
NI-9871

Specifications

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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.

Specifications

| | |
|---------------------------|-------------------|
| Maximum baud rate | 3.6864 Mbps |
| Maximum module throughput | 1.28 Mbps |
| Maximum cable length | 1.2 km (4,000 ft) |

| | |
|---|--|
| Data line ESD protection (human body model) | ±15 kV |
| MTBF | 514,016 hours at 25 °C; Bellcore Issue 6, Method 1, Case 3, Limited Part Stress Method |



Note Contact NI for Bellcore MTBF specifications at other temperatures or MIL-HDBK-217F specifications.

Power Requirements

| | |
|--|----------------|
| Power consumption from chassis | |
| Active mode | 0.5 W maximum |
| Sleep mode | 50 µW maximum |
| Thermal dissipation (at 70 °C) | |
| Active mode | 1.5 W maximum |
| Sleep mode | 55 mW maximum |
| Required external supply voltage range (V sup) | +8 to +28 V DC |
| Power supply consumption from external supply V sup | |
| Typical | 1 W |
| Maximum | 3.5 W |

Physical Characteristics

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

| | |
|--------|------------------------|
| Weight | Approx. 153 g (5.4 oz) |
|--------|------------------------|

Safety Voltages

Maximum Measurement Voltages

Connect only voltages that are within these limits.

| | |
|-------------------------|---|
| RS485/RS422 Port-to-COM | -8 to +13 VDC maximum, Measurement Category I |
| V sup-to-COM | ±28 V maximum, Measurement Category I |

Isolation Voltages

| | |
|-----------------------------|---|
| Port-to-earth ground | |
| Continuous | 60 V DC, Measurement Category I up to 5,000 m in altitude |
| Withstand | |
| up to 2,000 m in altitude | 1000 V RMS verified by a 5s dielectric withstand test |
| up to 5,000 m in altitude | 500 V RMS verified by a 5s 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 | IP30 |
| Pollution Degree | 2 |
| Maximum altitude | 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.

Indoor use only.