ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

**Artisan Technology Group**
(217) 352-9330 | sales@artisantg.com | artisantg.com

**Full-service, independent repair center**
with experienced engineers and technicians on staff.

**We buy your excess, underutilized, and idle equipment**
along with credit for buybacks and trade-ins.

**Custom engineering**
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

**Expert team | Trust guarantee | 100% satisfaction**

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *National Instruments PXI-6284* at our website: *Click HERE*

DEVICE SPECIFICATIONS

# NI 6284

## M Series Data Acquisition: 18-Bit, 500 kS/s, 32 AI, 48 DIO

The following specifications are typical at 25 °C, unless otherwise noted. For more information about the NI 6284, refer to the *M Series User Manual* available at *ni.com/manuals*.

## Analog Input

| | |
|---|---|
| Number of channels | 16 differential or 32 single ended |
| ADC resolution | 18 bits |
| DNL | No missing codes guaranteed |
| INL | Refer to the *AI Absolute Accuracy* section |
| Sample rate | |
| Single channel maximum | 625 kS/s |
| Multichannel maximum (aggregate) | 500 kS/s |
| Minimum | No minimum |
| Timing accuracy | 50 ppm of sample rate |
| Timing resolution | 50 ns |
| Input coupling | DC |
| Input range | ±0.1 V, ±0.2 V, ±0.5 V, ±1 V, ±2 V, ±5 V, ±10 V |
| Maximum working voltage for analog inputs (signal + common mode) | ±11 V of AI GND |
| CMRR (DC to 60 Hz) | 110 dB |
| Input impedance | |
| Device on | |
| AI+ to AI GND | >10 GΩ in parallel with 100 pF |
| AI- to AI GND | >10 GΩ in parallel with 100 pF |

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | |
|---|---|
| Device off | |
| AI+ to AI GND | 820 Ω |
| AI- to AI GND | 820 Ω |
| Input bias current | ±100 pA |
| Crosstalk (at 100 kHz) | |
| Adjacent channels | -75 dB |
| Non-adjacent channels | -95 dB |
| Small signal bandwidth (-3 dB) | 750 kHz filter off, 40 kHz filter on |
| Input FIFO size | 2,047 samples |
| Scan list memory | 4,095 entries |
| Data transfers | DMA (scatter-gather), interrupts, programmed I/O |
| Overvoltage protection for all analog input and sense channels | |
| Device on | ±25 V for up to eight AI pins |
| Device off | ±15 V for up to eight AI pins |
| Input current during overvoltage condition | ±20 mA maximum/AI pin |

**Table 1.** Settling Time for Multichannel Measurements

| Range | Filter Off ±15 ppm of Step (±4 LSB for Full-Scale Step) | Filter Off ±4 ppm of Step (±1 LSB for Full-Scale Step) | Filter On ±4 ppm of Step (±1 LSB for Full-Scale Step) |
|---|---|---|---|
| ±5 V, ±10 V | 2 µs | 8 µs | 50 µs |
| ±0.5 V, ±1 V, ±2 V | 2.5 µs | 8 µs | 50 µs |
| ±0.1 V, ±0.2 V | 3 µs | 8 µs | 50 µs |



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Typical Performance Graphs

**Figure 1.** AI Settling Error versus Time for Different Source Impedances

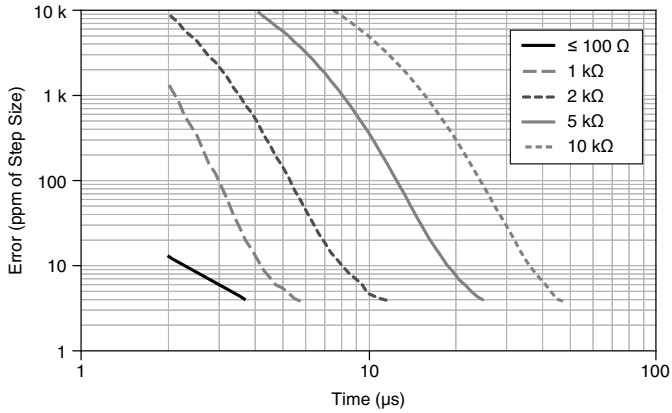
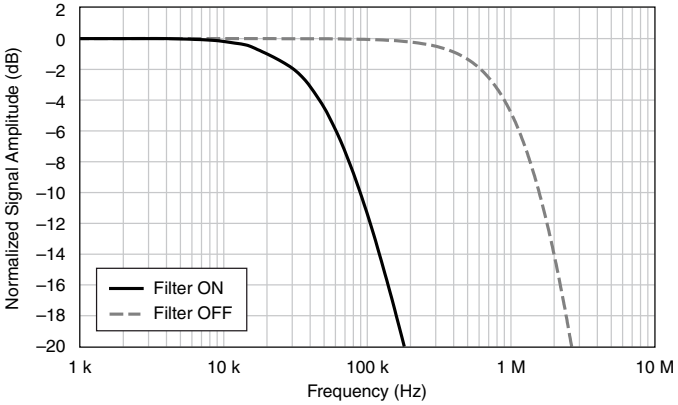


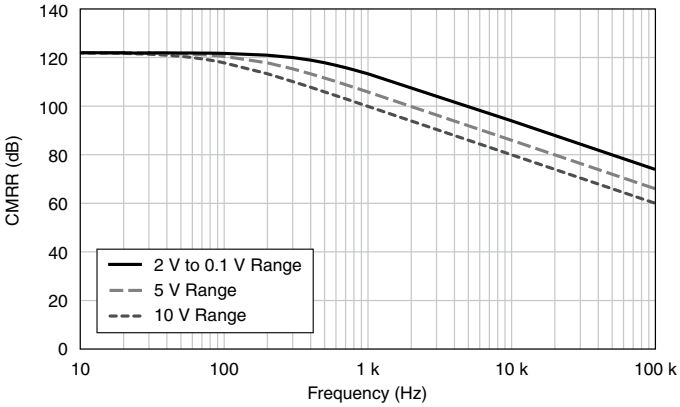

**Figure 2.** AI Small Signal Bandwidth






Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Figure 3.** AI CMRR




# AI Absolute Accuracy

## AI Absolute Accuracy (Filter On)

**Note** Accuracies listed are valid for up to two years from the device external calibration.

**Table 2.** AI Absolute Accuracy (Filter On)

| Nominal Range Positive Full Scale | Nominal Range Negative Full Scale | Residual Gain Error (ppm of Reading) | Residual Offset Error (ppm of Range) | Offset Tempco (ppm of Range/°C) | Random Noise, σ (µVrms) | Absolute Accuracy at Full Scale (µV) | Sensitivity (µV) |
|---|---|---|---|---|---|---|---|
| 10 | -10 | 40 | 8 | 11 | 60 | 980 | 24 |
| 5 | -5 | 45 | 8 | 11 | 30 | 510 | 12 |
| 2 | -2 | 45 | 8 | 13 | 12 | 210 | 4.8 |
| 1 | -1 | 55 | 15 | 15 | 7 | 120 | 2.8 |
| 0.5 | -0.5 | 55 | 30 | 20 | 4 | 70 | 1.6 |
| 0.2 | -0.2 | 75 | 45 | 35 | 3 | 39 | 1.2 |
| 0.1 | -0.1 | 120 | 60 | 60 | 2 | 28 | 0.8 |



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Note** Sensitivity is the smallest voltage change that can be detected. It is a function of noise.

| | |
|---|---|
| Gain tempco | 17 ppm/°C |
| Reference tempco | 1 ppm/°C |
| INL error | 10 ppm of range |

## AI Absolute Accuracy (Filter Off)

**Note** Accuracies listed are valid for up to two years from the device external calibration.

**Table 3.** AI Absolute Accuracy (Filter Off)

| Nominal Range Positive Full Scale | Nominal Range Negative Full Scale | Residual Gain Error (ppm of Reading) | Residual Offset Error (ppm of Range) | Offset Tempco (ppm of Range/°C) | Random Noise, σ (µVrms) | Absolute Accuracy at Full Scale (µV) | Sensitivity (µV) |
|---|---|---|---|---|---|---|---|
| 10 | -10 | 45 | 10 | 11 | 70 | 1,050 | 28.0 |
| 5 | -5 | 50 | 10 | 11 | 35 | 550 | 14.0 |
| 2 | -2 | 50 | 10 | 13 | 15 | 230 | 6.0 |
| 1 | -1 | 60 | 17 | 15 | 12 | 130 | 4.8 |
| 0.5 | -0.5 | 60 | 32 | 20 | 10 | 80 | 4.0 |
| 0.2 | -0.2 | 80 | 47 | 35 | 9 | 43 | 3.6 |
| 0.1 | -0.1 | 120 | 62 | 60 | 9 | 31 | 3.6 |

**Note** Sensitivity is the smallest voltage change that can be detected. It is a function of noise.

| | |
|---|---|
| Gain tempco | 17 ppm/°C |
| Reference tempco | 1 ppm/°C |
| INL error | 10 ppm of range |

## AI Absolute Accuracy Equation

$$AbsoluteAccuracy = Reading \cdot (GainError) + Range \cdot (OffsetError) + NoiseUncertainty$$

$$GainError = ResidualAIGainError + GainTempco \cdot (TempChangeFromLastInternalCal) + ReferenceTempco \cdot (TempChangeFromLastExternalCal)$$

$$OffsetError = ResidualAIOffsetError + OffsetTempco \cdot (TempChangeFromLastInternalCal) + INLError$$



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

$NoiseUncertainty = \frac{\text{Random Noise} \cdot 3}{\sqrt{100}}$ for a coverage factor of 3 σ and averaging 100 points.

## AI Absolute Accuracy Example

Absolute accuracy at full scale on the analog input channels is determined using the following assumptions:

- TempChangeFromLastExternalCal = 10 °C
- TempChangeFromLastInternalCal = 1 °C
- number_of_readings = 100
- CoverageFactor = 3 σ

For example, on the 10 V range of the Filter On accuracy table, the absolute accuracy at full scale is as follows:

GainError = 40 ppm + 17 ppm · 1 + 1 ppm · 10 = 67 ppm

OffsetError = 8 ppm + 11 ppm · 1 + 10 ppm = 29 ppm

$\text{NoiseUncertainty} = \frac{60\ \mu V \cdot 3}{\sqrt{100}} = 18\ \mu V$

AbsoluteAccuracy = 10 V · (GainError) + 10 V · (OffsetError) + NoiseUncertainty = 980 µV

# Analog Triggers

| | |
|---|---|
| Number of triggers | 1 |
| Source | AI <0..31>, APFI <0, 1> |
| Functions | Start Trigger, Reference Trigger, Pause Trigger, Sample Clock, Convert Clock, Sample Clock Timebase |
| Source level | |
| AI <0..31> | ±Full scale |
| APFI <0, 1> | ±10 V |
| Resolution | 10 bits, 1 in 1,024 |
| Modes | Analog edge triggering, analog edge triggering with hysteresis, and analog window triggering |
| Bandwidth (-3 dB) | |
| AI <0..31> | 700 kHz filter off, 40 kHz filter on |
| APFI <0, 1> | 5 MHz |
| Accuracy | ±1% |



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| APFI <0, 1> characteristics | |
|---|---|
| Input impedance | 10 kΩ |
| Coupling | DC |
| Protection, power on | ±30 V |
| Protection, power off | ±15 V |

# Digital I/O/PFI

## Static Characteristics

| | |
|---|---|
| Number of channels | 48 total, 32 (P0.<0..31>),<br>16 (PFI <0..7>/P1, PFI <8..15>/P2) |
| I/O type | 5 V TTL/CMOS compatible |
| Ground reference | D GND |
| Direction control | Each terminal individually programmable as input or output |
| Pull-down resistor | 50 kΩ typical, 20 kΩ minimum |
| Input voltage protection | ±20 V on up to two pins[1] |

## Waveform Characteristics (Port 0 Only)

| | |
|---|---|
| Terminals used | Port 0 (P0.<0..31>) |
| Port/sample size | Up to 32 bits |
| Waveform generation (DO) FIFO | 2,047 samples |
| Waveform acquisition (DI) FIFO | 2,047 samples |
| DI Sample Clock frequency | 0 MHz to 10 MHz, system and bus activity dependent |
| DO Sample Clock frequency | |
| Regenerate from FIFO | 0 MHz to 10 MHz |
| Streaming from memory | 0 MHz to 10 MHz, system and bus activity dependent |

[1] Stresses beyond those listed under *Input voltage protection* may cause permanent damage to the device.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | |
|---|---|
| Data transfers | DMA (scatter-gather), interrupts, programmed I/O |
| DI or DO Sample Clock source[2] | Any PFI, RTSI, AI Sample or Convert Clock, Ctr *n* Internal Output, and many other signals |

## PFI/Port 1/Port 2 Functionality

| | |
|---|---|
| Functionality | Static digital input, static digital output, timing input, timing output |
| Timing output sources | Many AI, counter, DI, DO timing signals |
| Debounce filter settings | 125 ns, 6.425 µs, 2.56 ms, disable; high and low transitions; selectable per input |

## Recommended Operating Conditions

| Level | Minimum | Maximum |
|---|---|---|
| Input high voltage ($V_{IH}$) | 2.2 V | 5.25 V |
| Input low voltage ($V_{IL}$) | 0 V | 0.8 V |
| Output high current ($I_{OH}$) P0.<0..31> | — | -24 mA |
| Output high current ($I_{OH}$) PFI <0..15>/P1/P2 | — | -16 mA |
| Output low current ($I_{OL}$) P0.<0..31> | — | 24 mA |
| Output low current ($I_{OL}$) PFI <0..15>/P1/P2 | — | 16 mA |

## Electrical Characteristics

| Level | Minimum | Maximum |
|---|---|---|
| Positive-going threshold (VT+) | — | 2.2 V |
| Negative-going threshold (VT-) | 0.8 V | — |
| Delta VT hystersis (VT+ - VT-) | 0.2 V | — |
| $I_{IL}$ input low current ($V_{in}$ = 0 V) | — | -10 µA |
| $I_{IH}$ input high current ($V_{in}$ = 5 V) | — | 250 µA |

[2] The digital subsystem does not have its own dedicated internal timing engine. Therefore, a sample clock must be provided from another subsystem on the device or an external source.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Digital I/O Characteristics

**Figure 4.** Digital I/O (P0.<0..31>): $I_{oh}$ versus $V_{oh}$

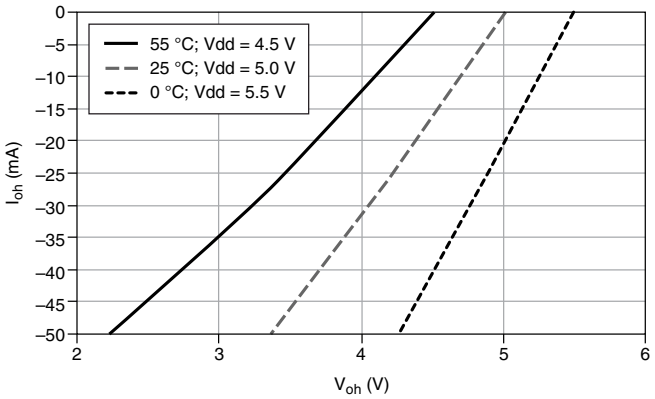
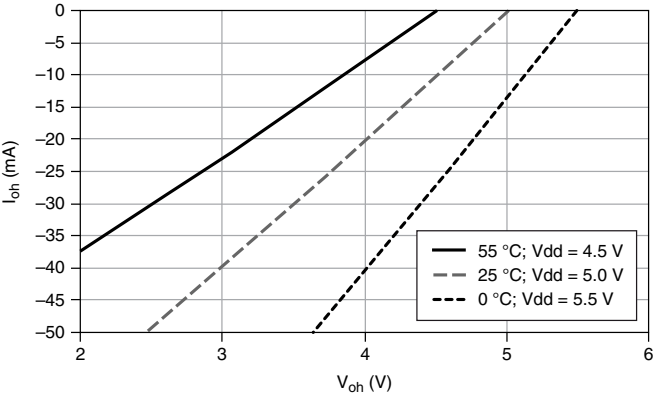



**Figure 5.** Digital I/O (PFI <0..15>/P1/P2): $I_{oh}$ versus $V_{oh}$






Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Figure 6.** Digital I/O (P0.<0..31>): $I_{ol}$ versus $V_{ol}$

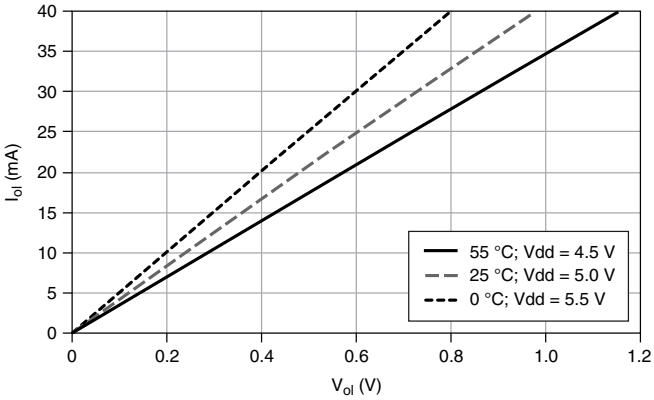
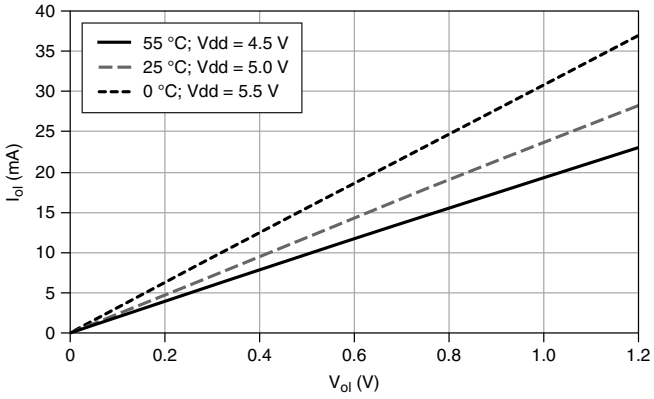



**Figure 7.** Digital I/O (PFI <0..15>/P1/P2): $I_{ol}$ versus $V_{ol}$




# General-Purpose Counters/Timers

| | |
|---|---|
| Number of counter/timers | 2 |
| Resolution | 32 bits |
| Counter measurements | Edge counting, pulse, semi-period, period, two-edge separation |
| Position measurements | X1, X2, X4 quadrature encoding with Channel Z reloading; two-pulse encoding |
| Output applications | Pulse, pulse train with dynamic updates, frequency division, equivalent time sampling |



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | |
|---|---|
| Internal base clocks | 80 MHz, 20 MHz, 0.1 MHz |
| External base clock frequency | 0 MHz to 20 MHz |
| Base clock accuracy | 50 ppm |
| Inputs | Gate, Source, HW_Arm, Aux, A, B, Z, Up_Down |
| Routing options for inputs | Any PFI, RTSI, PXI_TRIG, PXI_STAR, analog trigger, many internal signals |
| FIFO | 2 samples |
| Data transfers | Dedicated scatter-gather DMA controller for each counter/timer; interrupts; programmed I/O |

# Frequency Generator

| | |
|---|---|
| Number of channels | 1 |
| Base clocks | 10 MHz, 100 kHz |
| Divisors | 1 to 16 |
| Base clock accuracy | 50 ppm |

Output can be available on any output PFI or RTSI terminal.

# Phase-Locked Loop (PLL)

| | |
|---|---|
| Number of PLLs | 1 |
| Reference signal | PXI_STAR, PXI_CLK10, RTSI <0..7> |
| Output of PLL | 80 MHz Timebase; other signals derived from 80 MHz Timebase including 20 MHz and 100 kHz Timebases |

# External Digital Triggers

| | |
|---|---|
| Source | Any PFI, RTSI, PXI_TRIG, PXI_STAR |
| Polarity | Software-selectable for most signals |
| Analog input function | Start Trigger, Reference Trigger, Pause Trigger, Sample Clock, Convert Clock, Sample Clock Timebase |



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | |
|---|---|
| Counter/timer function | Gate, Source, HW_Arm, Aux, A, B, Z, Up_Down |
| Digital waveform generation (DO) function | Sample Clock |
| Digital waveform acquisition (DI) function | Sample Clock |

## Device-to-Device Trigger Bus

| | |
|---|---|
| PCI | RTSI <0..7>[3] |
| PXI | PXI_TRIG <0..7>, PXI_STAR |
| Output selections | 10 MHz Clock, frequency generator output, many internal signals |
| Debounce filter settings | 125 ns, 6.425 µs, 2.56 ms, disable; high and low transitions; selectable per input |

# Bus Interface

| | |
|---|---|
| PCI/PXI | 3.3 V or 5 V signal environment |
| DMA channels | 6, can be used for analog input, digital input, digital output, counter/timer 0, counter/timer 1 |

The PXI device supports one of the following features:

- May be installed in PXI Express hybrid slots
- Or, may be used to control SCXI in PXI/SCXI combo chassis

**Table 4.** PXI/SCXI Combo and PXI Express Chassis Compatibility

| M Series Part Number | SCXI Control in PXI/SCXI Combo Chassis | PXI Express Hybrid Slot Compatible |
|---|---|---|
| 191501C-02 | No | Yes |
| 191501A-0*x*/191501B-0*x* | Yes | No |

[3] In other sections of this document, RTSI refers to RTSI <0..7> for the PCI devices or PXI_TRIG <0..7> for PXI devices.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Power Requirements

| | |
|---|---|
| Current draw from bus during no-load condition[4] | |
| +5 V | 0.03 A |
| +3.3 V | 0.78 A |
| +12 V | 0.40 A |
| -12 V | 0.06 A |
| Current draw from bus during AI overvoltage condition[4] | |
| +5 V | 0.03 A |
| +3.3 V | 1.26 A |
| +12 V | 0.43 A |
| -12 V | 0.06 A |

# Current Limits

**Caution** Exceeding the current limits may cause unpredictable behavior by the device and/or PC/chassis.

| | |
|---|---|
| PCI | |
| +5 V terminal (connector 0) | 1 A max[5] |
| +5 V terminal (connector 1) | 1 A max[5] |
| PXI | |
| +5 V terminal (connector 0) | 1 A max[5] |
| +5 V terminal (connector 1) | 1 A max[5] |
| P0/PFI/P1/P2 and +5 V terminals combined | 2 A max |

# Physical Characteristics

| | |
|---|---|
| Dimensions | |
| PCI printed circuit board | 10.6 cm × 15.5 cm (4.2 in. × 6.1 in.) |
| PXI printed circuit board | Standard 3U PXI |

[4] Does not include P0/PFI/P1/P2 and +5 V terminals.

[5] Older revisions have a self-resetting fuse that opens when current exceeds this specification. Newer revisions have a traditional fuse that opens when current exceeds this specification. This fuse is not customer-replaceable; if the fuse permanently opens, return the device to NI for repair.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

| | |
|---|---|
| Weight | |
| PCI | 159 g (5.6 oz) |
| PXI | 229 g (8.1 oz) |
| I/O connectors | 2 68-pin VHDCI |

# Calibration

| | |
|---|---|
| Recommended warm-up time | 15 minutes |
| Calibration interval | 2 years |

# Maximum Working Voltage

*Maximum working voltage* refers to the signal voltage plus the common-mode voltage.

| | |
|---|---|
| Channel-to-earth | 11 V, Measurement Category I |

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as MAINS voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

**Caution** Do not use for measurements within Categories II, III, or IV.

**Note** Measurement Categories CAT I and CAT O (Other) are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

# Environmental

| | |
|---|---|
| Operating temperature | 0 ºC to 55 ºC |
| Storage temperature | -20 ºC to 70 ºC |
| Humidity | 10% RH to 90% RH, noncondensing |
| Maximum altitude | 2,000 m |
| Pollution Degree (indoor use only) | 2 |

Indoor use only.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Shock and Vibration (PXI Only)

| | |
|---|---|
| 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 $g_{rms}$ |
| Nonoperating | 5 Hz to 500 Hz, 2.4 $g_{rms}$ (Tested in accordance with IEC 60068-2-64. Nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.) |

# Safety

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

**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
- 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.



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**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)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

# 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 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）

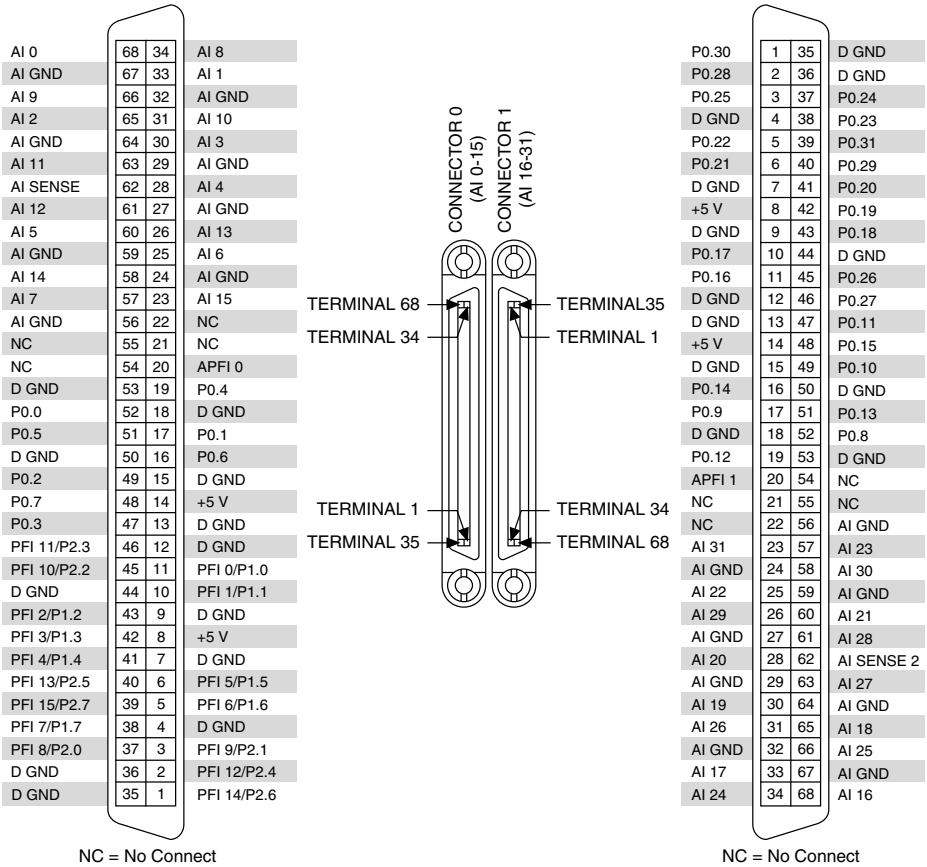
**中国客户** National Instruments 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 `ni.com/environment/rohs_china`。(For information about China RoHS compliance, go to `ni.com/environment/rohs_china`.)



Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

# Device Pinout

**Figure 8.** NI PCI/PXI-6284 Pinout






Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Refer to the *NI Trademarks and Logo Guidelines* at ni.com/trademarks for information on NI trademarks. Other product and company names mentioned herein are trademarks or trade names of their respective companies. For patents covering NI products/technology, refer to the appropriate location: **Help**»**Patents** in your software, the patents.txt file on your media, or the *National Instruments Patent Notice* at ni.com/patents. You can find information about end-user license agreements (EULAs) and third-party legal notices in the readme file for your NI product. Refer to the *Export Compliance Information* at ni.com/legal/export-compliance for the NI global trade compliance policy and how to obtain relevant HTS codes, ECCNs, and other import/export data. NI MAKES NO EXPRESS OR IMPLIED WARRANTIES AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN AND SHALL NOT BE LIABLE FOR ANY ERRORS. U.S. Government Customers: The data contained in this manual was developed at private expense and is subject to the applicable limited rights and restricted data rights as set forth in FAR 52.227-14, DFAR 252.227-7014, and DFAR 252.227-7015.

© 2015—2016 National Instruments. All rights reserved.

375219C-01 Jun16

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

**Artisan Technology Group** is an independent supplier of quality pre-owned equipment

## Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

## We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

## Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP