NI-9218 Specifications

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NI-9218 Specifications

Connector Types

The NI-9218 has more than one connector type: NI-9218 with LEMO and NI-9218 with DSUB. Unless the connector type is specified, NI-9218 refers to both connector types.

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.

Related information:

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

General Characteristics

Number of channels	2 analog input channels
ADC resolution	24 bits
Type of ADC	Delta-Sigma
Sampling mode	Simultaneous
TEDS support	
NI-9218 with DSUB	IEEE 1451.4 TEDS Class 1
NI-9218 with LEMO	IEEE 1451.4 TEDS Class 1 and TEDS Class 2
Internal master timebase (f_M)	
Frequency	13.1072 MHz
Accuracy	100 ppm

Figure 1. Data Rates

$$\frac{f_M \div 256}{n},\ n = 1, 2, ..., 31$$

Data rate range (f_S) using internal master timebase	
Minimum	1.652 kS/s
Maximum	51.2 kS/s
Data rate range (f_S) using external master timebase	
Minimum	1 kS/s
Maximum	51.367 kS/s

Overvoltage protection	
Pin 2 to Pin 3	-20 V to 30 V
Any other pin-to-pin	±30 V

Note Be aware when processing acquisitions that include full-scale data. Full-scale data readings indicate that an over-range has occurred in the analog front-end.

±16 V Characteristics

Input coupling	DC
Measurement range	
Typical	±16.3 V
Minimum	±16.0 V

Table 1. ±16 V Accuracy

Measurement Conditions		Gain Error	Offset Error
Calibrated	Typical, 23 °C ±5 °C	0.08%	0.70 mV
	Maximum, -40 °C to 70 °C	0.20%	9 mV
Uncalibrated[1]	Typical, 23 °C ±5 °C	1.2%	50 mV
	Maximum, -40 °C to 70 °C	2.0%	70 mV

Gain drift	15 ppm/°C
Offset drift	32 µV/°C

[1] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Integral non-linearity (INL)	150 µV
Input noise, RMS	
51.2 kS/s	128 µV
25.6 kS/s	107 µV
4.27 kS/s	81 µV
Input impedance	390 kΩ
Input bandwidth, -3 dB	0.49 f_s
Flatness, DC-20 kHz, referred to 1 kHz	
Typical	±30 mdB
Maximum	±50 mdB
Phase non-linearity, DC-20 kHz	0.30°
Input delay	(40 + [5/512])/f_s + 5.3 µs
Stopband	
Frequency	0.55 f_s
Rejection	100 dB
Alias-free bandwidth	0.45 f_s
Oversample rate	64 f_s
Rejection at oversample rate (f_s = 51.2 kS/s)	100 dB

Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-100 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, 1 V RMS	101 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz normal mode, full-scale aggressor	-109 dBFS
CMRR, 60 Hz 1 V RMS-to-earth ground	-120 dBFS
Powered sensor 12 V excitation	
Voltage level	12 V ±5%
Voltage noise, RMS 100 kHz bandwidth	1 mV
Output current	
Typical	50.5 mA
Minimum	46.5 mA
Settling Time (to 1 % of final value after enabling)	200 ms

Related reference:

- Vsup Power Requirements

±65 mV Characteristics

Input coupling	DC
Measurement range	

Typical	73.5 mV
Minimum	72 mV

Table 2. ±65 mV Accuracy

Measurement Conditions		Gain Error	Offset Error
Calibrated	Typical, 23 °C±5 °C	0.13%	8 µV
	Maximum, -40 °C to 70 °C	0.20%	130 µV
Uncalibrated[2]	Typical, 23 °C±5 °C	1.2%	300 µV
	Maximum, -40 °C to 70 °C	2.0%	450 µV

Gain drift	10 ppm/°C
Offset drift	320 nV/°C
Input noise, RMS	
51.2 kS/s	4.3 µV
25.6 kS/s	3 µV
4.27 kS/s	1.3 µV
Input impedance	>10 MΩ
Input bandwidth, -3 dB	0.49 f_s
Flatness, DC-20 kHz, referred to 1 kHz	
Typical	-40 mdB to 0 mdB

[2] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Maximum	-150 mdB to 20 mdB
Phase non-linearity, DC-20 kHz	0.2°
Input delay	$(40 + [5/512])/f_s + 3.9\ \mu s$
Stopband	
Frequency	$0.55\ f_s$
Rejection	100 dB
Alias-free bandwidth	$0.45\ f_s$
Oversample rate	$64\ f_s$
Rejection at oversample rate (f_s = 51.2 kS/s)	100 dB
Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-95 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, -1 dBFS	95 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz normal mode, full-scale aggressor	-109 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-133 dBFS
Powered sensor 12 V excitation	
Voltage level	12 V ±5%

Voltage noise, RMS 100 kHz bandwidth	1 mV
Output current	
Typical	50.5 mA
Minimum	46.5 mA
Settling Time (to 1% of final value after enabling)	200 ms

Related reference:

- Vsup Power Requirements

Full-Bridge Characteristics

Input coupling	DC
Measurement range	
Typical	22.1 mV/V
Minimum	21.7 mV/V

Table 3. Full-Bridge Accuracy

Measurement Conditions			Gain	Offset	
				Without Offset Null	≤ 90 days, ±5 °C from Offset Null
Calibrated	3.3 V Excitation	Typical, 23 °C ±5 °C	0.10%	2.4 µV/V	0.5 µV/V
		Maximum -40 °C to 70 °C	0.20%	40 µV/V	5 µV/V
	2 V Excitation	Typical, 23 °C ±5 °C	0.10%	30 µV /V	0.8 µV/V

Measurement Conditions			Gain	Offset	
				Without Offset Null	≤ 90 days, ±5 °C from Offset Null
		Maximum -40 °C to 70 °C	0.20%	87 µV/V	8 µV/V
Uncalibrated[3]	3.3 V Excitation	Typical, 23 °C±5 °C	1.2%	100 µV/V	—
		Maximum -40 °C to 70 °C	2.0%	150 µV/V	—
	2 V Excitation	Typical, 23 °C±5 °C	1.2%	120 µV/V	—
		Maximum -40 °C to 70 °C	2.0%	200 µV/V	—

Gain drift	10 ppm/°C
Offset drift	
3.3 V excitation	100 nV/V/°C
2 V excitation	160 nV/V/°C

Table 4. Input Noise, RMS

Excitation Voltage	Sample Rate		
	4.27 kS/s	25.6 kS/s	51.2 kS/s
3.3 V	0.4 µV/V	1.0 µV/V	1.3 µV/V
2 V	0.7 µV/V	1.6 µV/V	2.1 µV/V

Differential input impedance	>10 MΩ
Input bandwidth, -3 dB	0.49 $\mathbf{f_s}$
Flatness, DC-20 kHz, referred to 1 kHz	

[3] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Typical	-40 mdB to 0 mdB
Maximum	-150 mdB to 20 mdB
Phase non-linearity, DC-20 kHz	0.2°
Input delay	(40 + [5/512])/$\mathbf{f_s}$ + 3.9 µs
Stopband	
Frequency	0.55 $\mathbf{f_s}$
Rejection	100 dB
Alias-free bandwidth	0.45 $\mathbf{f_s}$
Oversample rate	64 $\mathbf{f_s}$
Rejection at oversample rate ($\mathbf{f_s}$ = 51.2 kS/s)	100 dB
Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-95 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, -1 dBFS	95 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz, normal mode, full-scale aggressor	-109 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-133 dBFS
Shunt calibration accuracy	50 kΩ ±0.2%

Strain excitation voltage	
2 V level	2 V ±3%
3.3 V level	3.3 V ±3%
Output current	
2 V level	17.8 mA
3.3 V level	10.1 mA

IEPE Characteristics

Input coupling	AC
Measurement range	
Typical	5.33 V
Minimum	5.0 V

Table 5. IEPE Accuracy

Measurement Conditions		Gain Error
Calibrated	Typical, 23 °C±5 °C	0.20% (0.017 dB)
	Maximum, -40 °C to 70 °C	0.40% (0.034 dB)
Uncalibrated[4]	Typical, 23 °C±5 °C	1.7% (0.146 dB)
	Maximum, -40 °C to 70 °C	2.0% (0.172 dB)

Residual DC offset	<150 mV
Gain drift	25 ppm/°C
Input noise, RMS	

[4] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

51.2 kS/s	50 µV
25.6 kS/s	38 µV
4.27 kS/s	25 µV
Input impedance	300 kΩ
Input bandwidth, -3 dB	0.49 **f_S**
Flatness, 10 Hz-20 kHz, referred to 1 kHz	
Typical	±25 mdB
Maximum	±40 mdB
Phase non-linearity, 100 Hz-20 kHz	0.25°
AC cutoff frequency, -3 dB	0.5 Hz
Input delay	(40 + [5/512])/f_S + 3.9 µs
Stopband	
Frequency	0.55 f_S
Rejection	100 dB
Alias-free bandwidth	0.45 f_S
Oversample rate	64 f_S
Rejection at oversample rate (f_S = 51.2 kS/s)	100 dB

Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-102 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, 1 V RMS	107 dB
Intermodulation Distortion (IMD), (CCIF 11 kHz/12 kHz)	-97 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz normal mode, full-scale aggressor	-109 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-122 dBFS
IEPE excitation current	
Typical	2.2 mA
Minimum	2.1 mA
Compliance voltage	
Typical	20.5 V
Minimum	19.5 V

If you are using an IEPE sensor, use the following equation to ensure that your configuration meets the IEPE compliance voltage range. This equation must resolve to 0 to 19.5.

Figure 2. IEPE Compliance Voltage Equation

$$V_{\text{bias}} \pm V_{\text{full-scale}} \quad V_{\text{bias}} \pm V_{\text{full-scale}}$$

where

V_{bias}
is the bias voltage of the IEPE sensor

- $V_{full\text{-}scale}$
is the full-scale voltage of the IEPE sensor

±20 mA Characteristics

The ±20 mA measurement type requires the NI-9983 measurement-specific adapter. The characteristics are for the NI-9218 used in conjunction with the NI-9983.

Input coupling	DC
Measurement range	
Typical	24.4 mA
Minimum	23.0 mA

Table 6. ±20 mA Accuracy

Measurement Conditions		Gain Error	Offset Error
Calibrated	Typical, 23 °C±5 °C	0.40%	5 µA
	Maximum, -40 °C to 70 °C	0.60%	42 µA
Uncalibrated[5]	Typical, 23 °C±5 °C	1.5%	100 µA
	Maximum, -40 °C to 70 °C	2.0%	150 µA

Gain drift	35 ppm/°C
Offset drift	105 nA/°C
Shunt resistance	3.01 Ω

[5] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Input noise, RMS	
51.2 kS/s	1.4 µA
25.6 kS/s	1.0 µA
4.27 kS/s	0.5 µA
Input impedance	45 Ω ±30%
Input bandwidth, -3 dB	0.49 $\mathbf{f_s}$
Input delay	(40 + [5/512])/f_s + 3.9 µs
Stopband	
Frequency	0.55 f_s
Rejection	100 dB
Alias-free bandwidth	0.45 f_s
Oversample rate	64 f_s
Rejection at oversample rate (f_s = 51.2 kS/s)	100 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz normal mode, full-scale aggressor	-109 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-99 dBFS
Powered sensor 12 V excitation	

Voltage level	12 V ±5%
Voltage noise, RMS, 100 kHz bandwidth	1 mV
Output current	
Typical	50.5 mA
Minimum	46.5 mA
Settling Time (to 1% of final value after enabling)	200 ms

Related reference:

- Vsup Power Requirements

±60 V Characteristics

The ±60 V measurement type requires the NI-9987 measurement-specific adapter. The characteristics are for the NI-9218 used in conjunction with the NI-9987.

Input coupling	DC
Measurement range	
Typical	±62.1 V
Minimum	±60 V

Table 7. ±60 V Accuracy

Measurement Conditions		Gain Error	Offset Error
Calibrated	Typical, 23 °C±5 °C	0.3%	3 mV
	Maximum, -40 °C to 70 °C	0.6%	40 mV

Measurement Conditions		Gain Error	Offset Error
Uncalibrated[6]	Typical, 23 °C±5 °C	1.3%	200 mV
	Maximum, -40 °C to 70 °C	2.0%	300 mV

Gain drift	30 ppm/°C
Offset drift	120 µV/°C
Integral non-linearity (INL)	15 mV
Input noise, RMS	
51.2 kS/s	500 µV
25.6 kS/s	420 µV
4.27 kS/s	320 µV
Input impedance	1.49 MΩ
Input bandwidth, -3 dB	
NI-9987D/9987L	Lesser of 2.8 kHz or 0.49 f_S
NI-9987F	Lesser of 7 kHz or 0.49 f_S
Flatness, DC to 500 Hz, referred to DC, $f_S \geq 1.652$ kS/s	0.2 dB
Input delay	
NI-9987D	$(40 + [5/512])/f_S + 58.7$ µs
NI-9987L	$(40 + [5/512])/f_S + 57.9$ µs

[6] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

NI-9987F	(40 + [5/512])/f_S + 27.2 µs
Stopband	
Frequency	0.55 f_S
Rejection	100 dB
Alias-free bandwidth	0.45 f_S
Oversample rate	64 f_S
Rejection at oversample rate (f_S = 51.2 kS/s)	100 dB
Total Harmonic Distortion (THD), 8 V RMS, 500 Hz	-80 dBc
Spurious-Free Dynamic Range (SFDR), 8 V RMS, 500 Hz	-80 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz, normal mode, full-scale aggressor	-70 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-89 dBFS

Half-Bridge Mode Characteristics

The half-bridge measurement type requires the NI-9986 measurement-specific adapter. The characteristics are for the NI-9218 used in conjunction with the NI-9986.

Input coupling	DC
Measurement range	
Typical	22.1 mV/V
Minimum	21.7 mV/V

Table 8. Half-Bridge Accuracy

Measurement Conditions			Gain	Offset	
				Without Offset Null	≤ 90 days, ±5 °C from Offset Null
Calibrated	3.3 V and 2 V excitation	Typical 23 °C±5 °C	0.10%	700 µV/V	45 µV/V
		Maximum -40 °C to 70 °C	0.20%	1,000 µV/V	90 µV/V
Uncalibrated[7]	3.3 V and 2 V excitation	Typical 23 °C±5 °C	1.2%	800 µV/V	—
		Maximum -40 °C to 70 °C	2.0%	1.1 mV/V	—

Gain drift	10 ppm/°C
Offset drift	1.3 µV/V/°C

Table 9. Input Noise, RMS

Excitation Voltage	Sample Rate		
	4.27 kS/s	25.6 kS/s	51.2 kS/s
3.3 V	0.4 µV/V	1.0 µV/V	1.3 µV/V
2 V	0.7 µV/V	1.6 µV/V	2.2 µV/V

Input bandwidth, -3 dB	0.49 f_s

[7] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Flatness, DC-20 kHz, referred to 1 kHz	
Typical	-40 mdB to 0 mdB
Maximum	-150 mdB to 20 mdB
Phase non-linearity, DC-20 kHz	0.2°
Input delay	$(40 + [5/512])/f_S + 3.9\ \mu s$
Stopband	
Frequency	$0.55\ f_S$
Rejection	100 dB
Alias-free bandwidth	$0.45\ f_S$
Oversample rate	$64\ f_S$
Rejection at oversample rate (f_S = 51.2 kS/s)	100 dB
Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-95 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, -1 dBFS	95 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz, normal mode, full-scale aggressor	-85 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-73 dBFS
Strain excitation voltage	

2 V level	2 V ±3%
3.3 V level	3.3 V ±3%
Output current	
2 V level	17.8 mA
3.3 V level	10.1 mA

Quarter-Bridge Characteristics

The quarter-bridge measurement type requires the NI-9984 or NI-9985 measurement-specific adapter. The characteristics are for the NI-9218 used in conjunction with the NI-9984 or the NI-9985.

Input coupling	DC
Measurement range	
Typical	22.1 mV/V
Minimum	21.7 mV/V

Table 10. Quarter-Bridge Accuracy

Measurement Conditions			Gain	Offset	
				Without Offset Null	≤ 90 days, ±5 °C from Offset Null
Calibrated	3.3 V and 2 V excitation	Typical 23 °C±5 °C	0.10%	700 µV/V	45 µV/V
		Maximum -40 °C to 70 °C	0.20%	1,000 µV/V	90 µV/V

Measurement Conditions			Gain	Offset	
				Without Offset Null	≤ 90 days, ±5 °C from Offset Null
Uncalibrated[8]	3.3 V and 2 V excitation	Typical 23 °C±5 °C	1.2%	800 µV/V	—
		Maximum -40 °C to 70 °C	2.0%	1.1 mV/V	—

Gain drift	10 ppm/°C
Offset drift	1.3 µV/V/°C
Quarter-bridge completion resistance	
NI-9984	120 Ω
NI-9985	350 Ω

Table 11. Input Noise, RMS

Excitation Voltage	Sample Rate		
	4.27 kS/s	25.6 kS/s	51.2 kS/s
350 Ω, 3.3 V	0.4 µV/V	1.0 µV/V	1.3 µV/V
120 Ω, 2 V	0.7 µV/V	1.6 µV/V	2.2 µV/V

Input bandwidth, -3dB	0.49 f_s
Flatness, DC-20 kHz, referred to 1 kHz	
Typical	-40 mdB to 0 mdB
Maximum	-150 mdB to 20 mdB
Phase non-linearity, DC-20 kHz	0.2°

[8] Uncalibrated accuracy refers to the accuracy achieved when acquiring in raw or unscaled modes where the calibration constants stored in the module are not applied to the data.

Input delay	$(40 + [5/512])/f_S + 3.9\ \mu s$
Stopband	
Frequency	$0.55\ f_S$
Rejection	100 dB
Alias-free bandwidth	$0.45\ f_S$
Oversample rate	$64\ f_S$
Rejection at oversample rate (f_S = 51.2 kS/s)	100 dB
Total Harmonic Distortion (THD), 1 kHz, -1 dBFS	-95 dBc
Spurious-Free Dynamic Range (SFDR), 1 kHz, -1 dBFS	95 dB
Crosstalk	
60 Hz, 1 V RMS, common mode	-120 dBFS
1 kHz, normal mode, full-scale aggressor	-85 dBFS
CMRR, 60 Hz, 1 V RMS-to-earth ground	-73 dBFS
Strain excitation voltage	
2 V level	2 V ±3%
3.3 V level	3.3 V ±3%
Output current	
2 V level	17.8 mA

3.3 V level	10.1 mA

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	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.

Power Requirements

Maximum power consumption from chassis	
Active mode	900 mW maximum
Sleep mode	500 µW maximum
Maximum thermal dissipation, from -40 °C to 70 °C	
Active mode	1.5 W maximum
Sleep mode	550 mW maximum

Vsup Power Requirements

Vsup input voltage range	9 V to 30 V
Maximum power consumption from Vsup	
Active mode	2 W maximum
Sleep mode	400 mW maximum

Physical Characteristics

Weight	
NI-9218 with DSUB	151 g (5.33 oz)
NI-9218 with LEMO	165 g (5.82 oz)
Dimensions	Visit **ni.com/dimensions** and search by module number.

NI-998x Physical Characteristics

Screw-terminal wiring	
Gauge	0.05 mm^2 (30 AWG) to 1.31 mm^2 (16 AWG) copper conductor wire
Wire strip length	6 mm (0.236 in.) of insulation stripped from the end
Temperature rating	80 °C minimum
Wires per screw terminal	One or two wires per screw terminal
Ferrules, single wire	0.25 mm^2 (20 AWG) to .52 mm^2 (24 AWG)
Torque for screw terminals	0.2 N · m to 0.25 N · m (1.77 lb · in.) to (2.21 lb · in.)
Wire securement	
NI-998xD, NI-998xL securement type	Three collets provided (ranging from 2.2 mm to 5.2 mm in diameter)
Torque for collet nut	1.5 N · m (13.3 lb · in.)
NI 998xF securement type	Zip tie provided
NI-998xD and NI-998xF connector securement	
Securement type	Jackscrews provided
Jackscrew torque	0.4 N · m (3.6 in · lb)
Weight	
NI-998xD, NI-998xL	142 g (5.0 oz) with cable

NI-998xF	34 g (1.2 oz)

NI-9218 Safety Voltages

Caution Any excitation output voltage to earth ground must remain below 60 V DC for each channel. To determine excitation output voltage to earth ground for a channel, add the maximum excitation voltage to the maximum potential on pin 3. The maximum excitation voltages are 2 V +3% and 3.3 V +3% for the bridge excitations, 12 V +5% for the +12 V excitation, and 22 V for the IEPE excitation.

Caution Toute tension d'excitation de sortie par rapport à la terre doit rester inférieure à 60 V CC pour chaque voie. Pour déterminer la tension d'excitation de sortie par rapport à la terre pour une voie, ajoutez la tension d'excitation maximale au potentiel maximal sur la broche 3. Les tensions d'excitation maximales sont de 2 V +3% et 3,3 V +3% pour les excitations de pont, 12 V +5% pour l'excitation +12 V, et 22 V pour l'excitation IEPE.

NI-9218 with LEMO Safety Voltages

Connect only voltages that are within the following limits:

Maximum voltage, from any pin to any pin on a single connector[9]	±30 V
Isolation	
Channel-to-channel, channel-to-Vsup, channel-to-earth, Vsup-to-earth (up to 5,000 m)[10]	
Continuous	60 V DC, Measurement Category I

[9] The maximum voltage between pin 2 and pin 3 on a single connector is -20 V to +30 V.

[10] Must use crimp contact LEMO plug (784162-01) to maintain these ratings. Ratings are invalidated if solder version is used.

Withstand	1,000 V RMS, verified by a 5 s dielectric withstand test

NI-9218 with DSUB Safety Voltages

Connect only voltages that are within the following limits:

Maximum voltage, from any pin to any pin on a single connector[11]	±30 V
Isolation	
Channel-to-channel, channel-to-Vsup inputs (up to 5,000 m)	
Continuous	60 V DC, Measurement Category I
Withstand	1,000 V RMS, verified by a 5 s dielectric withstand test
Channel-to-earth ground (up to 3,000 m)	
Continuous	60 V DC, Measurement Category I
Withstand	1,000 V RMS, verified by a 5 s dielectric withstand test
Channel-to-earth ground (up to 5,000 m)	
Continuous	60 V DC, Measurement Category I
Withstand	860 V RMS
Vsup inputs-to-earth ground (up to 5,000 m)	
Continuous	60 V DC, Measurement Category I

[11] The maximum voltage between pin 2 and pin 3 on a single connector is -20 V to +30 V.

Withstand	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.

Calibration

You can obtain the calibration certificate and information about calibration services for the NI-9218 at ni.com/calibration.

Calibration interval	2 years