUB only with shielded cables and accessories.

## Special Conditions for Marine Applications


Some products are approved for marine (shipboard) applications. To verify marine approval certification for a product, visit [ni.com/certification](http://ni.com/certification) and search for the certificate.


 **Notice** 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.

## Electromagnetic Compatibility Standards

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** 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** 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.

## Environmental Guidelines

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

 **Notice** This model is intended for use in indoor applications only.



## Environmental

### Temperature

Operating	-40 °C to 70 °C
Storage	-40 °C to 85 °C

### Humidity

Operating	10% RH to 90% RH, noncondensing
Storage	5% RH to 95% RH, noncondensing

Ingress protection	IP40
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Pollution Degree	2
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### Maximum altitude

NI 9252 with screw terminal	5,000 m
NI 9252 with DSUB	5,000 m

### Shock and Vibration

#### Operating vibration

Random	5 g RMS, 10 Hz to 500 Hz
Sinusoidal	5 g, 10 Hz to 500 Hz

Operating shock	30 g, 11 ms half sine; 50 g, 3 ms half sine; 18 shocks at 6 orientations
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## Environmental Standards

This product meets the requirements of the following environmental standards for electrical equipment.

- IEC 60068-2-1 Cold
- IEC 60068-2-2 Dry heat
- IEC 60068-2-30 Damp heat cyclic (12 + 12h cycle)
- IEC 60068-2-64 Random operating vibration

- IEC 60068-2-6 Sinusoidal operating vibration
- IEC 60068-2-27 Operating shock



**Note** To verify marine approval certification for a product, refer to the product label or visit [ni.com/certification](https://ni.com/certification) and search for the certificate.

## 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](https://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 NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit [ni.com/environment/weee](https://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](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)

## Power Requirements

### Power consumption from chassis

Active mode	0.95 W maximum
Sleep mode	91 $\mu$ W maximum

### Thermal dissipation (at 70 °C)

Active mode	1.4 W maximum
Sleep mode	673 mW maximum

## Physical Characteristics

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### Screw-terminal wiring

Gauge	0.05 mm <sup>2</sup> to 0.82 mm <sup>2</sup> (30 AWG to 18 AWG) copper conductor wire
Wire strip length	5 mm to 6 mm (0.20 in. to 0.24 in.) of insulation stripped from the end
Temperature rating	90 °C, minimum
Torque for screw terminals	0.20 N · m to 0.25 N · m (1.8 lb · in. to 2.2 lb · in.)
Wires per screw terminal	One wire per screw terminal; two wires per screw terminal using a 2-wire ferrule
Ferrules	0.25 mm <sup>2</sup> to 1.0 mm <sup>2</sup>
Connector securement	
Securement type	Screw flanges provided
Torque for screw flanges	0.3 N · m to 0.4 N · m (2.7 lb · in. to 3.5 lb · in.)
Weight	
NI 9252 with screw terminal	134 g (4.7 oz)
NI 9252 with DSUB	149 g (5.3 oz)

## Maintenance

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If you need to clean your device, wipe it with a dry towel.

## CE Compliance

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

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2014/34/EU; Potentially Explosive Atmospheres (ATEX)

## Export Compliance

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This model is subject to control under the U.S. Export Administration Regulations (15 CFR Part 730 et. seq.) administered by the U.S. Department of Commerce's Bureau of Industry and Security (BIS) ([www.bis.doc.gov](http://www.bis.doc.gov)) and other applicable U.S. export control laws and sanctions regulations. This model may also be subject to additional license requirements of other countries' regulations.

Additionally, this model may also require export licensing before being returned to NI. The issuance of a Return Material Authorization (RMA) by NI does not constitute export authorization. The user must comply with all applicable export laws prior to exporting or re-exporting this model. See [ni.com/legal/export-compliance](http://ni.com/legal/export-compliance) for more information and to request relevant import classification codes (e.g. HTS), export classification codes (e.g. ECCN), and other import/export data.

## Product Certifications and Declarations

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Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit [ni.com/certification](http://ni.com/certification), search by model number or product line, and click the appropriate link in the Certification column.

## Additional Resources

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Visit [ni.com/manuals](http://ni.com/manuals) for more information about your model, including specifications, pinouts, and instructions for connecting, installing, and configuring your system.

## Worldwide Support and Services

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The NI website is your complete resource for technical support. At [ni.com/support](http://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](https://ni.com/services) for information about the services NI offers.

Visit [ni.com/register](https://ni.com/register) to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

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