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# NI-9265

# Specifications

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# NI-9265 Specifications

## NI-9265 Nomenclature

In this article, the NI-9265 with screw terminal and NI-9265 with spring terminal are referred to inclusively as the NI-9265.

## Definitions

**Warranted** specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

**Characteristics** describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- **Typical** specifications describe the performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are **Typical** unless otherwise noted.

### Related information:

- [Software Support for CompactRIO, CompactDAQ, Single-Board RIO, R Series, and EtherCAT](#)

## Conditions

Specifications are valid for the range -40 °C to 70 °C unless otherwise noted. All voltages are relative to COM unless otherwise noted.

## Output Characteristics

Number of channels	4 analog output channels
DAC resolution	16 bits
Type of DAC	String
Power-on output state	0
Startup current	0.0 mA
Power-down current	0.0 mA
<b>Full-scale output current</b>	
Minimum	20.1 mA
Typical	20.6 mA
Maximum	21.0 mA
Output range	0 mA to 20 mA
Compliance voltage	12 VDC maximum
Maximum load	600 $\Omega$

**Table 1. Accuracy**

Measurement Conditions	Percent of Reading (Gain Error)	Percent of Range <sup>1</sup> (Offset Error)
Calibrated, typical (25 °C, ±5 °C)	0.11%	0.19%
Calibrated, maximum (-40 °C to 70 °C)	0.25%	0.4%
Uncalibrated <sup>2</sup> , typical (25 °C, ±5 °C)	0.35%	1.4%
Uncalibrated, maximum (-40 °C to 70 °C)	0.85%	2.5%

Stability	
Gain drift	30 ppm/°C
Offset drift	45 ppm/°C
External power supply voltage range (Vsup)	9 VDC to 36 VDC
Protection (AO, Vsup)	
Overvoltage	±40 V
Short-circuit	Indefinitely

**Table 2. Update Time**

Number of Channels	Update Time for R Series Expansion Chassis	Update Time for Any Other Chassis
One	3.5 μs	3 μs

1. Range equals 0 mA to 20.6 mA.
2. Uncalibrated accuracy refers to the accuracy achieved when acquiring data in raw or unscaled modes and in which calibration constants that are stored in the module are not applied to the data.

Number of Channels	Update Time for R Series Expansion Chassis	Update Time for Any Other Chassis
Two	6.5 $\mu$ s	5 $\mu$ s
Three	9 $\mu$ s	7.5 $\mu$ s
Four	12 $\mu$ s	9.5 $\mu$ s

Noise	600 nArms	
Crosstalk	-90 dB	
<b>Settling time (to 1 LSB)</b>		
Full-scale step	10 $\mu$ s	
1 mA step	5 $\mu$ s	
Glitch energy	Unmeasurable	
Monotonicity	16 bits	
DNL	1 LSB maximum	
INL	$\pm$ 16 LSB	
MTBF	1,014,487 hours at 25 °C; Bellcore Issue 6, Method 1, Case 3, Limited Part Stress Method	

## Power Requirements

Power consumption from chassis	
Active mode	230 mW maximum
Sleep mode	25 $\mu$ W maximum
Thermal dissipation (at 70 °C)	
Active mode	1.5 W maximum
Sleep mode	10 mW maximum
Power consumption from external power supply	
Active mode	1.4 W maximum
Sleep mode	10 mW

## Physical Characteristics

Dimensions	Visit <a href="https://ni.com/dimensions">ni.com/dimensions</a> and search by module number.
Screw-terminal wiring	
Gauge	0.2 mm <sup>2</sup> to 2.5 mm <sup>2</sup> (26 AWG to 14 AWG) copper conductor wire
Wire strip length	13 mm (0.51 in.) of insulation stripped from the end

Temperature rating	90 °C, minimum
Torque for screw terminals	0.5 N · m to 0.6 N · m (4.4 lb · in. to 5.3 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 2.5 mm <sup>2</sup>
<b>Spring-terminal wiring</b>	
Gauge	0.2 mm <sup>2</sup> to 2.5 mm <sup>2</sup> (26 AWG to 14 AWG) copper conductor wire
Wire strip length	10 mm (0.39 in.) of insulation stripped from the end
Temperature rating	90 °C, minimum
Torque for spring terminals	0.5 N · m to 0.6 N · m (4.4 lb · in. to 5.3 lb · in.)
Wires per spring terminal	One wire per spring terminal; two wires per spring terminal using a 2-wire ferrule
Ferrules	0.25 mm <sup>2</sup> to 2.5 mm <sup>2</sup>
<b>Connector securement</b>	



Securement type	Screw flanges provided
Torque for screw flanges	0.2 N · m (1.80 lb · in.)
<b>Weight</b>	
NI-9265 with screw terminal	165.5 (5.8 oz)
NI-9265 with spring terminal	153 g (5.4 oz)

## Safety Voltages

<b>Connect only voltages that are within the following limits.</b>	
Channel-to-COM or Vsup-to-COM	±40 V maximum <sup>3</sup>

## Isolation Voltages

Channel-to-channel	None
<b>Channel-to-earth ground, Vsup-to-earth ground, or COM-to-earth ground</b>	
<b>Continuous</b>	
up to 2,000 m altitude	250 V RMS, Measurement Category II
up to 5,000 m altitude	60 V DC, Measurement Category I
<b>Withstand</b>	

3. The maximum voltage that can be applied between any channel or Vsup terminal and a COM terminal without damaging the module or other devices.

up to 2,000 m altitude	2,300 V RMS, verified by a 5 s dielectric withstand test
up to 5,000 m altitude	1,000 V RMS, verified by a 5 s dielectric withstand test

## Measurement Category I



**Warning** Do not connect the product to signals or use for measurements within Measurement Categories II, III, or IV, or for measurements on MAINS circuits or on circuits derived from Overvoltage Category II, III, or IV which may have transient overvoltages above what the product can withstand. The product must not be connected to circuits that have a maximum voltage above the continuous working voltage, relative to earth or to other channels, or this could damage and defeat the insulation. The product can only withstand transients up to the transient overvoltage rating without breakdown or damage to the insulation. An analysis of the working voltages, loop impedances, temporary overvoltages, and transient overvoltages in the system must be conducted prior to making measurements.



**Mise en garde** Ne pas connecter le produit à des signaux dans les catégories de mesure II, III ou IV et ne pas l'utiliser pour des mesures dans ces catégories, ou des mesures sur secteur ou sur des circuits dérivés de surtensions de catégorie II, III ou IV pouvant présenter des surtensions transitoires supérieures à ce que le produit peut supporter. Le produit ne doit pas être raccordé à des circuits ayant une tension maximale supérieure à la tension de fonctionnement continu, par rapport à la terre ou à d'autres voies, sous peine d'endommager et de compromettre l'isolation. Le produit peut tomber en panne et son isolation risque d'être endommagée si les tensions transitoires dépassent la surtension transitoire nominale. Une analyse des tensions de fonctionnement, des impédances de boucle, des surtensions temporaires et des surtensions transitoires dans le système doit être effectuée avant de procéder à des mesures.

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.

## Measurement Category II



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



**Attention** Ne pas connecter le produit à des signaux dans les catégories de mesure III ou IV et ne pas l'utiliser pour effectuer des mesures dans ces catégories.

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.

## Environmental Characteristics

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
Pollution Degree		2
<b>Maximum altitude</b>		
NI-9265 with screw terminal		5,000 m
NI-9265 with spring terminal		5,000 m
<b>Shock and Vibration</b>		
<b>Operating vibration</b>		
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	

To meet these shock and vibration specifications, you must panel mount the system.

## Calibration

You can obtain the calibration certificate and information about calibration services for the NI-9265 at [ni.com/calibration](https://ni.com/calibration).

Calibration interval	1 year
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