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# NI-9477

# Specifications

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# Contents

NI-9477 Specifications ..... 3

# NI-9477 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.

## Output Characteristics

Number of channels	32 digital output channels
Output type	Sinking

Power-on output state	Channels off <sup>[1]</sup>
Output voltage ( $V_0$ )	$I_0 \cdot R_0$
External power supply voltage range	0 V DC to 60 V DC
<b>Continuous output current (<math>I_0</math>)</b>	
Per channel	1 A maximum, on up to 20 channels
Module (sum of all channels)	20 A maximum
Output impedance ( $R_0$ )	0.065 $\Omega$ maximum
Reversed-voltage protection	None
Short-circuit protection	None
Maximum update rate	8 $\mu$ s maximum
Propagation delay	1 $\mu$ s maximum
MTBF	717,920 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method

## 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.

## Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-COM <sup>[2]</sup>	60 V DC maximum, Measurement Category I	
<b>Isolation</b>		
Channel-to-channel	None	
<b>Channel-to-earth ground</b>		
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.

## Power Requirements

Power consumption from chassis

Active mode	650 mW maximum
Sleep mode	25 $\mu$ W maximum
<b>Thermal dissipation (at 70 °C)</b>	
Active mode	1.5 W maximum
Sleep mode	25 $\mu$ W maximum

## Physical Characteristics

Dimensions	Visit <a href="https://ni.com/dimensions">ni.com/dimensions</a> and search by module number.
Weight	145 g (5.1 oz)