NI-9478 Specifications

2025-03-10

Contents

NI-9478 Specifications

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.

NI-9478 Pinout

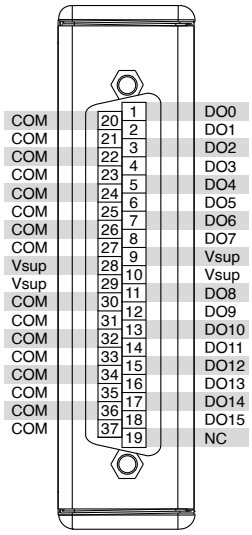

Table 1. NI-9478 Signal Descriptions

Signal	Description
COM	Common reference connection
DO	Digital output signal connection
NC	No connection
V_{sup}	Voltage supply connection

Output Characteristics

Number of channels	16 digital output channels
Output type	Sinking
Power-on output state	Channels off
Output voltage (V_0)	I_0 R_0

External power supply voltage range (Vsup)	0 VDC to 50 VDC
Continuous output current (I_0), per channel	
All channels on	1.2 A maximum
Four channels on	2.5 A maximum
One channel on	5 A maximum
Switched output current (10 kHz)[1], per channel	
All channels on	1 A maximum
Four channels on	2 A maximum
One channel on	4 A maximum
Switched output current (20 kHz), per channel	
All channels on	0.75 A maximum
Four channels on	1.67 A maximum
One channel on	3.33 A maximum
Output impedance (R_0)	50 mΩ maximum

1. Using up to 2 meters of cabling on each output channel.

Reversed-voltage protection	None
Number of current limit settings	2 (Limit A and Limit B)
Current limit range	0 A to 5.1 A
Current limit resolution	8-bit, 20 mA per LSB
Current limit accuracy	130 mA + 3% of setting, maximum
Overcurrent protection threshold selection per channel	Limit A, Limit B, or No Limit
Overcurrent shutoff response time	1 µs
Overcurrent refresh configuration	Enabled or Disabled
Overcurrent refresh period	20 µs to 2550 µs in 10 µs increments
Overcurrent refresh period accuracy	±7% maximum
Propagation delay	250 ns maximum
MTBF	823,106 hours at 25 °C; Bellcore Issue 6, Method 1, Case 3, Limited Part Stress Method

Power Requirements

Power consumption from chassis	
Active mode	1 W maximum
Sleep mode	25 µW maximum
Thermal dissipation (at 70 °C)	
Active mode	1.5 W maximum
Sleep mode	25 µW maximum

Physical Characteristics

Dimensions	Visit ni.com/dimensions and search by module number.
Weight	148 g (5.2 oz)

Related information:

- Dimensional Drawings

Safety Voltages

Connect only voltages that are within the following limits:

Vsup-to-COM	50 V DC maximum, Measurement Category I

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.

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.

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		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.

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