



# NI 9253E


 **Note** The information in this document applies to the sbRIO-9253. In this document, the sbRIO-9253 is referred to alternatively as the NI 9253E. Both names refer to the same device.


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.

## 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.


 **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 9253E can be impaired if it is used in a manner not described in the user documentation.

 **Attention** La protection apportée par le NI 9253E risque d'être endommagée s'il est utilisé d'une autre façon que celle décrite dans la documentation utilisateur.

 **Caution** The NI 9253E will need to be mounted in suitable Fire and Mechanical end product enclosure; Exercise caution when placing the NI 9253E inside an enclosure. Auxiliary cooling may be necessary to keep the device under the

maximum ambient temperature rating for the NI 9253E. Refer to the *NI 9253 Specifications* for more information about the maximum ambient temperature rating.



**Attention** Le NI 9253E devra être monté dans un boîtier du produit final répondant aux exigences Feu et Mécanique ; faites preuve de prudence lorsque vous placez le NI 9253E dans un boîtier. Un système de refroidissement auxiliaire peut être nécessaire pour maintenir l'appareil en dessous de la température nominale maximale pour le NI 9253E. Reportez-vous aux *Spécifications du NI 9253* pour obtenir plus d'informations sur la température nominale maximale.

## 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.

## NI 9253E Safety Voltages

Connect only voltages that are within the following limits:

AI-to-COM and $V_{\text{sup}}$ -to-COM	$\pm 30$ V DC maximum
Channel-to-channel isolation	None
Channel-to-earth ground isolation <sup>1</sup>	
Continuous	250 V RMS, Measurement Category II
Withstand	3,000 V RMS, verified by a 5 s dielectric withstand test
Overvoltage protection	$\pm 30$ V, between any two pins of the connector <sup>2</sup>



**Caution** Do not connect the NI 9253E to signals or use for measurements within Measurement Categories III or IV.



**Attention** Ne connectez pas le NI 9253E 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.

## Safety Compliance 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



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

<sup>1</sup> Channels include  $V_{\text{sup}}$  and COM.

<sup>2</sup> Only 1 channel at a time.

## 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 this product only inside a suitable shielded enclosure.

### 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-003: 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 Characteristics

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### Temperature

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Operating <sup>3</sup>	-40 °C to 85 °C
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Storage	-40 °C to 85 °C
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### Humidity

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Operating	10% RH to 90% RH, noncondensing
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Storage	5% RH to 95% RH, noncondensing
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Pollution Degree	2
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Maximum altitude	5,000 m
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## 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 *Commitment to the Environment* 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.

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<sup>3</sup> Local ambient temperature. Measure the local ambient temperature by placing thermocouples on both sides of the PCB, 5 mm (0.2 in.) from the board surface.

## 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](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).)

## Power Requirements

### Power consumption from chassis

Active mode	798 mW maximum
Sleep mode	48 $\mu$ W maximum

### Thermal dissipation (at 70 °C)

Active mode	1.5 W maximum
Sleep mode	751 mW maximum

## Physical Characteristics

### Spring terminal wiring

Gauge	0.14 mm <sup>2</sup> to 1.5 mm <sup>2</sup> (26 AWG to 16 AWG) copper conductor wire
Wire strip length	10 mm (0.394 in.) of insulation stripped from the end
Temperature rating	90 °C, minimum
Wires per spring terminal	One wire per spring terminal; two wires per spring terminal using a 2-wire ferrule

Ferrules	
Single ferrule, uninsulated	0.14 mm <sup>2</sup> to 1.5 mm <sup>2</sup> (26 AWG to 16 AWG) 10 mm barrel length
Single ferrule, insulated	0.14 mm <sup>2</sup> to 1.0 mm <sup>2</sup> (26 AWG to 18 AWG) 12 mm barrel length
Two-wire ferrule, insulated	2x 0.34 mm <sup>2</sup> (2x 22 AWG) 12 mm barrel length
Connector securement	
Securement type	Screw flanges provided
Torque for screw flanges	0.2 N · m (1.80 lb · in.)
Weight	61.1 g (2.15 oz)

## Maintenance

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

## CE Compliance

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)

## Export Compliance

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](https://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/product-certifications](https://ni.com/product-certifications), search by model number, and click the appropriate link.

## Additional Resources

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Visit [ni.com/manuals](https://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](https://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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