NI-9425

Specifications

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NI-9425 Specifications

Introduction

In this document, the NI-9425 with spring terminal and NI-9425 with DSUB are referred to inclusively as the NI-9425. The information in this document applies to all versions of the NI-9425 unless otherwise specified.

Related information:

- Software Support for CompactRIO, CompactDAQ, Single-Board RIO, R Series, and EtherCAT

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.

Conditions

Specifications are valid for the range -40 °C to 70 °C unless otherwise noted.

NI-9425 Pinout

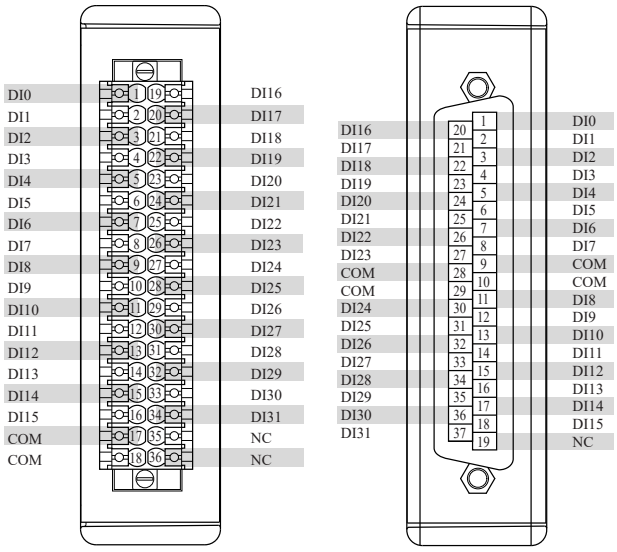

Table 1. Signal Descriptions

Signal	Description
COM	Common reference connection to isolated ground
DI	Digital input signal connection
NC	No connection

Input Characteristics

Number of channels	32 digital input channels
Input type	Sinking
Digital logic levels	
OFF state	
Input voltage	≤5 V

Input current	≤150 µA
ON state	
Input voltage	≥10 V
Input current	≥330 µA
Hysteresis	
Input voltage	2 V minimum
Input current	60 µA minimum
Input impedance	30 kΩ ± 5%
I/O protection	
Input voltage	
8 channels	60 V DC maximum
32 channels	30 V DC maximum
Reverse-biased voltage	
8 channels	-60 V DC maximum
32 channels	-30 V DC maximum

Hold time[1]	0 µs minimum
Setup time[2]	1 µs minimum
Update/transfer time[3]	
cRIO-9151 R Series Expansion chassis	8 µs maximum
All other chassis	7 µs maximum
MTBF	1,256,699 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method

Power Requirements

Power consumption from chassis	
Active mode	410 mW maximum
Sleep mode	0.5 mW maximum
Thermal dissipation (at 70 °C)	
Active mode	1.45 W maximum

1. ***Hold time*** is the amount of time input signals must be stable after initiating a read from the module.
2. ***Setup time*** is the amount of time input signals must be stable before reading from the module.
3. The update/transfer time is valid when the module is used in a CompactRIO system. When used in other systems, driver software and system latencies impact this time.

Sleep mode	1 W maximum

Physical Characteristics

Spring-terminal wiring	
Gauge	0.14 mm^2 to 1.5 mm^2 (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 spring terminal	One wire per spring terminal; two wires per spring terminal using a 2-wire ferrule
Ferrules	0.14 mm^2 to 1.5 mm^2

Connector securement	
Securement type	Screw flanges provided
Torque for screw flanges	0.2 N · m (1.80 lb · in.)

Weight	
NI-9425 with spring terminal	163 g (5.7 oz)
NI-9425 with DSUB	147 g (5.2 oz)

NI-9425 with Spring Terminal Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-COM	60 V DC
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

NI-9425 with DSUB Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-COM	60 V DC
Isolation	
Channel-to-channel	None
Channel-to-earth ground	
Continuous	60 V DC, Measurement Category I
Withstand up to 2,000 m	1,000 V RMS verified by a 5 s dielectric withstand test

Withstand Up to 5,000 m	500 V RMS , verified by a 5 s dielectric withstand test

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.

Calibration

You can obtain the calibration certificate and information about calibration services for the NI-9425 at ni.com/calibration.

Calibration interval	1 year