NI-9266 Specifications

2024-08-07

Contents

NI-9266 Specifications

NI-9266 Nomenclature

In this article, the NI-9266 with screw terminal and NI-9266 with DSUB are referred to inclusively as the NI-9266.

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	8 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
Full-scale output current	
Minimum	20.3 mA
Typical	20.77 mA
Maximum	21.2 mA
Output range	0 mA to 20 mA
Compliance voltage[1]	12 V DC maximum

Maximum load	600 Ω

Table 1. Accuracy

Measurement Conditions		Percent of Reading (Gain Error)	Percent of Range[2] (Offset Error)
Calibrated	Maximum (-40 °C to 70 °C)	0.27%	0.36%
	Typical (25 °C, ±5 °C)	0.035%	0.02%
Uncalibrated[3]	Maximum (-40 °C to 70 °C)	0.76%	1.4%
	Typical (25 °C, ±5 °C)	0.2%	0.64%

Stability	
Gain drift	35 ppm/°C
Offset drift	47 ppm/°C
External power supply voltage range (V_{sup}-to-COM)	9 V DC to 30 V DC
Protection (AO-to-COM, V_{sup}-to-COM)	
Overvoltage	±36 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	7.5 µs	6 µs

Number of Channels	Update Time for R Series Expansion Chassis	Update Time for Any Other Chassis
Four	26.5 µs	21.5 µs
Eight	51.5 µs	41.5 µs

Noise	600 nA RMS
Crosstalk	-90 dB
Settling time (to 1 LSB)	
Full-scale step	1 ms
1 mA step	40 µs
Glitch energy	Unmeasurable
Monotonicity	16 bits
DNL	1 LSB maximum
INL	±16 LSB
External power supply fault response time	100 ms
Open Current Loop response time	2.5 ms

Power Requirements

Power consumption from chassis	
Active mode	230 mW maximum
Sleep mode	25 µW 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	3.1 W maximum[4]
Sleep mode	20 mW

Physical Characteristics

Weight	
NI-9266 with screw terminal	147 g (5.2 oz)
NI-9266 with DSUB	151 g (5.3 oz)
Screw terminal wiring	

Gauge	0.05 mm^2 to 0.82 mm^2 (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^2 to 1.0 mm^2
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.)

NI-9266 with DSUB Safety Voltages

Connect only voltages that are within the following limits.

AO-to-COM and V_{sup}-to-COM	±36 V DC maximum
Isolation	

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

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

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

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.

NI-9266 with Screw Terminal Safety Voltages

Connect only voltages that are within the following limits:

AO-to-COM and V_{sup}-to-COM	±36 V DC maximum
Isolation	
Channel-to-channel	None

Channel-to-earth ground, V_{sup}-to-earth ground, or COM-to-earth ground	
Continuous	250 V RMS, Measurement Category II
Withstand up to 3,000 m	3,000 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 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-9266 with screw terminal	3,000 m
NI-9266 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

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-9266 at ni.com/calibration.

Calibration interval	1 year