

DEVICE SPECIFICATIONS

NI PXIe-4339

8 Ch, 24-bit, 25.6 kS/s Universal Bridge Input Module

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This document lists specifications for the NI PXIe-4339 universal bridge module. All specifications are subject to change without notice. Visit ni.com/manuals for the most current specifications and product documentation.



Note To maintain forced air cooling in the PXIe system, refer to the *Maintain Forced-Air Cooling Note to Users*.

Terminology

Maximum and *minimum* specifications characterize the warranted performance of the instrument within the recommended calibration interval and under the stated operating conditions. These specifications are subject to production verification or guaranteed by design.

Typical specifications are specifications met by the majority of the instruments within the recommended calibration interval and under the stated operating conditions, based on measurements taken during production verification and/or engineering development. The performance of the instrument is not warranted.

Supplemental specifications describe the basic function and attributes of the instrument established by design and are not subject to production verification. They provide information that is relevant for the adequate use of the instrument that is not included in the previous definitions.

All performance specifications are *typical* unless otherwise noted. These specifications are valid within the full operating temperature range. Accuracy specifications are valid within ± 5 °C of the calibration or over the full operating range as specifically noted.

Input Characteristics

Number of channels.....	8 analog input channels
ADC resolution.....	24 bits
Type of ADC.....	Delta-sigma
Sampling mode.....	Simultaneous

Voltage mode input ranges	±100 mV, ±200 mV, ±500 mV, and ±10 V
Ratiometric mode input ranges	
$V_{ex} \leq 2.5 \text{ V}$	±40 mV/V, ±80 mV/V, ±200 mV/V, and ±4 V/V
$V_{ex} \geq 2.75 \text{ V}$	±10 mV/V, ±20 mV/V, ±50 mV/V, and ±1 V/V
Maximum working voltage (signal + common mode)	±10.5 V for ±10 V, ±1 V/V, and ±4 V/V ranges ±6 V for all other ranges
CMRR (DC to 60 Hz)	72 dB
FIFO buffer size	1,023 samples
Data transfers	Direct memory access (DMA), Programmed I/O
Sample rates (f_s)	
Range	1 S/s to 25.6 kS/s
Resolution	≤181.9 $\mu\text{S/s}$

Fault Protection (powered On or Off)

Signal	Level
AI ±<0..7>	30 V between any two pins
RS ±<0..7>	
T ±<0..7>	
EX ±<0..7>	
AO ±<0..7>	
SCA <0..7>	
PFI0	
RSVD	24 V to GND

Bridge Completion

Half-bridge completion	
Offset tolerance	±1000 $\mu\text{V/V}$ max, 150 $\mu\text{V/V}$ typ
Stability	1.25 $\mu\text{V/V}$ per °C max, 0.75 $\mu\text{V/V}$ per °C typ
Quarter-bridge completion	Surface mount resistor inside the TB-4339 terminal block. Varies by terminal block. Refer to the <i>NI PXIe-4339 and TB-4339/B/C Installation Guide and Terminal Block Specifications</i> for more information.

Shunt Calibration

Type	Single shunt switch per channel
Resistor	Surface mount resistor inside the TB-4339 terminal block. Varies by terminal block. Refer to the <i>NI PXIe-4339 and TB-4339/B/C Installation Guide and Terminal Block Specifications</i> for more information.
Shunt cal switch	
Switch resistance	10,025 Ω $\pm$ 0.20% max at 23 $^{\circ}$ C
Stability	65 ppm/ $^{\circ}$ C max

Excitation Characteristics

Selection	Software selectable, per channel
Excitation type	Constant differential voltage (balanced)
Values (V_{ex})	0.625 V, 1 V, 1.5 V, 2 V, 2.5 V, 2.75 V, 3.3 V, 5 V, 7.5 V, 10 V
Maximum current	30 mA per channel
Maximum fault current	38 mA per channel

Maximum Voltage Excitation Settings versus Bridge Configuration

Bridge Resistance (individual element)	Bridge Configuration	V_{ex} (max)
120 Ω	Full	3.3 V
	Half and Quarter	5 V
350 Ω	Full	10 V
	Half and Quarter	
1 k Ω	Full	
	Half and Quarter	

Excitation noise	250 μ V _{rms} (bandwidth = 11.5 kHz)
Continuous short-circuit protection	EX+ to GND, EX- to GND, EX+ to EX-

Accuracy¹

Measurement Conditions	Range: ± 100 mV	
	Gain Error (% of Reading)	Offset Error (μ V)*
typ (23 °C ± 5 °C)	0.02	19
max (23 °C ± 5 °C)	0.06	74
max (0 °C to 55 °C)	0.18	133
* Offset error excludes noise. Refer to the Input Noise specifications.		

Measurement Conditions	Range: ± 200 mV	
	Gain Error (% of Reading)	Offset Error (μ V)*
typ (23 °C ± 5 °C)	0.02	22
max (23 °C ± 5 °C)	0.06	89
max (0 °C to 55 °C)	0.18	165
* Offset error excludes noise. Refer to the Input Noise specifications.		

Measurement Conditions	Range: ± 500 mV	
	Gain Error (% of Reading)	Offset Error (μ V)*
typ (23 °C ± 5 °C)	0.02	27
max (23 °C ± 5 °C)	0.06	133
max (0 °C to 55 °C)	0.18	252
* Offset error excludes noise. Refer to the Input Noise specifications.		

Measurement Conditions	Range: ± 10 V	
	Gain Error (% of Reading)	Offset Error (μ V)*
typ (23 °C ± 5 °C)	0.02	273
max (23 °C ± 5 °C)	0.06	1561
max (0 °C to 55 °C)	0.18	3073
* Offset error excludes noise. Refer to the Input Noise specifications.		

¹ Accuracies listed are warranted for the conditions described in the tables and for up to one year from the module external calibration.

Measurement Conditions*	Range: ± 10 mV/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.02	19/V _{ex}
max ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.1	74/V _{ex}
max ($0\text{ }^{\circ}\text{C}$ to $55\text{ }^{\circ}\text{C}$)	0.2	133/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 10 V, Offset Error is calculated as $19/\text{V}_{\text{ex}} = 19\text{ }\mu\text{V}/10\text{ V} = 1.9\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ± 20 mV/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.02	22/V _{ex}
max ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.1	89/V _{ex}
max ($0\text{ }^{\circ}\text{C}$ to $55\text{ }^{\circ}\text{C}$)	0.2	165/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 10 V, Offset Error is calculated as $22/\text{V}_{\text{ex}} = 22\text{ }\mu\text{V}/10\text{ V} = 2.2\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ± 50 mV/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.02	27/V _{ex}
max ($23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$)	0.1	133/V _{ex}
max ($0\text{ }^{\circ}\text{C}$ to $55\text{ }^{\circ}\text{C}$)	0.2	252/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 10 V, Offset Error is calculated as $27/\text{V}_{\text{ex}} = 27\text{ }\mu\text{V}/10\text{ V} = 2.7\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ± 1 V/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ (23 °C ± 5 °C)	0.02	273/V _{ex}
max (23 °C ± 5 °C)	0.1	1561/V _{ex}
max (0 °C to 55 °C)	0.2	2073/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 10 V, Offset Error is calculated as $273/\text{V}_{\text{ex}} = 273\text{ }\mu\text{V}/10\text{ V} = 27.3\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ± 40 mV/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ (23 °C ± 5 °C)	0.02	19/V _{ex}
max (23 °C ± 5 °C)	0.1	74/V _{ex}
max (0 °C to 55 °C)	0.2	133/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 2.5 V, Offset Error is calculated as $19/\text{V}_{\text{ex}} = 19\text{ }\mu\text{V}/2.5\text{ V} = 7.6\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ± 80 mV/V	
	Gain Error (% of Reading)	Offset Error ($\mu\text{V/V}$)†
typ (23 °C ± 5 °C)	0.02	22/V _{ex}
max (23 °C ± 5 °C)	0.1	89/V _{ex}
max (0 °C to 55 °C)	0.2	165/V _{ex}
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{\text{cm}} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: V_{ex} is the excitation voltage. For example: With V_{ex} = 2.5 V, Offset Error is calculated as $22/\text{V}_{\text{ex}} = 22\text{ }\mu\text{V}/2.5\text{ V} = 8.8\text{ }\mu\text{V/V}$.		

Measurement Conditions*	Range: ±200 mV/V	
	Gain Error (% of Reading)	Offset Error (µV/V)†
typ (23 °C ±5 °C)	0.02	27/Vex
max (23 °C ±5 °C)	0.1	133/Vex
max (0 °C to 55 °C)	0.2	252/Vex
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{cm} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: Vex is the excitation voltage. For example: With $V_{ex} = 2.5\text{ V}$, Offset Error is calculated as $27/V_{ex} = 27\text{ µV}/2.5\text{ V} = 10.8\text{ µV/V}$.		

Measurement Conditions*	Range: ±4 V/V	
	Gain Error (% of Reading)	Offset Error (µV/V)†
typ (23 °C ±5 °C)	0.02	273/Vex
max (23 °C ±5 °C)	0.1	1561/Vex
max (0 °C to 55 °C)	0.2	3073/Vex
* Before offset null or shunt calibration, $-0.1\text{ V} \leq V_{cm} \leq 0.1\text{ V}$. V_{cm} is the common-mode voltage. † Offset error excludes noise. Refer to the Input Noise specifications. Note: Vex is the excitation voltage. For example: With $V_{ex} = 2.5\text{ V}$, Offset Error is calculated as $273/V_{ex} = 273\text{ µV}/2.5\text{ V} = 109.2\text{ µV/V}$.		

Absolute Accuracy

Absolute Accuracy = *Reading* × *Gain Error* + *Offset Error* + *Noise Uncertainty*,

$$\text{Noise Uncertainty} = 3 \times \frac{\text{Random Noise}}{\sqrt{\# \text{ samples}}}$$

where *Random Noise* is the Input noise for the Sample Rate used,
 3 converts the RMS value to peak value,
 # *samples* is the number of samples averaged

If the operating ambient temperature is outside the range of 23 °C ±5 °C, include additional gain error of $\Delta T \times \textit{Gain Stability}$ and additional offset error of $\Delta T \times \textit{Offset Stability}$

where ΔT is the temperature difference between the ambient temperature and 18 °C or 28 °C, whichever is smaller.

Temperature Stability

Voltage Mode

Range: ± 100 mV

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	2.2 μ V/ $^{\circ}$ C max
	0.3 μ V/ $^{\circ}$ C typ

Range: ± 200 mV

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	2.8 μ V/ $^{\circ}$ C max
	0.4 μ V/ $^{\circ}$ C typ

Range: ± 500 mV

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	4.4 μ V/ $^{\circ}$ C max
	0.64 μ V/ $^{\circ}$ C typ

Range: ± 10 V

Gain stability.....	20 ppm/ $^{\circ}$ C max
	4 ppm/ $^{\circ}$ C typ
Offset stability.....	56 μ V/ $^{\circ}$ C max
	11.5 μ V/ $^{\circ}$ C typ

Ratio Mode

Range: ± 10 mV/V and ± 40 mV/V

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	2.2 μ V/Vex per $^{\circ}$ C max
	0.3 μ V/Vex per $^{\circ}$ C typ

Range: ± 20 mV/V and ± 80 mV/V

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	2.8 μ V/Vex per $^{\circ}$ C max
	0.4 μ V/Vex per $^{\circ}$ C typ

Range: ± 50 mV/V and ± 200 mV/V

Gain stability.....	25 ppm/ $^{\circ}$ C max
	5 ppm/ $^{\circ}$ C typ
Offset stability.....	4.4 μ V/Vex per $^{\circ}$ C max
	0.64 μ V/Vex per $^{\circ}$ C typ

Range: ± 1 V/V and ± 4 V/V

Gain stability.....	20 ppm/°C max 4 ppm/°C typ
Offset stability	56 μ V/Vex per °C max 11.5 μ V/Vex per °C typ

Input Noise

Table 1. Total (μ V/Vrms)*, $f_s = 25.6$ kS/s, 350 Ω Full Bridge

Excitation Voltage	Range ($\pm$ mV/V)							
	10	20	50	1000	40	80	200	4000
0.625 V	—	—	—	—	3.54	3.74	4.66	54.72
1 V	—	—	—	—	2.21	2.34	2.91	34.20
1.5 V	—	—	—	—	1.47	1.56	1.94	22.80
2 V	—	—	—	—	1.11	1.17	1.46	17.10
2.5 V	—	—	—	—	0.88	0.94	1.16	13.68
2.75 V	0.80	0.85	1.06	12.44	—	—	—	—
3.3 V	0.67	0.71	0.88	10.36	—	—	—	—
5 V	0.44	0.47	0.58	6.84	—	—	—	—
7.5 V	0.29	0.31	0.39	4.56	—	—	—	—
10 V	0.22	0.23	0.29	3.42	—	—	—	—
* For lower sample rates multiply by $\sqrt{\frac{f_s}{25.6 \text{ kS/s}}}$, $1 \text{ kS/s} \leq f_s < 25.6 \text{ kS/s}$.								

Table 2. Total (μ Vrms)*, $f_s = 25.6$ kS/s

Range ($\pm$ mV)			
100	200	500	10000
2.21	2.34	2.91	34.2
* For lower sample rates multiply by $\sqrt{\frac{f_s}{25.6 \text{ kS/s}}}$, $1 \text{ kS/s} \leq f_s < 25.6 \text{ kS/s}$.			

Channel-to-channel matching¹

Input signal frequency (f_{in}).....	DC to 11.5 kHz
Gain.....	0.3%
Phase	$\frac{0.035^{\circ}}{\text{kHz}} \times f_{in}$

Phase linearity

(f_{in} = DC to 11.5 kHz)	$\pm 0.3^{\circ}$
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Spurious free dynamic range (SFDR)

1 kHz, -60 dB FS	100 dB
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Total harmonic distortion (THD)

1 kHz, -1 dB FS	-88 dB
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Crosstalk (μV_{rms} @ 1 kHz)	
Other Channels Operating at Full Scale	Other Channels Operating at Half Scale
4	2

Filter Group Delay

Analog input delay

Input Range	Delay (μs)
10 V, 1 V/V, and 4 V/V	6.1
0.5 V, 0.05 V/V, and 0.2 V/V	6.6
0.2 V, 0.02 V/V, and 0.08 V/V	7.1
0.1 V, 0.01 V/V, and 0.04 V/V	7.9

¹ Identical channel configurations.

Digital filter group delay^{1, 2} 1.90976 ms + Variable Filter Delay

Sample Rate* (f_s)	Variable Filter Delay (Samples)
$1 \text{ S/s} \leq f_s < 25 \text{ S/s}$	3.99
$25 \text{ S/s} \leq f_s \leq 47.7 \text{ S/s}$	58.00
$47.7 \text{ S/s} < f_s \leq 95.4 \text{ S/s}$	57.99
$95.4 \text{ S/s} < f_s \leq 190.7 \text{ S/s}$	57.97
$190.7 \text{ S/s} < f_s \leq 381.5 \text{ S/s}$	57.93
$381.5 \text{ S/s} < f_s \leq 762.9 \text{ S/s}$	57.86
$762.9 \text{ S/s} < f_s \leq 1525.9 \text{ S/s}$	57.71
$1525.9 \text{ S/s} < f_s \leq 3051.8 \text{ S/s}$	57.41
$3051.8 \text{ S/s} < f_s \leq 6103.5 \text{ S/s}$	56.82
$6103.5 \text{ S/s} < f_s \leq 12207.0 \text{ S/s}$	55.63
$12207.0 \text{ S/s} < f_s \leq 24414.1 \text{ S/s}$	53.25
$24414.1 \text{ S/s} < f_s \leq 25600 \text{ S/s}$	48.50
* Sample rate range shown is rounded to 0.1 S/s. Precise numbers can be calculated as $100,000,000 \div 2^n$ where n is in the range of 12 to 21. For example, the full number for 24414.1 is $100,000,000 \div 2^{12} = 24414.0625$.	

Bandwidth and Alias Rejection

Passband

- Frequency (for $1 \text{ S/s} \leq f_s < 25 \text{ S/s}$)..... $0.1 \times f_s$
- Frequency
(for $25 \text{ S/s} \leq f_s \leq 25.6 \text{ kS/s}$)..... $0.45 \times f_s$
- Flatness 0.18 dB for $\pm 100 \text{ mV}$,
 $\pm 10 \text{ mV/V}$, and $\pm 40 \text{ mV/V}$ ranges
0.1 dB for all other ranges

¹ Digital filter group delay defines the maximum amount of time required after the digitization of a sample begins until the sample is available to be read. The Sample Clock generated by this device for exporting across the PXIe backplane is not affected by the Digital Filter Group Delay.

² Total digital filter group delay is the total of the fixed portion and the variable delay. For example, the total digital filter group delay for a 10,000 S/s sample rate would be

$1.90976 \text{ ms} + \frac{55.63 \text{ S}}{10,000 \text{ S/s}} = 7.47276 \text{ ms} .$

Stopband

Frequency (for $1 \text{ S/s} \leq f_s < 25 \text{ S/s}$).....	$\geq 0.9 \times f_s$
Frequency (for $25 \text{ S/s} \leq f_s \leq 25.6 \text{ kS/s}$).....	$\geq 0.55 \times f_s$
Rejection	100 dB

Alias-free bandwidth

(for $1 \text{ S/s} \leq f_s < 25 \text{ S/s}$).....	$0.1 \times f_s$
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Alias-free bandwidth

(for $25 \text{ S/s} \leq f_s \leq 25.6 \text{ kS/s}$).....	$0.45 \times f_s$
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Minimum frequency

for ADC alias hole	3.125 MHz
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Rejection at alias hole	90 dB
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Hardware-Timed Single Point Sample Mode

Acquisition rate¹

Minimum	1 Hz
Maximum	25.6 kHz

Noise (rms)

$\pm 10 \text{ V}$ range	$25 \mu\text{V}_{\text{rms}}$ voltage mode
$\pm 500 \text{ mV}$ range	$1.53 \mu\text{V}_{\text{rms}}$ voltage mode
$\pm 200 \text{ mV}$ range	$1.05 \mu\text{V}_{\text{rms}}$ voltage mode
$\pm 100 \text{ mV}$ range	$950 \text{ nV}_{\text{rms}}$ voltage mode

Hardware-Timed Single Point Filtering

Filter type	Fourth order, elliptic filter
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Stopband attenuation.....	-120 dB
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Passband ripple	0.2 dB
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¹ Depends on the system setup and application time. Refer to the *NI PXIe-4339 User Manual* for more information.

Figure 1. Filter Magnitude Response

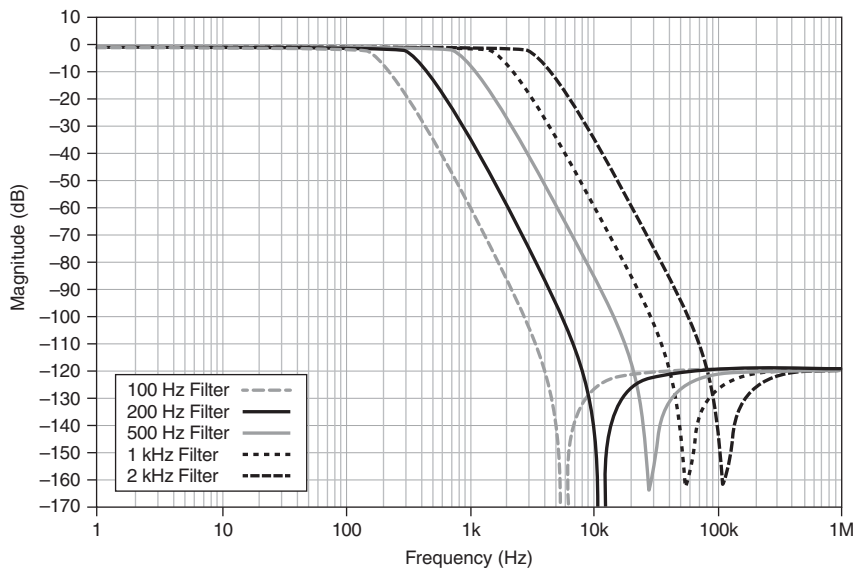


Figure 2. Passband Ripple

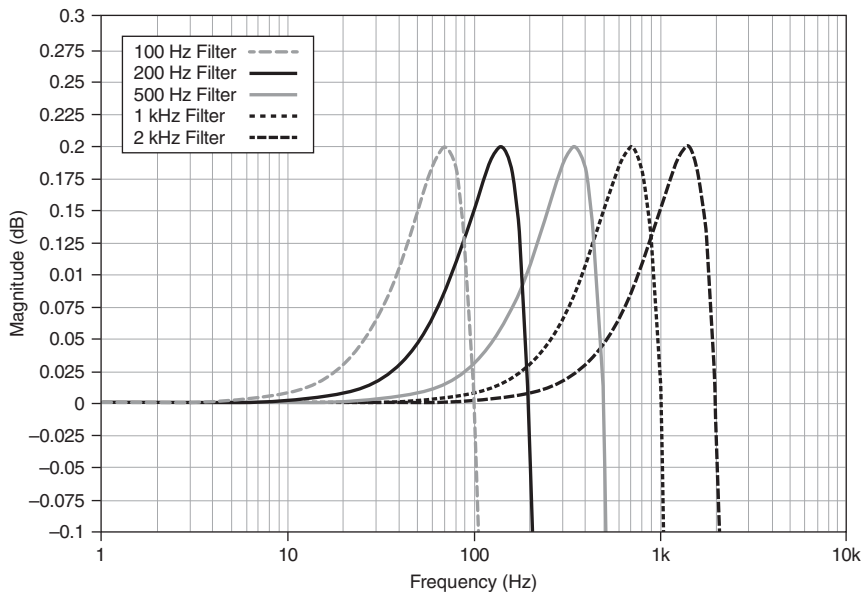


Figure 3. Filter Phase Response

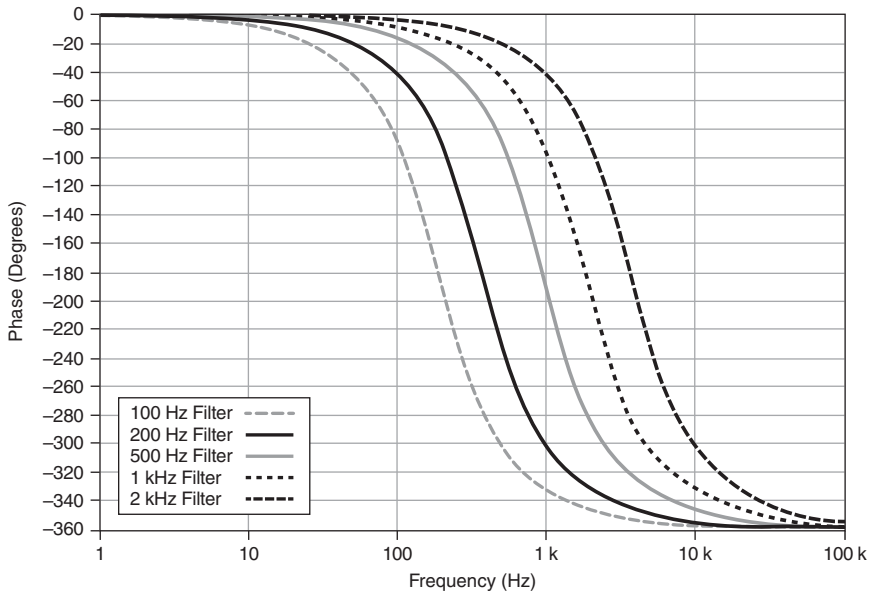


Figure 4. Filter Group Delay

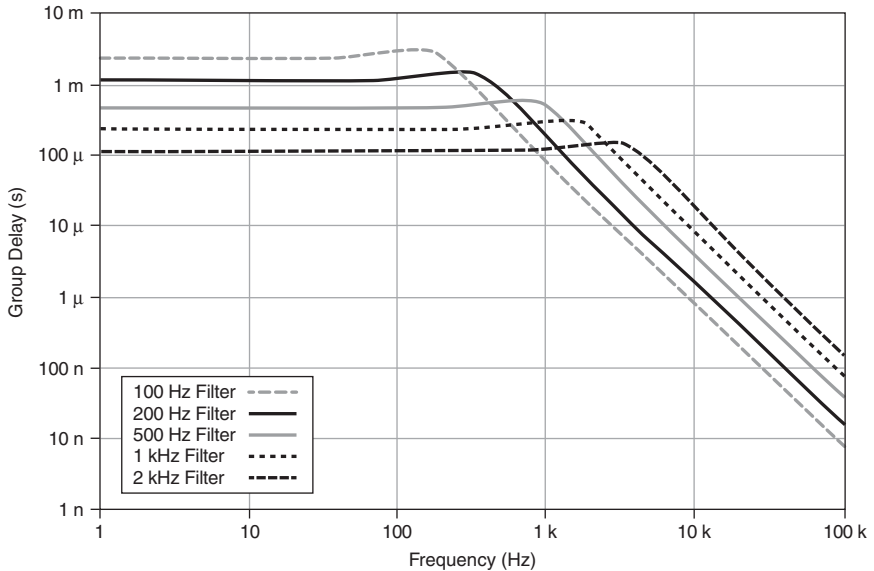


Table 3. Digital Filter Group Delay

Filter Cut-Off Frequency	Group Delay at 1 Hz
2 kHz Filter	113.9 μ s
1 kHz Filter	227.7 μ s
500 Hz Filter	455.4 μ s
200 Hz Filter	1.1386 ms
100 Hz Filter	2.28 ms

Hardware-timed single
point ADC group delay¹ 1.6 μ s

Transducer Electronic Data Sheet (TEDS) Support

Number of channels 8
Standard IEEE 1451 Class II

Buffered Analog Output

Output voltage range ± 10 V
Output current 2 mA minimum
Slew rate 0.65 V/ μ s
Capacitive drive 1 nF

¹ When in hardware-timed single point mode, *Total group delay = ADC group delay + Filter group delay.*

Output Noise

Front-End Gain (Ranges)	Output Noise (μV_{rms} , Measurement Bandwidth = 10 kHz)
1 ($\pm 10\text{ V}$, $\pm 1\text{ V/V}$, $\pm 4\text{ V/V}$)	9.5
20 ($\pm 0.5\text{ V}$, $\pm 50\text{ mV/V}$, $\pm 200\text{ mV/V}$)	48
50 ($\pm 0.2\text{ V}$, $\pm 20\text{ mV/V}$, $\pm 80\text{ mV/V}$)	112
100 ($\pm 0.1\text{ V}$, $\pm 10\text{ mV/V}$, $\pm 40\text{ mV/V}$)	220

Gain error 0.6% max

Output Offset Error

Front-End Gain (Ranges)	Output Offset Error (mV), max
1 ($\pm 10\text{ V}$, $\pm 1\text{ V/V}$, $\pm 4\text{ V/V}$)	0.6
20 ($\pm 0.5\text{ V}$, $\pm 50\text{ mV/V}$, $\pm 200\text{ mV/V}$)	5.6
50 ($\pm 0.2\text{ V}$, $\pm 20\text{ mV/V}$, $\pm 80\text{ mV/V}$)	13.3
100 ($\pm 0.1\text{ V}$, $\pm 10\text{ mV/V}$, $\pm 40\text{ mV/V}$)	26.4

Internal Frequency Timebase Characteristics

Frequency 100 MHz

Accuracy $\pm 50\text{ ppm}$

Synchronization

Reference clock source	Onboard 100 MHz clock, Backplane PXIe_CLK100
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Triggers

Analog trigger	
Purpose	Reference trigger only
Source	AI <0..7>
Level	Full scale (depending on input range), programmable
Mode	Rising-edge, Rising-edge with hysteresis, Falling-edge, Falling-edge with hysteresis, Entering Window, Leaving Window
Resolution	24 bits
Digital trigger	
Purpose	Start or reference trigger
Source	PFI0, PXI_TRIG<0..7>, PXI_STAR, PXIe_DSTAR<A..B>
Polarity	Software-selectable
Minimum pulse width	100 ns for PXI_TRIG<0..7>, 20 ns for others

Output Timing Signals

Sources	Sample Clock, Start Trigger Out, Reference Trigger Out
Destinations	PFI0, PXI_TRIG<0..7>, PXIe_DSTARC
Polarity	Software-selectable

PFI Characteristics

Input

Absolute input voltage range	-0.5 V to 6.0 V
Recommended input voltage range.....	0 V to 5.5 V
V _{IH}	2.43 V
V _{IL}	0.94 V
Input impedance.....	10 kΩ typical, internal pull down resistor

Output

V _{OH}	3 V with I _{OH} = 100 μA
	2.8 V with I _{OH} = 5 mA
V _{OL}	0.1 V with I _{OL} = -100 μA
	0.33 V with I _{OL} = -5 mA
Output range	0 V to 3.465 V
Output current	±5 mA
Output impedance	50 Ω

Bus Interface

Form factor	x1 PXI Express peripheral module, Specification rev 1.0 compliant
Slot compatibility.....	x1 and x4 PXI Express or PXI Express hybrid slots
DMA channels	1, analog input

Calibration

You can obtain the calibration certificate and information about calibration services for the NI PXIe-4339 at ni.com/calibration.

Recommended warm-up time	15 minutes
Calibration interval	1 year

Power Requirements

+12 V	1.5 A max
+3.3 V	2.5 A max

Physical Requirements

Dimensions	Standard 3U PXIe, 16 cm × 10 cm (6.3 in. × 3.9 in.)
Weight.....	186 g (6.6 oz)
I/O connector	96-pin male DIN 41612/IEC 60603-2 connector



Caution Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free from contaminants before returning it to service.

Environmental Specifications

Maximum altitude.....	2,000 m (800 mbar)
Pollution Degree	2
Indoor use only.	

Operating Environment

Ambient temperature range	0 °C to 55 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 low temperature limit and MIL-PRF-28800F Class 2 high temperature limit.)
Relative humidity range.....	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Storage Environment

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2. Meets MIL-PRF-28800F Class 3 limits.)
Relative humidity range.....	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

Shock and Vibration

Operating shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Meets MIL-PRF-28800F Class 2 limits.)
Random vibration	
Operating	5 Hz to 500 Hz, 0.3 g _{rms}
Non-operating	5 Hz to 500 Hz, 2.4 g _{rms} (Tested in accordance with IEC 60068-2-64. Non-operating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

Safety

This product meets the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1



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



Caution The protection provided by the NI PXIe-4339 can be impaired if it is used in a manner not described in this documents.

Electromagnetic Compatibility

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

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic 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 C €

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)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit [ni.com/certification](#), search by model number or product line, and click the appropriate link in the Certification column.

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 *Minimize Our Environmental Impact* 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.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit [ni.com/environment/weee](#).

电子信息产品污染控制管理办法（中国 RoHS）



中国客户 National Instruments 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 National Instruments 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](#).)

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