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DEVICE SPECIFICATIONS

# NI PXIe-4339

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

Français Deutsch 日本語 한국어 简体中文

ni.com/manuals

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

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Voltage mode input ranges ..... ±100 mV, ±200 mV, ±500 mV, and ±10 V

Ratiometric mode input ranges

$V_{ex} \leq 2.5$ V ..... ±40 mV/V, ±80 mV/V, ±200 mV/V, and ±4 V/V

$V_{ex} \geq 2.75$ 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 µS/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 µV/V max, 150 µV/V typ

Stability ..... 1.25 µV/V per °C max, 0.75 µV/V per °C typ

Quarter-bridge completion ..... Surface mount resistor inside the TB-4339 terminal block. Varies by terminal block. Refer to the *NI PXIe-4339 and TB-4339/B/C Installation Guide and Terminal Block Specifications* for more information.



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## 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 *NI PXIe-4339 and TB-4339/B/C Installation Guide and Terminal Block Specifications* for more information.

Shunt cal switch

- Switch resistance ..... 10,025 Ω ±0.20% max at 23 °C
- Stability ..... 65 ppm/°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 kΩ | Full | |
| | Half and Quarter | |

Excitation noise ..... 250 $\mu V_{rms}$ (bandwidth = 11.5 kHz)

Continuous short-circuit protection ..... EX+ to GND, EX- to GND, EX+ to EX-



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# Accuracy[1]

| Measurement Conditions | Range: ±100 mV | |
|---|---|---|
| | Gain Error (% of Reading) | Offset Error (µV)* |
| 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 (µV)* |
| 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 (µV)* |
| 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 (µV)* |
| 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.



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| Measurement Conditions* | Range: ±10 mV/V | |
|---|---|---|
| | Gain Error (% of Reading) | Offset Error (µV/V)† |
| typ (23 °C ±5 °C) | 0.02 | 19/Vex |
| max (23 °C ±5 °C) | 0.1 | 74/Vex |
| max (0 °C to 55 °C) | 0.2 | 133/Vex |

* Before offset null or shunt calibration, -0.1 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 10 V, Offset Error is calculated as 19/Vex = 19 µV/10 V = 1.9 µV/V.

| Measurement Conditions* | Range: ±20 mV/V | |
|---|---|---|
| | Gain Error (% of Reading) | Offset Error (µV/V)† |
| typ (23 °C ±5 °C) | 0.02 | 22/Vex |
| max (23 °C ±5 °C) | 0.1 | 89/Vex |
| max (0 °C to 55 °C) | 0.2 | 165/Vex |

* Before offset null or shunt calibration, -0.1 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 10 V, Offset Error is calculated as 22/Vex = 22 µV/10 V = 2.2 µV/V.

| Measurement Conditions* | Range: ±50 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 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 10 V, Offset Error is calculated as 27/Vex = 27 µV/10 V = 2.7 µV/V.



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| Measurement Conditions* | Range: ±1 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 | 2073/Vex |

* Before offset null or shunt calibration, -0.1 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 10 V, Offset Error is calculated as 273/Vex = 273 µV/10 V = 27.3 µV/V.

| Measurement Conditions* | Range: ±40 mV/V | |
|---|---|---|
| | Gain Error (% of Reading) | Offset Error (µV/V)† |
| typ (23 °C ±5 °C) | 0.02 | 19/Vex |
| max (23 °C ±5 °C) | 0.1 | 74/Vex |
| max (0 °C to 55 °C) | 0.2 | 133/Vex |

* Before offset null or shunt calibration, -0.1 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 2.5 V, Offset Error is calculated as 19/Vex = 19 µV/2.5 V = 7.6 µV/V.

| Measurement Conditions* | Range: ±80 mV/V | |
|---|---|---|
| | Gain Error (% of Reading) | Offset Error (µV/V)† |
| typ (23 °C ±5 °C) | 0.02 | 22/Vex |
| max (23 °C ±5 °C) | 0.1 | 89/Vex |
| max (0 °C to 55 °C) | 0.2 | 165/Vex |

* Before offset null or shunt calibration, -0.1 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 2.5 V, Offset Error is calculated as 22/Vex = 22 µV/2.5 V = 8.8 µV/V.



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| 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 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 2.5 V, Offset Error is calculated as 27/Vex = 27 µV/2.5 V = 10.8 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 V ≤ Vcm ≤ 0.1 V. Vcm is the common-mode voltage.
† Offset error excludes noise. Refer to the *Input Noise* specifications.
**Note**: Vex is the excitation voltage. For example: With Vex = 2.5 V, Offset Error is calculated as 273/Vex = 273 µV/2.5 V = 109.2 µV/V.

# Absolute Accuracy

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

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

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 ΔT × *Gain Stability* and additional offset error of ΔT × *Offset Stability*

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



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# Temperature Stability

## Voltage Mode

Range: ±100 mV

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....2.2 µV/°C max
0.3 µV/°C typ

Range: ±200 mV

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....2.8 µV/°C max
0.4 µV/°C typ

Range: ±500 mV

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....4.4 µV/°C max
0.64 µV/°C typ

Range: ±10 V

Gain stability.....20 ppm/°C max
4 ppm/°C typ

Offset stability.....56 µV/°C max
11.5 µV/°C typ

## Ratio Mode

Range: ±10 mV/V and ±40 mV/V

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....2.2 µV/Vex per °C max
0.3 µV/Vex per °C typ

Range: ±20 mV/V and ±80 mV/V

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....2.8 µV/Vex per °C max
0.4 µV/Vex per °C typ

Range: ±50 mV/V and ±200 mV/V

Gain stability.....25 ppm/°C max
5 ppm/°C typ

Offset stability.....4.4 µV/Vex per °C max
0.64 µV/Vex per °C typ



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Range: ±1 V/V and ±4 V/V

Gain stability..... 20 ppm/°C max
4 ppm/°C typ

Offset stability ..... 56 µV/Vex per °C max
11.5 µV/Vex per °C typ

# Input Noise

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

| Excitation Voltage | Range (±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 kS/s ≤ $f_s$ < 25.6 kS/s.

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

| Range (±mV) | | | |
|---|---|---|---|
| **100** | **200** | **500** | **1000** |
| 2.21 | 2.34 | 2.91 | 34.2 |

* For lower sample rates multiply by $\sqrt{\frac{f_s}{25.6\ \text{kS/s}}}$, 1 kS/s ≤ $f_s$ < 25.6 kS/s.



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Channel-to-channel matching[1]

Input signal frequency ($f_{in}$)..... DC to 11.5 kHz

Gain..... 0.3%

Phase ..... $\frac{0.035°}{\text{kHz}} \times f_{in}$

Phase linearity
($f_{in}$ = DC to 11.5 kHz) ..... ±0.3°

Spurious free dynamic range (SFDR)

1 kHz, -60 dB FS ..... 100 dB

Total harmonic distortion (THD)

1 kHz, -1 dB FS ..... -88 dB

| Crosstalk ($\mu V_{rms}$ @ 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.



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Digital filter group delay[1, 2] ..... 1.90976 ms + Variable Filter Delay

| Sample Rate* ($f_s$) | Variable Filter Delay (Samples) |
|---|---|
| 1 S/s ≤ $f_s$ < 25 S/s | 3.99 |
| 25 S/s ≤ $f_s$ ≤ 47.7 S/s | 58.00 |
| 47.7 S/s < $f_s$ ≤ 95.4 S/s | 57.99 |
| 95.4 S/s < $f_s$ ≤ 190.7 S/s | 57.97 |
| 190.7 S/s < $f_s$ ≤ 381.5 S/s | 57.93 |
| 381.5 S/s < $f_s$ ≤ 762.9 S/s | 57.86 |
| 762.9 S/s < $f_s$ ≤ 1525.9 S/s | 57.71 |
| 1525.9 S/s < $f_s$ ≤ 3051.8 S/s | 57.41 |
| 3051.8 S/s < $f_s$ ≤ 6103.5 S/s | 56.82 |
| 6103.5 S/s < $f_s$ ≤ 12207.0 S/s | 55.63 |
| 12207.0 S/s < $f_s$ ≤ 24414.1 S/s | 53.25 |
| 24414.1 S/s < $f_s$ ≤ 25600 S/s | 48.50 |

* Sample rate range shown is rounded to 0.1 S/s.
Precise numbers can be calculated as 100,000,000 ÷ $2^n$ where $n$ is in the range of 12 to 21.
For example, the full number for 24414.1 is 100,000,000 ÷ $2^{12}$ = 24414.0625.

# Bandwidth and Alias Rejection

Passband

Frequency (for 1 S/s ≤ $f_s$ < 25 S/s)..... 0.1 × $f_s$

Frequency
(for 25 S/s ≤ $f_s$ ≤ 25.6 kS/s)..... 0.45 × $f_s$

Flatness ..... 0.18 dB for ±100 mV,
±10 mV/V, and ±40 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

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



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Stopband

Frequency (for 1 S/s ≤ $f_s$ < 25 S/s).....≥0.9 × $f_s$

Frequency
(for 25 S/s ≤ $f_s$ ≤ 25.6 kS/s).....≥0.55 × $f_s$

Rejection .....100 dB

Alias-free bandwidth

(for 1 S/s ≤ $f_s$ < 25 S/s).....0.1 × $f_s$

Alias-free bandwidth
(for 25 S/s ≤ $f_s$ ≤ 25.6 kS/s).....0.45 × $f_s$

Minimum frequency
for ADC alias hole .....3.125 MHz

Rejection at alias hole .....90 dB

# Hardware-Timed Single Point Sample Mode

Acquisition rate[1]

Minimum .....1 Hz

Maximum.....25.6 kHz

Noise (rms)

±10 V range .....25 $\mu V_{rms}$ voltage mode

±500 mV range .....1.53 $\mu V_{rms}$ voltage mode

±200 mV range .....1.05 $\mu V_{rms}$ voltage mode

±100 mV range .....950 $nV_{rms}$ voltage mode

## Hardware-Timed Single Point Filtering

Filter type.....Fourth order, elliptic filter

Stopband attenuation.....-120 dB

Passband ripple .....0.2 dB

[1] Depends on the system setup and application time. Refer to the *NI PXIe-4339 User Manual* for more information.



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**Figure 1.** Filter Magnitude Response

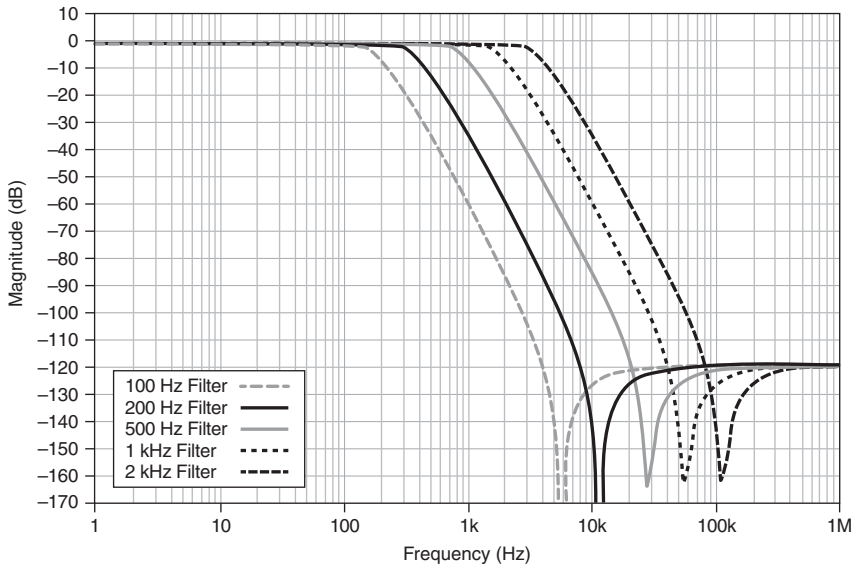
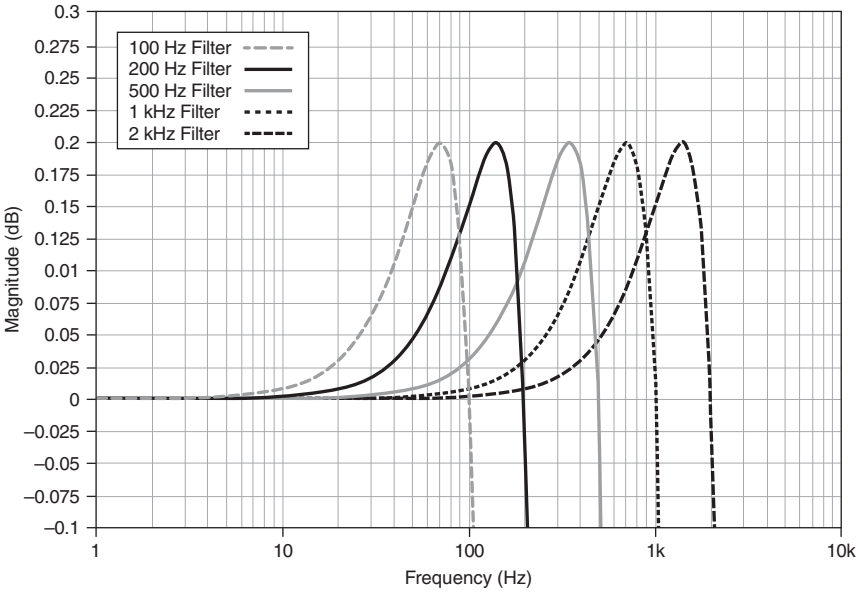



**Figure 2.** Passband Ripple






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**Figure 3.** Filter Phase Response

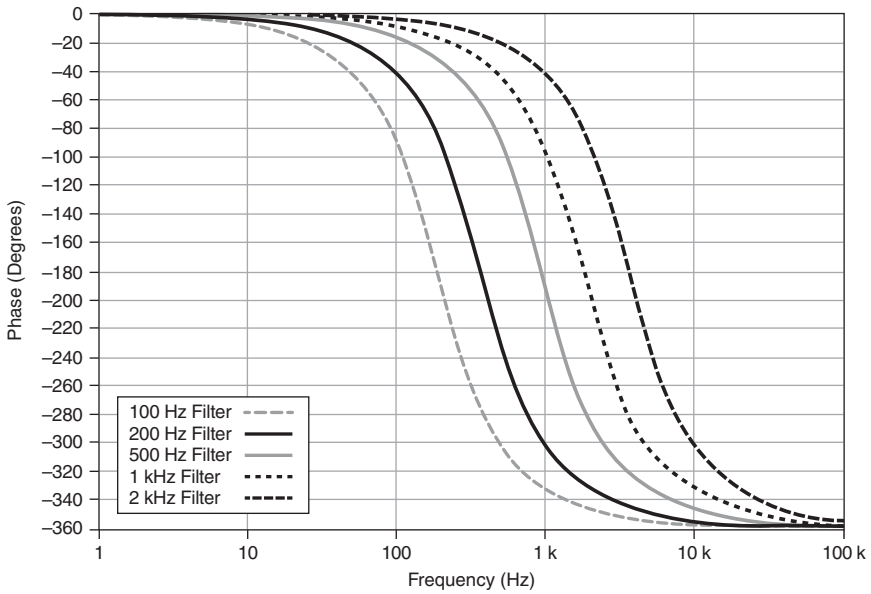
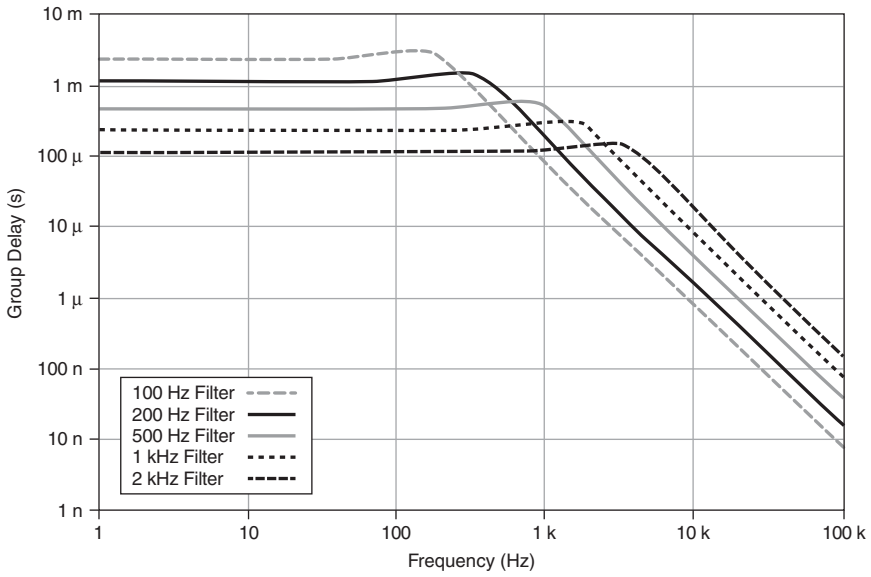



**Figure 4.** Filter Group Delay






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**Table 3.** Digital Filter Group Delay

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

Hardware-timed single point ADC group delay[1] ..... 1.6 µs

# 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/µs

Capacitive drive ..... 1 nF

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



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## Output Noise

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

Gain error.....0.6% max

## Output Offset Error

| Front-End Gain (Ranges) | Output Offset Error (mV), max |
|---|---|
| 1 (±10 V, ±1 V/V, ±4 V/V) | 0.6 |
| 20 (±0.5 V, ±50 mV/V, ±200 mV/V) | 5.6 |
| 50 (±0.2 V, ±20 mV/V, ±80 mV/V) | 13.3 |
| 100 (±0.1 V, ±10 mV/V, ±40 mV/V) | 26.4 |

# Internal Frequency Timebase Characteristics

Frequency.....100 MHz

Accuracy.....±50 ppm



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## Synchronization

Reference clock source ..... Onboard 100 MHz clock, Backplane PXIe_CLK100

## 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



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# 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



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# 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.)



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## 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.



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**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 CE

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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