NI-9263 Specifications

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NI-9263 Specifications

NI-9263 Nomenclature

In this article, the NI-9263 with screw terminal and NI-9263 with spring terminal are referred to inclusively as the NI-9263.

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.

Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-channel	None
Channel-to-earth ground	
Continuous	250 V RMS, Measurement Category II
Withstand	2,300 V RMS, verified by a 5 s dielectric withstand test

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
Maximum altitude	
NI-9263 with screw terminal	2,000 m
NI-9263 with spring terminal	2,000 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

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

Power Requirements

Power consumption from chassis	
Active mode (at -40 °C)	500 mW maximum

Sleep mode	25 µW maximum
Thermal dissipation (at 70 °C)	
Active mode	750 mW maximum
Sleep mode	25 µW maximum

Physical Characteristics

Dimensions	Visit ni.com/dimensions and search by module number.
Screw-terminal wiring	
Gauge	0.2 mm^2 to 2.5 mm^2 (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^2 to 2.5 mm^2
Spring-terminal wiring	
Gauge	0.2 mm^2 to 2.5 mm^2 (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^2 to 2.5 mm^2
Connector securement	
Securement type	Screw flanges provided
Torque for screw flanges	0.2 N · m (1.80 lb · in.)
Weight	
NI-9263 with screw terminal	150 g (5.3 oz)
NI-9263 with screw terminal	139 g (4.9 oz)

Output Characteristics

Number of channels	4 analog output channels
DAC resolution	16 bits
Type of DAC	String
Power-on output state	Channels off

Startup voltage[1]	0 V
Power-down voltage[2]	0 V
Output voltage range	
Nominal	±10 V
Minimum	±10.4 V
Typical	±10.7 V
Maximum	±11 V
Current drive	±1 mA per channel maximum
Output impedance	2 Ω

Table 1. Accuracy

Measurement Conditions		Percent of Reading (Gain Error)	Percent of Range[3] (Offset Error)
Calibrated	Maximum (-40 °C to 70 °C)	0.35%	0.75%
	Typical (25 °C, ±5 °C)	0.03%	0.1%
Uncalibrated[4]	Maximum (-40 °C to 70 °C)	2.2%	1.7%
	Typical (25 °C, ±5 °C)	0.3%	0.25%

Stability	
Gain drift	11 ppm/°C
Offset drift	110 µV/°C
Protection	

Overvoltage	±30 V
Short-circuit	Indefinitely

Table 2. Update Time

Number of Channels	Update Time for All Other Chassis	Update Time for NI cRIO-9151 R Series Expansion Chassis
1	3 µs min	3.5 µs min
2	5 µs min	6.5 µs min
3	7.5 µs min	9 µs min
4	9.5 µs min	12 µs min

Noise	
Updating at 100 kS/s	600 µVrms
Not updating	260 µVrms
Slew rate	4 V/µs
Crosstalk	76 dB
Settling time (100 pF load, to 1 LSB)	
Full-scale step	20 µs
1 V step	13 µs
0.1 V step	10 µs
Capacitive drive	1,500 pF minimum
Monotonicity	16 bits
DNL	±1 LSB maximum

INL (endpoint)	±12 LSB maximum
MTBF	1,732,619 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method

Calibration

You can obtain the calibration certificate and information about calibration services for the NI-9263 at ni.com/calibration.

Calibration interval	1 year

[1] When the module powers on, a glitch occurs for 20 µs peaking at -1.5 V.

[2] The power-down voltage peaks at 1.8 V before exponentially discharging to 0 V in 100 µs. You can add a 10 kΩ load to reduce the peak voltage.

[3] Range equals ±10.7 V

[4] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.