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**PXI-4498**

# NI 449x Specifications

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ni.com/manuals

This document lists specifications for the NI 4492, NI 4495, NI 4496, NI 4497, NI 4498, and NI 4499 Dynamic Signal Acquisition (DSA) analog input devices. These specifications are typical at 25 °C unless otherwise stated. The operating temperature range for the NI 449x is 0 °C to 55 °C. All specifications are subject to change without notice. Visit [ni.com/manuals](http://ni.com/manuals) for the most current specifications and product documentation.



**Caution** Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for important safety and electromagnetic compatibility information. To obtain a copy of this document online, visit [ni.com/manuals](http://ni.com/manuals), and search for the document title.



**Caution** To ensure the specified EMC performance, operate this product only with shielded cables and accessories.

## Input Characteristics

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Number of simultaneously sampled input channels

NI 4492 ..... 8

NI 4495/4496/4497/4498/4499 ..... 16

Input configuration ..... Pseudodifferential (50 Ω between negative input and chassis ground)

Input coupling

NI 4495 ..... DC only

NI 4496/4498 ..... AC only

NI 4492/4497/4499 ..... AC/DC, selectable per channel

A/D converter (ADC) resolution ..... 24 bits

ADC type ..... Delta-sigma

Sample rates ( $f_s$ )

Range ..... 100 S/s to 204.8 kS/s

Resolution<sup>1</sup> ..... ≤181.9 μS/s

FIFO buffer size ..... 4,095 samples

Data transfers ..... Direct memory access (DMA)

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<sup>1</sup> Depends on the sample rate. Refer to the *Sample Rate and Update Rate, Accuracy and Coercion* section of the *NI Dynamic Signal Acquisition User Manual* for more information.

# Maximum Working Voltage

Input	Voltage ( $V_{pk}$ )*
Positive terminal (+)	±10
Negative terminal (-)	±1

\* Voltages with respect to chassis ground.

# Overvoltage Protection

Input	Voltage ( $V_{pk}$ )*
Positive terminal (+)	±30
Negative terminal (-)	±5

\* Voltages with respect to chassis ground.

# Signal Range

Gain (dB)	Full-Scale Range ( $V_{pk}$ ) <sup>†, ‡</sup>
30*	±0.316
20	±1.00
10*	±3.16
0	±10.0

\* NI 4498/4499 only.  
<sup>†</sup> Each input channel gain is independently software selectable.  
<sup>‡</sup> Voltages on the positive terminal with respect to the negative terminal.

# AC Coupled Measurement Accuracy (NI 4492/4497/4499)

Gain amplitude accuracy ( $f_{in} = 1$  kHz)

- Operating temperature within 5 °C of last self-calibration temperature ..... 0.05 dB max
- Over full operating temperature range ..... 0.1 dB max

Offset (residual DC)<sup>1</sup>

- 25 °C ..... ±10 mV max
- 55 °C ..... ±50 mV max

<sup>1</sup> Applied DC bias ≤15 V.

# AC Coupled Measurement Accuracy (NI 4496/4498)

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Gain amplitude accuracy ( $f_{in} = 1$  kHz)

- Operating temperature within 5 °C
- of last self-calibration temperature..... 0.1 dB max
- Over full operating temperature range..... 0.15 dB max

Offset (residual DC)

- Operating temperature within 5 °C
- of last self-calibration temperature..... ±2 mV max

## Flatness

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Frequency Band	$f_s \geq 51.2$ kS/s $20$ Hz $\leq f_{in} \leq 20$ kHz	$f_s \geq 102.4$ kS/s $20$ kHz $< f_{in} \leq 45$ kHz	$f_s = 204.8$ kS/s $45$ kHz $< f_{in} \leq 92.2$ kHz
Flatness* (dB)	±0.003	±0.01	±0.05

\* Relative to 1 kHz.

# DC Coupled Measurement Accuracy (NI 4492/4495/4497/4499)

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Gain amplitude accuracy

- Operating temperature within 5 °C
- of last self-calibration temperature..... 0.5% max
- Over full operating temperature range..... 1% max

Offset<sup>1</sup>

- Operating temperature within 5 °C
- of last self-calibration temperature..... ±500 μV max
- Over full operating temperature range..... ±1 mV max

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<sup>1</sup>  $V_{cm} = 0$ . Nonzero values create additional offset error according to the CMRR specification.

# Amplifier Characteristics

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## Input Impedance

Terminal	Input Impedance
Between positive input and negative input	$10\text{ M}\Omega \parallel 35\text{ pF}$
Between negative input and chassis ground	$50\ \Omega$

## Common-Mode Rejection Ratio (CMRR)

Input frequency  $< 20\text{ kHz}^1$  ..... 40 dB

## Dynamic Characteristics

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### Bandwidth and Alias Rejection

Specification	Low-Frequency Alias Rejection Enabled	Low-Frequency Alias Rejection Disabled (Default)
Alias-free bandwidth (BW) (passband)	DC to $0.4 \cdot f_s$	DC to $0.4535 \cdot f_s$
Alias rejection, minimum	104 dBc	120 dBc
-3 dB BW	$0.484 \cdot f_s$	$0.491 \cdot f_s$

### AC Coupling<sup>2</sup>

-3 dB cutoff frequency ..... 0.5 Hz

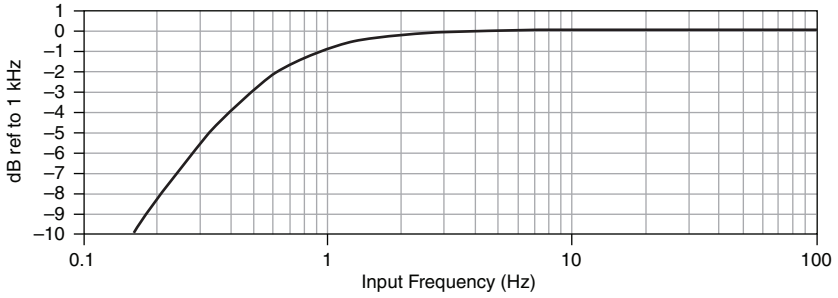
-0.1 dB cutoff frequency ..... 3.2 Hz

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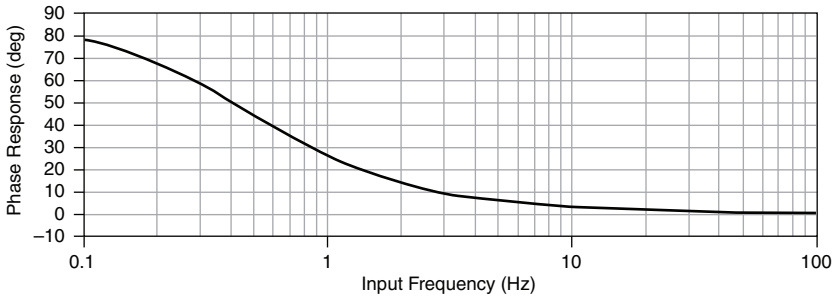
<sup>1</sup> Using the InfiniBand 4x to 8 BNC cable assembly. Does not include effects of additional cabling.

<sup>2</sup> NI 4495 is DC coupled.

**Figure 1.** Magnitude Response of AC Coupling Circuit



**Figure 2.** Phase Response of AC Coupling Circuit



## Idle Channel Noise (NI 4492/4495/4496/4497)

Gain (dB)	Idle Channel Noise*					
	$f_s = 51.2 \text{ kS/s}$		$f_s = 102.4 \text{ kS/s}$		$f_s = 204.8 \text{ kS/s}$	
	dBV <sub>rms</sub> <sup>†</sup>	μV <sub>rms</sub>	dBV <sub>rms</sub> <sup>†</sup>	μV <sub>rms</sub>	dBV <sub>rms</sub> <sup>†</sup>	μV <sub>rms</sub>
20	-113	2.2	-110	3.2	-106	5.0
0	-97	14	-94	20	-89	35

\* Source impedance ≤50 Ω  
<sup>†</sup> dBV<sub>rms</sub> = dB reference 1 V<sub>rms</sub>

# Idle Channel Noise (NI 4498/4499)

Gain (dB)	Idle Channel Noise*					
	$f_s = 51.2 \text{ kS/s}$		$f_s = 102.4 \text{ kS/s}$		$f_s = 204.8 \text{ kS/s}$	
	$\text{dBV}_{\text{rms}}^\dagger$	$\mu\text{V}_{\text{rms}}$	$\text{dBV}_{\text{rms}}^\dagger$	$\mu\text{V}_{\text{rms}}$	$\text{dBV}_{\text{rms}}^\dagger$	$\mu\text{V}_{\text{rms}}$
30	-119	1.1	-116	1.6	-113	2.2
20	-115	1.8	-112	2.5	-108	4.0
10	-107	4.5	-104	6.3	-99	11
0	-97	14	-94	20	-89	35

\* Source impedance  $\leq 50 \Omega$   
 $^\dagger \text{dBV}_{\text{rms}} = \text{dB reference } 1 \text{ V}_{\text{rms}}$

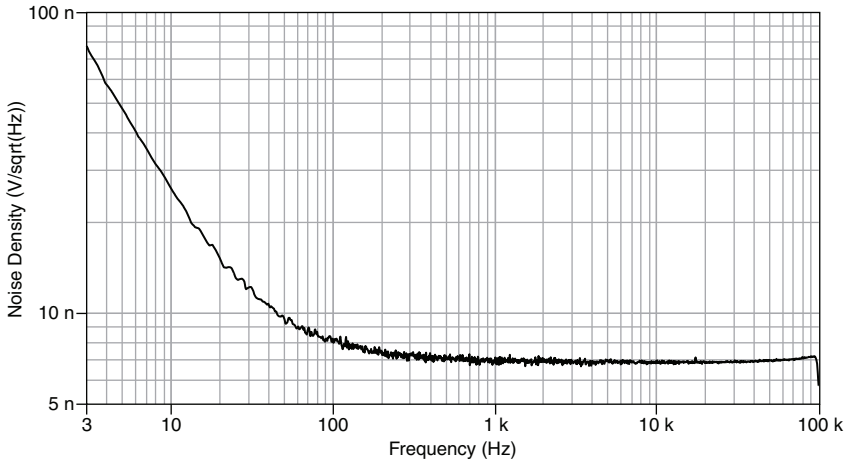
## Spectral Noise Density

NI 4492/4495/4496/4497 input voltage

noise density .....  $14 \text{ nV}/\sqrt{\text{Hz}}$  at 20 dB gain, 1 kHz

NI 4498/4499 input voltage noise density .....  $7 \text{ nV}/\sqrt{\text{Hz}}$  at 30 dB gain, 1 kHz

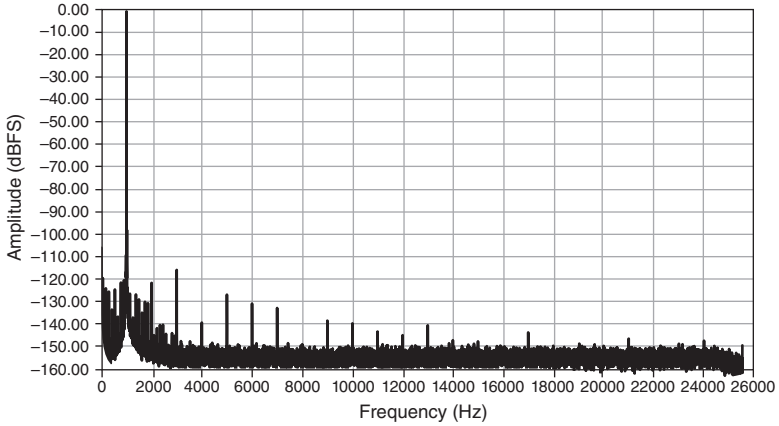
**Figure 3.** 30 dB Gain Spectral Noise Density of the NI 4498/4499 with 50  $\Omega$  at Input



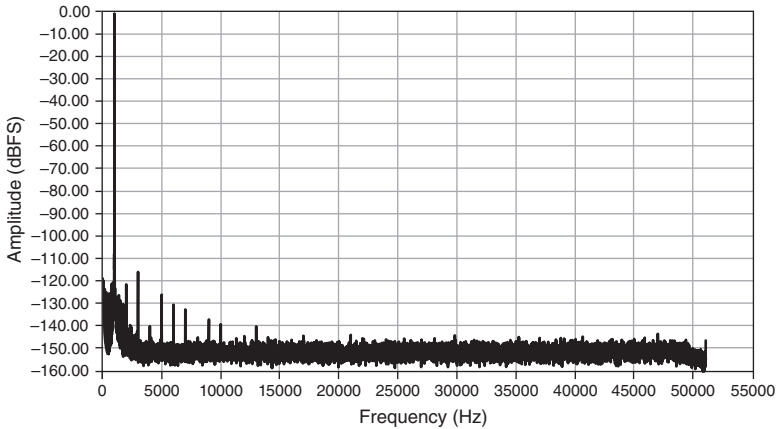
# Representative Measurement FFTs

Test conditions for all FFTs: 10 RMS averages of 65,536 samples using a 7-term Blackman-Harris window. Device: NI 4498/4499 at 0 dB gain. Source: Krohn-Hite Model 4402B.

**Figure 4.** FFT of -1 dBFS, 1 kHz Tone Acquired at 51.2 kS/s

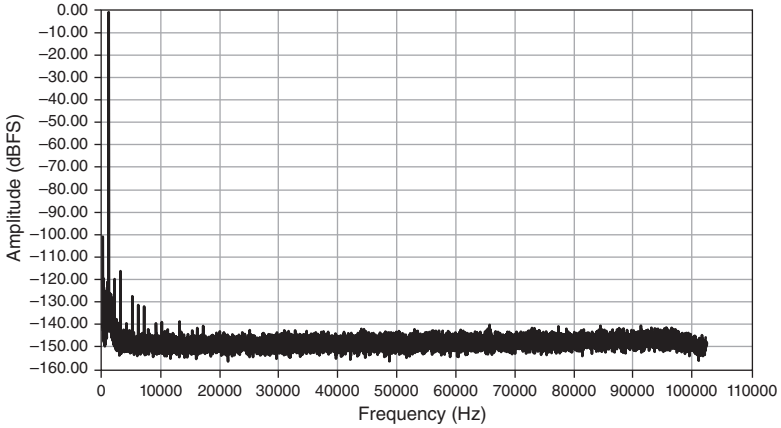


**Figure 5.** FFT of -1 dBFS, 1 kHz Tone Acquired at 102.4 kS/s





**Figure 6.** FFT of -1 dBFS, 1 kHz Tone Acquired at 204.8 kS/s



## Dynamic Range (NI 4492/4495/4496/4497)

Gain (dB)	Dynamic Range (dBFS)*, Min (Typical)		
	$f_s = 51.2$ kS/s	$f_s = 102.4$ kS/s	$f_s = 204.8$ kS/s
20	106 (110)	103 (107)	99 (103)
0	110 (114)	107 (111)	101 (106)

\* 1 kHz input tone, unweighted. Input amplitude is -60 dBFS.

## Dynamic Range (NI 4498/4499)

Gain (dB)	Dynamic Range (dBFS)*, Min (Typical)		
	$f_s = 51.2$ kS/s	$f_s = 102.4$ kS/s	$f_s = 204.8$ kS/s
30	102 (106)	99 (103)	95 (100)
20	108 (112)	105 (109)	101 (105)
10	110 (114)	106 (111)	101 (106)
0	110 (114)	107 (111)	101 (106)

\* 1 kHz input tone, unweighted. Input amplitude is -60 dBFS.

## Spurious Free Dynamic Range (SFDR) (NI 4492/4495/4496/4497)

Gain (dB)	SFDR (dBc)*, †, ‡
20	103
0	106

\*  $f_s = 204.8$  kS/s.  
† 1 kHz input tone, input amplitude is -1 dBFS.  
‡ Measurement includes all harmonics.

## Spurious Free Dynamic Range (SFDR) (NI 4498/4499)

Gain (dB)	SFDR (dBc)*, †, ‡
30	102
20	103
10	106
0	108

\*  $f_s = 204.8$  kS/s.  
† 1 kHz input tone, input amplitude is -1 dBFS.  
‡ Measurement includes all harmonics.

## Total Harmonic Distortion Plus Noise (THD+N) (NI 4492/4495/4496/4497)

Gain (dB)	THD+N (dBc)*	
	$f_s = 51.2$ kS/s $f_{in} = 20$ Hz to 20 kHz†	$f_s = 204.8$ kS/s $f_{in} = 20$ Hz to 92.2 kHz‡
20	-94	-78
0	-98	-83

\* Input amplitude is -1 dBFS.  
† 23.2 kHz measurement bandwidth.  
‡ 92.8 kHz measurement bandwidth.

# Total Harmonic Distortion Plus Noise (THD+N) (NI 4498/4499)

Gain (dB)	THD+N (dBc)*	
	$f_s = 51.2 \text{ kS/s}$ $f_{in} = 20 \text{ Hz to } 20 \text{ kHz}^\dagger$	$f_s = 204.8 \text{ kS/s}$ $f_{in} = 20 \text{ Hz to } 92.2 \text{ kHz}^\ddagger$
30	-94	-79
0, 10, 20	-98	-86

\* Input amplitude is -1 dBFS.  
 $\dagger$  23.2 kHz measurement bandwidth.  
 $\ddagger$  92.8 kHz measurement bandwidth.

## Intermodulation Distortion (IMD)

Gain (dB)*	IMD (dBc) $^\dagger$
30	-98
0, 10, 20	-104

\* 30 dB and 10 dB gain only apply to NI 4498/4499.  
 $\dagger$  CCIF 14 kHz + 15 kHz, each tone amplitude is -6 dBFS.

## Crosstalk

Gain (dB)*	Crosstalk for Adjacent (Nonadjacent) Channels (dBc) $^\dagger$ , $\ddagger$ , $^{**}$	
	$f_{in} = 1 \text{ kHz}$	$f_{in} = 92.2 \text{ kHz}$
30	-110 (-110)	-92 (-96)
0, 10, 20	-120 (-120)	-92 (-110)

\* 30 dB and 10 dB gain only apply to NI 4498/4499.  
 $\dagger$  Source impedance  $\leq 1 \text{ k}\Omega$ .  
 $\ddagger$  Input amplitude is -1 dBFS.  
 $^{**}$  Using the InfiniBand 4x to 8 BNC cable assembly.

# ADC Filter Delay

Sample Rate	Filter Delay (Samples)	
	Low-Frequency Alias Rejection Enabled	Low-Frequency Alias Rejection Disabled (Default)
$100 \text{ S/s} \leq f_s \leq 200 \text{ S/s}$	33.12	N/A*
$200 \text{ S/s} < f_s \leq 400 \text{ S/s}$	33.24	
$400 \text{ S/s} < f_s \leq 800 \text{ S/s}$	33.48	
$800 \text{ S/s} < f_s < 1.0 \text{ kS/s}$	33.97	
$1.0 \text{ kS/s} \leq f_s \leq 1.6 \text{ kS/s}$	33.97	64
$1.6 \text{ kS/s} < f_s \leq 3.2 \text{ kS/s}$	34.94	
$3.2 \text{ kS/s} < f_s \leq 6.4 \text{ kS/s}$	36.88	
$6.4 \text{ kS/s} < f_s \leq 12.8 \text{ kS/s}$	40.75	
$12.8 \text{ kS/s} < f_s \leq 25.6 \text{ kS/s}$	48.5	
$25.6 \text{ kS/s} < f_s \leq 204.8 \text{ kS/s}$	N/A†	

\* Low-Frequency Alias Rejection is always enabled for  $f_s < 1 \text{ kS/s}$ .

† Low-Frequency Alias Rejection is always disabled for  $f_s > 25.6 \text{ kS/s}$ .

# Interchannel Gain Mismatch (NI 4492/4495/4496/4497)

Gain (dB)	AC/DC Coupled Mismatch (dB)*, †		AC Coupled Mismatch (dB)*, †	
	$f_{in} = 20 \text{ kHz}$	$f_{in} = 92.2 \text{ kHz}$	$f_{in} = 2 \text{ Hz}$	$f_{in} = 20 \text{ Hz}$
20	<0.011	<0.03	<0.04	<0.011
0	<0.011	<0.02		

\* Identical channel configurations.

† Operating temperature within 5 °C of last self-calibration temperature.

# Interchannel Phase Mismatch (NI 4492/4495/4496/4497)

Gain (dB)	AC/DC Coupled Mismatch <sup>*, †</sup>		AC Coupled Mismatch <sup>*, †</sup>	
	$f_{in} = 20 \text{ kHz}$	$f_{in} = 92.2 \text{ kHz}$	$f_{in} = 2 \text{ Hz}$	$f_{in} = 20 \text{ Hz}$
20	<0.20°	<0.90°	<0.8°	<0.08°
0	<0.02°	<0.09°		

\* Identical channel configurations.  
† Operating temperature within 5 °C of last self-calibration temperature.

# Interchannel Gain Mismatch (NI 4498/4499)

Gain (dB)	AC/DC Coupled Mismatch (dB) <sup>*, †</sup>		AC Coupled Mismatch (dB) <sup>*, †</sup>	
	$f_{in} = 20 \text{ kHz}$	$f_{in} = 92.2 \text{ kHz}$	$f_{in} = 2 \text{ Hz}$	$f_{in} = 20 \text{ Hz}$
30	<0.013	<0.05	<0.04	<0.011
20	<0.011	<0.024		
10	<0.011	<0.02		
0	<0.011	<0.02		

\* Identical channel configurations.  
† Operating temperature within 5 °C of last self-calibration temperature.

# Interchannel Phase Mismatch (NI 4498/4499)

Gain (dB)	AC/DC Coupled Mismatch <sup>*, †</sup>		AC Coupled Mismatch <sup>*, †</sup>	
	$f_{in} = 20 \text{ kHz}$	$f_{in} = 92.2 \text{ kHz}$	$f_{in} = 2 \text{ Hz}$	$f_{in} = 20 \text{ Hz}$
30	<0.30°	<1.35°	<0.8°	<0.08°
20	<0.12°	<0.54°		
10	<0.06°	<0.28°		
0	<0.02°	<0.09°		

\* Identical channel configurations.  
† Operating temperature within 5 °C of last self-calibration temperature.



**Note** All gain and phase mismatch specifications are for the same device and are not applicable between different NI 449x devices.

# Phase Linearity

$f_{in} = 20 \text{ Hz to } 20 \text{ kHz} \dots\dots\dots \pm 0.01^\circ$

$f_{in} = 20 \text{ Hz to } 92.2 \text{ kHz} \dots\dots\dots \pm 0.3^\circ$

# Onboard Calibration Reference

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DC level ..... 5.000 V  $\pm 2.5 \text{ mV}$

Temperature stability ..... 5 ppm/ $^\circ\text{C}$  max

Long-term stability ..... 15 ppm/ $\sqrt{1,000 \text{ hr}}$

# Transducer Electronic Data Sheet (TEDS) Support

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Supports Transducer Electronic Data Sheet (TEDS) according to the

IEEE 1451 Standard ..... All device inputs (except the NI 4495)



**Note** For more information about TEDS, go to [ni.com/info](http://ni.com/info) and enter the Info Code `rdteds`.

Maximum cable length ..... 100 ft

# IEPE Excitation<sup>1</sup>

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Current ..... 0 or 4 mA  $\pm 10\%$   
(software selectable, per channel)

Compliance ..... 24 V



**Note** Use the following equation to make sure that your configuration meets the IEPE compliance voltage range.

$$V_{\text{common-mode}} + V_{\text{bias}} \pm V_{\text{full-scale}} \text{ must be } 1 \text{ V to } 24 \text{ V,}$$

where

$V_{\text{common-mode}}$  is the common-mode voltage seen by the input channel,

$V_{\text{bias}}$  is the DC bias voltage of the sensor, and

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

IEPE open ..... Software readable<sup>2</sup>

IEPE short ..... Software readable<sup>2</sup>

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<sup>1</sup> NI 4495 does not support IEPE Excitation.

<sup>2</sup> NI-DAQmx 8.6 or later.

Channel input impedance with IEPE enabled .....	>250 k $\Omega$ at 1 kHz
Current noise .....	20 pA/ $\sqrt{\text{Hz}}$

## Frequency Timebase Characteristics

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### Using external timebase

Accuracy .....	Equal to accuracy of external timebase
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### Using internal timebase

Accuracy .....	$\pm 60$ ppm, over operating temperature range, in first year
Aging .....	5 ppm, each additional year

## Triggers

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### Analog trigger

Type .....	Start or reference trigger
Source .....	Any AI
Level .....	Full scale, programmable
Slope .....	Positive (rising) or negative (falling), software selectable
Resolution .....	24 bits
Hysteresis .....	Programmable

### Digital trigger

Type .....	Start or reference trigger
Source .....	PF10, PXI_Trig<0..6>
Compatibility .....	Transistor-transistor logic (5 V TTL)
Polarity .....	Rising or falling edge
Minimum pulse width .....	100 ns

## General Specifications

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### Bus Interface

PXI .....	3.3 V or 5 V signal environment
PXI Express .....	3.3 V diff signal environment
DMA channels .....	1

# Synchronization

PXI..... CLK\_10

PXI Express..... CLK\_10

## Power Requirements

Voltage	NI PXIe-4492	NI PXIe-4496
+3.3 V	2000 mA	2000 mA
+12 V	400 mA	810 mA

Voltage	NI PXIe-4497	NI PXIe-4498	NI PXIe-4499
+3.3 V	2100 mA	2000 mA	2100 mA
+12 V	810 mA	930 mA	930 mA

Voltage	NI PXI-4495	NI PXI-4496	NI PXI-4498
+5 V	800 mA	1400 mA	1700 mA
+3.3 V	1700 mA	1700 mA	1700 mA
+12 V	400 mA	400 mA	400 mA
-12 V	100 mA	100 mA	100 mA

## Physical

Dimensions (not including connectors)

PXI, PXI Express..... 16 cm × 10 cm (6.3 in. × 3.9 in.)  
3U CompactPCI slot

Analog I/O connectors..... InfiniBand 4x

Digital trigger connector (PFI 0)..... SMB

Weight

All except NI 4492 ..... 326 g (11.5 oz)

NI 4492 ..... 167 g (5.9 oz)

Measurement Category<sup>1</sup> ..... I



**Caution** Do *not* use the NI 449x for connections to signals or for measurements within Categories II, III, or IV.



**Caution** The protection provided by the 449x can be impaired if it is used in a manner not described in this document.

<sup>1</sup> Measurement Category is also referred to as Installation Category.



# Environmental Specifications

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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.) 0 °C to 45 °C when installed in an NI PXI-1000B DC chassis.

Relative humidity range ..... 10% to 90%, noncondensing  
(Tested in accordance with IEC-60068-2-56.)

## Storage Environment

Ambient temperature range ..... -20 °C to 70 °C  
(Tested in accordance with IEC-60068-2-1 and IEC-60068-2-2.)

Relative humidity range ..... 5% to 95%, noncondensing  
(Tested in accordance with IEC-60068-2-56.)

## Shock and Vibration

Operational shock ..... 30 g peak, half-sine, 11 ms pulse  
(Tested in accordance with IEC-60068-2-27.  
Test profile developed in accordance with MIL-PRF-28800F.)

Random vibration

    Operating ..... 5 Hz to 500 Hz, 0.3 g<sub>rms</sub>

    Nonoperating ..... 5 Hz to 500 Hz, 2.4 g<sub>rms</sub>  
(Tested in accordance with IEC-60068-2-64.  
Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)

## Calibration

Self-calibration ..... On software command, the device computes gain and offset corrections relative to high-precision internal reference.

Self-calibration interval ..... Recommended whenever ambient temperature differs from  $T_{cal}$  by more than  $\pm 5$  °C.

External calibration interval ..... 1 year

Warm-up time ..... 15 minutes

# 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.

# 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
- AS/NZS CISPR 11: Group 1, 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 generates 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:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; 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](http://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 *NI and the Environment* Web page at [ni.com/environment](http://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](http://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](http://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](http://ni.com/environment/rohs_china).)

## Where to Go for Support

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The National Instruments Web site is your complete resource for technical support. At [ni.com/support](http://ni.com/support) you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at [ni.com/support](http://ni.com/support) and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, visit the Worldwide Offices section of [ni.com/niglobal](http://ni.com/niglobal) to access the branch office Web sites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.

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