
NI-9218

Specifications

2022-10-27

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NI 9218 Specifications

The following specifications are typical for the range -40 °C to 70 °C unless otherwise noted.

Caution Do not operate the NI-9218 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to NI for repair.

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

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

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	$\pm 16.0\text{ V}$		
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

Table 10. $\pm 16\text{ V}$ Accuracy

Gain drift	15 ppm/°C	
Offset drift	32 $\mu\text{V}/^\circ\text{C}$	
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 k Ω	
Input bandwidth, -3 dB	0.49 f_s	
Flatness, DC-20 kHz, referred to 1 kHz		
Typical	$\pm 30\text{ dB}$	
Maximum	$\pm 50\text{ dB}$	

Phase non-linearity, DC-20 kHz	0.30°
Input delay	$(40 + [5/512])/f_s + 5.3 \mu\text{s}$
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 ($f_s = 51.2 \text{ kS/s}$)	100 dB
Total Harmonic Distortion (THD), 1 kHz, -3 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 \pm 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	
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

Table 10. ±65 mV Accuracy

Gain drift	10 ppm/°C
Offset drift	320 nV/°C
Input noise, RMS	

51.2 kS/s	4.3 μ V
25.6 kS/s	3 μ V
4.27 kS/s	1.3 μ V
Input impedance	>10 M Ω
Input bandwidth, -3 dB	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°
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 \pm 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

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
		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	—

Table 3. Full-Bridge Accuracy

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

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

Table 11. Input Noise, RMS

Differential input impedance	>10 MΩ
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Input bandwidth, -3 dB	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°
Input delay	$(40 + [5/512])/f_s + 3.9 \mu\text{s}$
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 ($f_s = 51.2 \text{ kS/s}$)	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 k Ω \pm 0.2%
Strain excitation voltage	
2 V level	2 V \pm 3%
3.3 V level	3.3 V \pm 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	
Measurement Conditions		Gain Error
Calibrated	Typical, 23 °C \pm 5 °C	0.20% (0.017 dB)
	Maximum, -40 °C to 70 °C	0.40% (0.034 dB)
Uncalibrated ^[4]	Typical, 23 °C \pm 5 °C	1.7% (0.146 dB)
	Maximum, -40 °C to 70 °C	2.0% (0.172 dB)

Table 5. IEPE Accuracy

Residual DC offset	<150 mV
Gain drift	25 ppm/°C
Input noise, RMS	
51.2 kS/s	50 μ V
25.6 kS/s	38 μ V
4.27 kS/s	25 μ V
Input impedance	300 k Ω
Input bandwidth, -3 dB	0.49 f_s
Flatness, 10 Hz-20 kHz, referred to 1 kHz	
Typical	\pm 25 mdB
Maximum	\pm 40 mdB
Phase non-linearity, 100 Hz-20 kHz	0.25°
AC cutoff frequency, -3 dB	0.5 Hz
Input delay	$(40 + [5/512])/f_s + 3.9 \mu$ 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, -3 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

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

where

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

Table 10. ±20 mA Accuracy

Gain drift	35 ppm/°C
Offset drift	105 nA/°C
Shunt resistance	3.01 Ω
Input noise, RMS	
51.2 kS/s	1.4 μ A
25.6 kS/s	1.0 μ A
4.27 kS/s	0.5 μ A
Input impedance	45 Ω \pm 30%
Input bandwidth, -3 dB	0.49 f_s
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
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 \pm 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](#)

\pm 60 V Characteristics

The \pm 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	\pm 62.1 V

Minimum	±60 V		
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
Uncalibrated ^[6]	Typical, 23 °C±5 °C	1.3%	200 mV
	Maximum, -40 °C to 70 °C	2.0%	300 mV

Table 10. ±60 V Accuracy

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	$(40 + [5/512])/f_s + 58.7 \mu\text{s}$
NI-9987L	$(40 + [5/512])/f_s + 57.9 \mu\text{s}$
NI-9987F	$(40 + [5/512])/f_s + 27.2 \mu\text{s}$
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 ($f_s = 51.2 \text{ kS/s}$)	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			
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	—

Table 10. Half-Bridge Accuracy

Gain drift		10 ppm/°C	
Offset drift		1.3 μV/V/°C	
Excitation Voltage		Sample Rate	
		4.27 kS/s	51.2 kS/s
3.3 V	0.4 μV/V	1.0 μV/V	1.3 μV/V

Excitation Voltage	Sample Rate		
	4.27 kS/s	25.6 kS/s	51.2 kS/s
2 V	0.7 $\mu\text{V/V}$	1.6 $\mu\text{V/V}$	2.2 $\mu\text{V/V}$

Table 11. Input Noise, RMS

Input bandwidth, -3 dB	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°
Input delay	$(40 + [5/512])/f_s + 3.9 \mu\text{s}$
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 ($f_s = 51.2 \text{ kS/s}$)	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 \pm 3%
3.3 V level	3.3 V \pm 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

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 ^[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	—

Table 10. Quarter-Bridge Accuracy

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

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

Table 11. Input Noise, RMS

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°
Input delay	$(40 + [5/512])/f_s + 3.9 \mu\text{s}$
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 ($f_s = 51.2 \text{ kS/s}$)	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	$2 \text{ V} \pm 3\%$

3.3 V level	3.3 V \pm 3%
Output current	
2 V level	17.8 mA
3.3 V level	10.1 mA

Power Requirements

Maximum power consumption from chassis	
Active mode	900 mW maximum
Sleep mode	500 μ W 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

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

Tip For two-dimensional drawings and three-dimensional models of the C Series module and connectors, visit ni.com/dimensions and search by module number.

Weight

NI 9218 with DSUB	151 g (5.33 oz)
NI 9218 with LEMO	165 g (5.82 oz)

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 0.52 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 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 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test

Caution Any excitation output voltage to earth ground must remain below 60 VDC 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.

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 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test
Channel-to-earth ground (up to 3,000 m)	
Continuous	60 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test
Channel-to-earth ground (up to 5,000 m)	
Continuous	60 VDC, Measurement Category I
Withstand	860 Vrms
Vsup inputs-to-earth ground (up to 5,000 m)	

Continuous	60 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test

Caution Any excitation output voltage to earth ground must remain below 60 VDC 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.

Hazardous Locations

U.S. (UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, AEx nA IIC T4
Canada (C-UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, Ex nA IIC T4
Europe (ATEX) and International (IECEx)	Ex nA IIC T4 Gc

Safety and Hazardous Locations Standards

This product is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1
- EN 60079-0:2012, EN 60079-15:2010
- IEC 60079-0: Ed 6, IEC 60079-15; Ed 4
- UL 60079-0; Ed 5, UL 60079-15; Ed 3

- CSA 60079-0:2011, CSA 60079-15:2012

Note For UL and other safety certifications, refer to the product label or the [Online Product Certification](#) section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use; for radio equipment; and for telecommunication terminal equipment:

- EN 61326-1 (IEC 61326-1): Class A emissions; Industrial immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note For EMC declarations and certifications, and additional information, refer to the [Online Product Certification](#) section.

CE Compliance

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 94/9/EC; Potentially Explosive Atmospheres (ATEX)

Shock and Vibration

To meet these specifications, you must panel mount the system.

Operating vibration	
Random (IEC 60068-2-64)	5 grms, 10 Hz to 500 Hz
Sinusoidal (IEC 60068-2-6)	5 g, 10 Hz to 500 Hz
Operating shock (IEC 60068-2-27)	30 g, 11 ms half sine; 50 g, 3 ms half sine; 18 shocks at 6 orientations

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

Environmental

Refer to the manual for the chassis you are using for more information about meeting these specifications.

Operating temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 70 °C
Storage temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 85 °C
Ingress protection	IP40
Operating humidity (IEC 60068-2-78)	10% RH to 90% RH, noncondensing
Storage humidity (IEC 60068-2-78)	5% RH to 95% RH, noncondensing
Pollution Degree	2
Maximum altitude	5,000 m

Indoor use only.

NI 998x Environmental


Operating temperature	-40 °C to 70 °C
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Environmental Management


NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the **Engineering a Healthy Planet** web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

EU and UK Customers

-  **Waste Electrical and Electronic Equipment (WEEE)**—At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）

-  **中国 RoHS**— NI 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 NI 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

Calibration

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

Calibration interval	2 years
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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.

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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.

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.

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