
NI-9476

Specifications

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NI-9476 Specifications

NI-9476 Nomenclature

In this article, the NI-9476 with spring terminal and NI-9476 with DSUB are referred to inclusively as the NI-9476. The information in this document applies to all versions of the NI-9476 unless otherwise specified.

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.

Output Characteristics

| | |
|---|--|
| Number of channels | 32 digital output channels |
| Output type | Sourcing |
| Output Voltage | $V_{\text{sup}} - (I_0 * R_0)$ |
| Power-on output state | Channels off |
| External power supply voltage range ($V_{\text{sup-to-COM}}$) | 6 V DC to 36 V DC |
| Continuous output current (I_0) per channel (DO-to-COM) | |
| With 6 V DC to 30 V DC supply voltage | 250 mA maximum |
| With 30 V DC to 36 V DC supply voltage | 200 mA maximum |
| Output impedance (R_0) | 0.3 Ω maximum |
| Continuous overvoltage protection (V_{sup}) | up to 40 V maximum |
| Reversed-voltage protection | None |
| Current limiting | None |
| Short-circuit protection | Indefinitely protected when a channel is shorted to COM or to a voltage up to V_{sup} |
| Trip current for one channel | |
| With all other channels at rated current | 3 A typical |
| | |

| | |
|--------------------------------------|--|
| With all other channels off | 5 A typical |
| V _{sup} current consumption | 28 mA maximum |
| Maximum update rate | 40 μs maximum |
| Propagation delay | 500 μs maximum |
| MTBF | 1,091,425 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method |

NI-9476 with Spring Terminal Safety Voltages

Connect only voltages that are within the following limits.

| | |
|--------------------------------|--|
| V _{sup} -to-COM | 40 V DC maximum |
| DO | $V_{COM} \leq V_{DO} \leq V_{sup}$ |
| Isolation | |
| Channel-to-channel | None |
| Channel-to-earth ground | |
| Continuous | 250 V RMS, Measurement Category II |
| Withstand up to 5,000 m | 3,000 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.

NI-9476 with DSUB Safety Voltages

Connect only voltages that are within the following limits.

| | |
|--------------------------------|--|
| $V_{\text{sup-to-COM}}$ | 40 V DC maximum |
| DO | $V_{\text{COM}} \leq V_{\text{DO}} \leq V_{\text{sup}}$ |
| Isolation | |
| Channel-to-channel | None |
| Channel-to-earth ground | |
| Continuous | 60 V DC, Measurement Category 1 |
| Withstand up to 2,000 m | 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.

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-9476 with spring terminal | 5,000 m |
| NI-9476 with DSUB | 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 | 250 mW maximum |
| Sleep mode | 25 μ W maximum |
| Thermal dissipation (at 70 °C) | |
| Active mode | 1.5 W maximum |
| Sleep mode | 30 mW maximum |

Physical Characteristics

If you need to clean the module, wipe it with a dry towel.

| Dimensions | Visit ni.com/dimensions and search by module number. |
|-------------------------------|---|
| Spring-terminal wiring | |
| Gauge | 0.14 mm to 1.5 mm (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 screw terminal | One wire per spring terminal; two wires per spring terminal using a 2-wire ferrule |

| | |
|------------------------------|---------------------------|
| Ferrules | 0.14 mm to 1.5 mm |
| Connector securement | |
| Securement type | Screw flanges provided |
| Torque for screw flanges | 0.2 N · m (1.80 lb · in.) |
| Weight | |
| NI-9476 with spring terminal | 167 g (5.9 oz) |
| NI-9476 with spring terminal | 147 g (5.2 oz) |

Related information:

- [Dimensional Drawings](#)