
NI-9260

Specifications

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Connector Types

In this document, the NI-9260 with BNC and the NI-9260 with mini XLR are referred to inclusively as the NI-9260. The information in this document applies to all versions of the NI-9260 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.

Output Characteristics

Number of channels	2 analog output channels
DAC resolution	24 bits
Type of DAC	Delta-Sigma
Output state	
Power-on	10 k Ω impedance
Power-down	10 k Ω impedance
Startup voltage ^{1,2}	0 V
Output coupling	DC
Internal master timebase (f_M)	
Frequency	13.1072 MHz
Accuracy	± 100 ppm maximum
Data rate range (f_s)	
Using internal master timebase	

1. When the NI-9260 with BNC powers on, a glitch occurs for 500 μ s peaking at 400 mV.
2. A step of 100 mV occurs for 200 μ s when the NI-9260 outputs the first waveform following a power up, reset, or clock source change.

Minimum	1.652 kS/s
Maximum	51.2 kS/s
Using external master timebase	
Minimum	1.613 kS/s
Maximum	51.2 kS/s
Oversample rate	$256 * f_s$
Output delay	$30.767/f_s + 3.2 \mu s$
Overvoltage protection	$\pm 30 V$
Short-circuit protection	Yes
Minimum working load	600Ω
Output impedance	1Ω
Output voltage range	
Minimum	3 V RMS ($\pm 4.243 V_{pk}$)
Typical	3.08 V RMS ($\pm 4.357 V_{pk}$)

Maximum	3.16 V RMS (± 4.468 Vpk)	
Output common voltage ³	± 6 mV	

Table 1. Accuracy

Measurement Conditions		Percent of Reading (Gain Error) ⁴	Percent of Range ⁵ (Offset Error)
Calibrated	Maximum (-40 °C to 70 °C)	$\pm 0.6\%$, ± 0.05 dB	$\pm 0.7\%$, ± 30 mV
	Typical (25 °C, ± 5 °C)	$\pm 0.03\%$, ± 0.0025 dB	$\pm 0.025\%$, ± 1 mV
Uncalibrated ⁶	Maximum (-40 °C to 70 °C)	$\pm 2.6\%$, ± 0.25 dB	$\pm 1.15\%$, ± 50 mV
	Typical (25 °C, ± 5 °C)	$\pm 0.7\%$, ± 0.06 dB	$\pm 0.14\%$, ± 6 mV

Drift	
Gain	25 ppm/°C
Offset	100 μ V/°C
Channel-to-channel mismatch	

3. NI-9260 with mini XLR only

4. Load greater than 10 k Ω . For loads lower than 10 k Ω , the gain error at the module output is affected by the output impedance of the module of 1 Ω .

Additional gain error = $-(\text{output impedance}/\text{resistive load}) * 100$ [%]. For the minimum working load of 600 Ω , this error will be -0.167%.

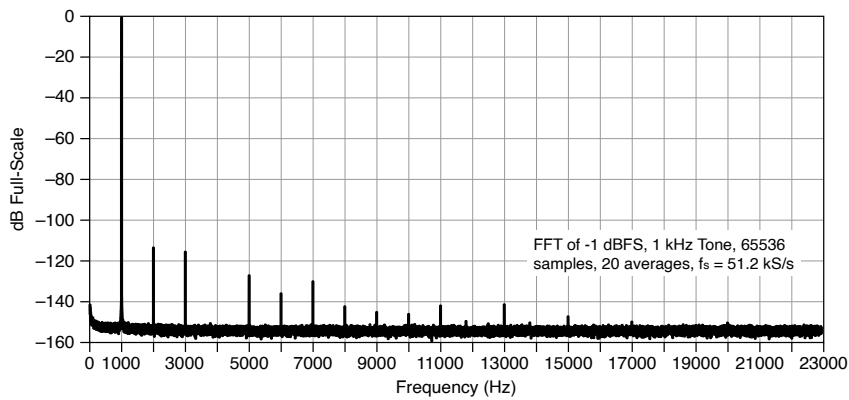
5. Range equals 4.357 Vpk

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.


Gain	0.05 dB	
Phase (f_{in} in kHz)	$f_{in} * 0.033^\circ$ maximum	
Passband		
Frequency	$0.45 * f_s$	
Flatness		
0 Hz to 10 kHz	-0.02 dB	
0 Hz to 23 kHz	-0.13 dB	
Phase linearity	$\pm 0.1^\circ$	
Stopband		
Frequency	$0.55 * f_s$	
Rejection	100 dB	
Image rejection ($f_s = 51.2$ kS/s)	>70 dB	
Crosstalk (20 Hz to 23 kHz)	-120 dBc	
Non-harmonic SFDR ($f_s = 51.2$ kS/s)	-130 dB	

Idle channel noise	10 μ V RMS
Dynamic range ⁷	110 dB
Intermodulation Distortion (IMD) ⁸	-110 dB

Figure 1. Power Spectrum



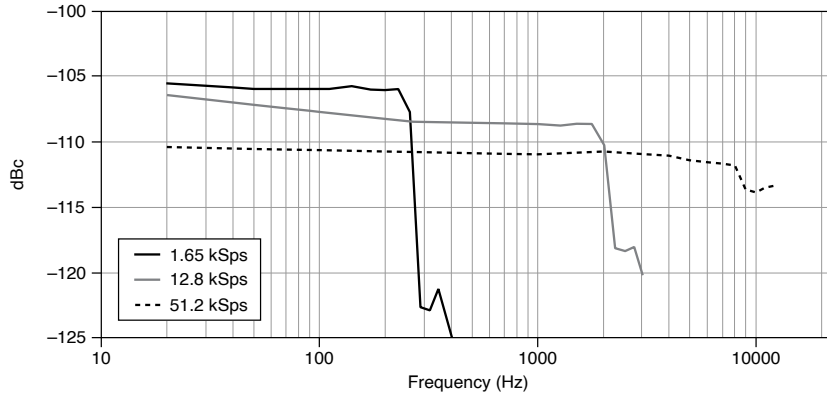
THD+N	-105 dB
THD	-110 dB

 **Note** -1 dBFS, $f_s = 51.2$ kS/s, BW = 20 Hz to 23 kHz.

7. 1 kHz output frequency, -60 dBFS output amplitude, BW = 23 kHz

8. CCIF 14 kHz + 15 kHz, each tone amplitude is -6 dBFS

Figure 2. THD vs Frequency



Power Requirements

Power consumption from chassis	
Active mode	0.93 W maximum
Sleep mode	500 μ W maximum
Thermal dissipation (at 70 °C)	
NI-9260 with BNC	
Active mode	0.84 W maximum
Sleep mode	0.34 W maximum
NI-9260 with mini XLR	
Active mode	1.23 W maximum
Sleep mode	0.73 W maximum

Physical Characteristics

Weight	
NI-9260 with BNC	150 g (5.3 oz)
NI-9260 with mini XLR	140 g (4.9 oz)

Safety Voltages

AO-to-COM voltage	3.16 V RMS (± 4.68 V peak) maximum
Overtoltage protection	± 30 V
Channel-to-earth ground	± 30 V maximum
Isolation Voltages	
Channel-to-channel	None
Channel-to-earth ground	None

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.

Calibration

You can obtain the calibration certificate and information about calibration services for the NI-9260 at ni.com/calibration.

Calibration interval	1 year
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