

EXPLOSIVE ATMOSPHERES USER GUIDE

NI 9235/9236/9237

NI 9235: 10 kS/s/channel, 120 Ω Quarter-Bridge Strain Gage, 8-Channel C Series Strain/Bridge Input Module

NI 9236: 10 kS/s/channel, 350 Ω Quarter-Bridge Strain Gage, 8-Channel C Series Strain/Bridge Input Module

NI 9237: 50 kS/s/channel, Bridge Analog Input, 4-Channel C Series Strain/Bridge Input Module

Physical Characteristics

Weight

NI 9235 with push-in spring terminal	158 g (5.6 oz)
NI 9235 with spring terminal	153 g (5.4 oz)
NI 9236 with push-in spring terminal	158 g (5.6 oz)
NI 9236 with spring terminal	153 g (5.4 oz)
NI 9237 with DSUB	149 g (5.25 oz.)
NI 9237 with RJ-50	152 g (5.4 oz.)

Dimensions

Visit ni.com/dimensions and search by module number.



Note Some NI C Series modules offer two types of spring terminal connectors: push-in spring terminal and spring terminal. The black/orange push-in spring terminal connectors do not require a tool for signal connection; push the wire into the terminal when using solid wire or stranded wire with a ferrule, or by pressing the push button when using stranded wire without a ferrule. The black spring terminal connectors require a flathead screwdriver with a 2.3 mm \times 1.0 mm (0.09 in. \times 0.04 in.) blade for signal connection; insert the screwdriver into a spring clamp activation slot to open the corresponding connector terminal, press a wire into the open connector terminal, and then remove the screwdriver from the activation slot to clamp the wire into place.

NI 9235 with Push-In Spring Terminal, NI 9236 with Push-In Spring Terminal (Black/Orange Connector)

Spring terminal wiring

Gauge	0.14 mm ² to 1.5 mm ² (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 ² to 1.5 mm ² (26 AWG to 16 AWG) 10 mm barrel length
Single ferrule, insulated	0.14 mm ² to 1.0 mm ² (26 AWG to 18 AWG) 12 mm barrel length
Two-wire ferrule, insulated	2x 0.34 mm ² (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.)

NI 9235 with Spring Terminal, NI 9236 with Spring Terminal (Black Connector)

Spring terminal wiring

Gauge	0.8 mm ² to 1.0 mm ² (28 AWG to 18 AWG) copper conductor wire
Wire strip length	7 mm (0.276 in.) of insulation stripped from the end
Temperature rating	90 °C, minimum
Wires per spring terminal	One wire per spring terminal

Connector securement

Securement type	Screw flanges provided
Torque for screw flanges	0.2 N · m (1.80 lb · in.)

Environmental

Temperature

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

Ingress protection

NI 9235	IP40
NI 9236	IP40
NI 9237 with DSUB	IP40
NI 9237 with RJ-50	IP30

Humidity

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

Pollution Degree	2
Maximum altitude	5,000 m

Indoor use only.

Hazardous Locations

Explosive atmospheres rating	Ex nA IIC T4 Gc
CCC certificate number	2021312310000312

Safety Guidelines

Operate the product only as described in this document.



Caution This icon denotes a caution, which advises you to consult documentation where this symbol is marked.



Caution Do not operate this product in a manner not specified in this document. 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 NI for repair.

Safety Guidelines for Hazardous Locations

These products have been evaluated as Ex nA IIC T4 Gc equipment and are CCC certified. Each product is suitable for use within ambient temperatures of $-40\text{ °C} \leq T_a \leq 70\text{ °C}$ in either nonhazardous locations or Zone 2 hazardous locations. If you are using the products in Gas

Group IIC hazardous locations, you must use the device in an NI chassis that has been evaluated as Ex nA IIC T4 Gc equipment.

Follow these guidelines if you are installing the product 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 Zone 2.



Caution Transient protection shall be provided that is set at a level not exceeding 140% of the peak rated voltage value of 85 V at the supply terminals to the equipment.



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



Caution The system shall be mounted in a CCC-certified enclosure with a minimum ingress protection rating of at least IP54 as defined in GB3836.1.



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

Safety Voltages

NI 9235, NI 9236

Connect only voltages that are within the following limits:

Between any two terminals ± 30 V maximum

Isolation

Channel-to-channel None

Channel-to-earth ground

Continuous 60 V DC, Measurement Category I

Withstand 1,000 V RMS, verified by a 5 s dielectric withstand test



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

NI 9237

Connect only voltages that are within the following limits.

Between any two pins	±30 V maximum
External excitation voltage for use above 150 mW bridge power dissipation	2 V to 10 V
Isolation, channel-to-channel	None
Isolation, channel-to-earth ground	
Up to 3,000 m	
Continuous	60 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test
Up to 5,000 m	
Continuous	60 VDC, Measurement Category I
Withstand	860 Vrms, verified by a 5 s dielectric withstand test



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

Installing C Series Modules

Verify that power is not connected to the I/O connector(s) on the C Series module.

Removing C Series Modules

Verify that power is not connected to the I/O connector(s) on the C Series module before you remove a module from the chassis.

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
- IEC 60079-0: Ed 6, IEC 60079-15; Ed 4
- GB3836.1, GB3836.8



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

Product Certifications and Declarations

To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

Worldwide Support and Services

NI corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504, USA.

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