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# PCI/PXI/ USB-6225 Specifications

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# PCI/PXI/USB-6225 Specifications

## Specifications

These specifications apply to the PCI-6225, PXI-6225, USB-6225 Screw Terminal, USB-6225 Mass Termination, and USB-6225 OEM models.

## Revision History

| Version    | Date changed   | Description                                                       |
|------------|----------------|-------------------------------------------------------------------|
| 375203F-01 | February 2026  | Corrected labeling error on AI settling error plot.               |
| 375203E-01 | July 2025      | Updated I/O connector specifications.                             |
| 375203D-01 | June 2025      | Added pinout diagrams.                                            |
| 375203C-01 | June 2016      | Updated formatting.                                               |
| 375203B-01 | September 2015 | Updated formatting.                                               |
| 375203A-01 | June 2015      | Initial release.                                                  |
| 371290G-01 | April 2009     | Original specifications document: <i>NI 622x Specifications</i> . |

## Looking For Something Else?

For information not found in the specifications for your product, such as operating instructions, browse *Related Information*.

### Related information:

- [M Series User Manual](#)
- [Specifications Explained: NI Multifunction I/O \(MIO\) DAQ](#)
- [DAQ Multifunction I/O \(MIO\) and Simultaneous Multifunction I/O \(SMIO\) Devices Calibration Procedure](#)
- [USB-622x/625x/628x OEM User Guide](#)

- [Dimensional Drawings](#)
- [Product Certifications](#)
- [Letter of Volatility](#)

# PCI/PXI/USB-6225 Pinouts

Use the pinout diagrams to connect to terminals on the PCI-6225, PXI-6225, USB-6225 Screw Terminal, and USB-6225 Mass Termination.

Figure 1. PCI/PXI-6225 Pinout

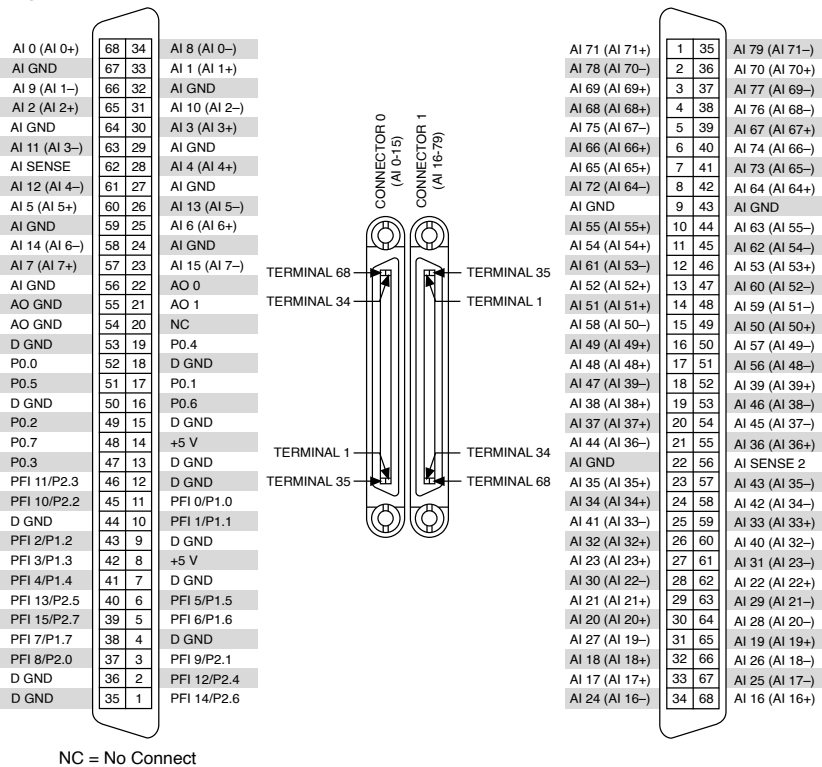
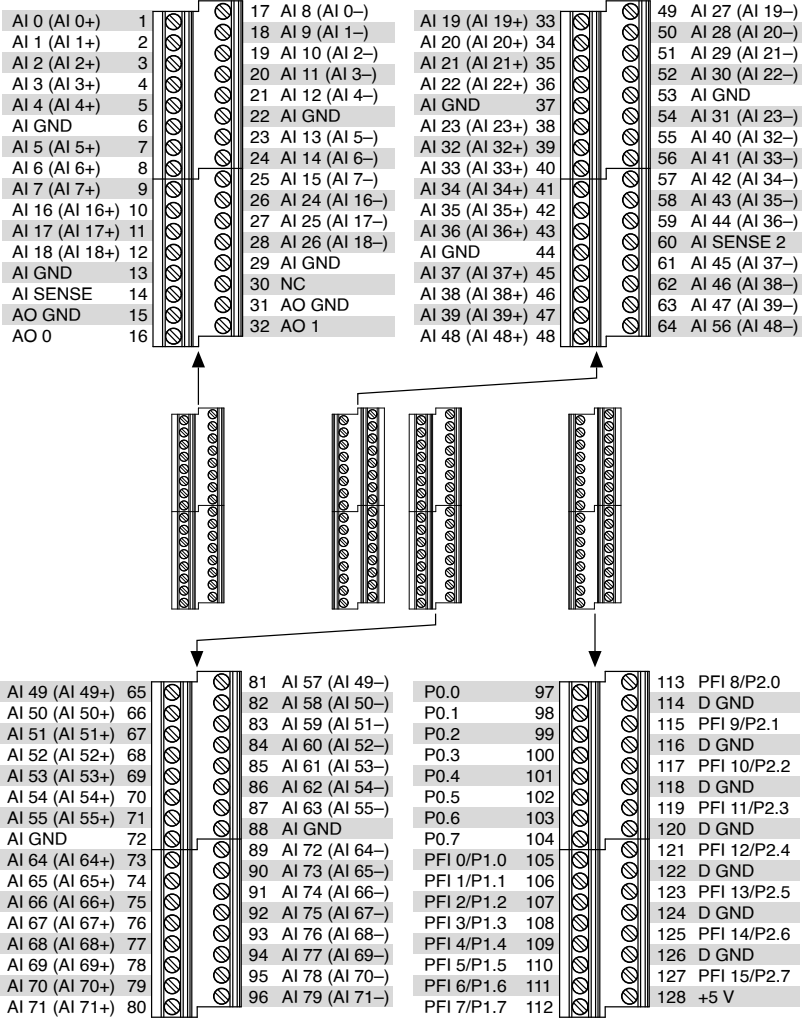
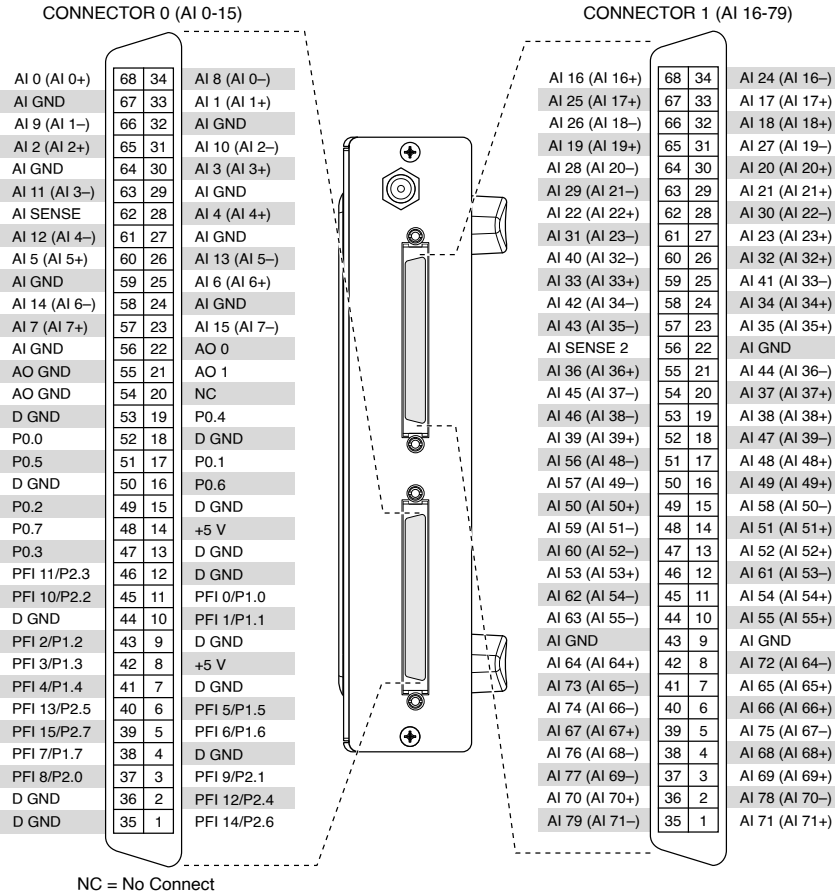


Figure 2. USB-6225 Screw Terminal Pinout



NC = No Connect

Figure 3. USB-6225 Mass Termination Pinout



# Analog Input

Table 1. Analog Input Characteristics

|                    |                                      |
|--------------------|--------------------------------------|
| Number of channels | 40 differential or 80 single-ended   |
| ADC resolution     | 16 bits                              |
| DNL                | No missing codes guaranteed          |
| INL                | Refer to <i>AI Absolute Accuracy</i> |

Table 2. AI Sample Rate

|                                  |          |
|----------------------------------|----------|
| Single channel maximum           | 250 kS/s |
| Multichannel maximum (aggregate) | 250 kS/s |

|         |            |
|---------|------------|
| Minimum | No minimum |
|---------|------------|

Table 3. Analog Input Timing and Input Characteristics

|                                                                  |                                               |
|------------------------------------------------------------------|-----------------------------------------------|
| Timing accuracy                                                  | 50 ppm of sample rate                         |
| Timing resolution                                                | 50 ns                                         |
| Input coupling                                                   | DC                                            |
| Input range                                                      | $\pm 0.2$ V, $\pm 1$ V, $\pm 5$ V, $\pm 10$ V |
| Maximum working voltage for analog inputs (signal + common mode) | $\pm 11$ V of AI GND                          |
| CMRR (DC to 60 Hz)                                               | 92 dB                                         |

Table 4. AI Input Impedance

|                           |                                          |
|---------------------------|------------------------------------------|
| Device on, AI+ to AI GND  | $>10$ G $\Omega$ in parallel with 100 pF |
| Device on, AI- to AI GND  | $>10$ G $\Omega$ in parallel with 100 pF |
| Device off, AI+ to AI GND | 820 $\Omega$                             |
| Device off, AI- to AI GND | 820 $\Omega$                             |

Table 5. AI Input Bias Current

|                    |              |
|--------------------|--------------|
| Input bias current | $\pm 100$ pA |
|--------------------|--------------|

Table 6. AI Crosstalk (at 100 kHz)

|                       |                     |
|-----------------------|---------------------|
| Adjacent channels     | -75 dB              |
| Non-adjacent channels | -90 dB <sup>1</sup> |

1. Channel AI <0..15> crosstalk to channel AI <64..79> is -71 dB. This applies to channels with 64-channel separation. Example: AI (x) and AI (x + 64).

Table 7. Analog Input Small Signal Bandwidth, FIFO, and Scan List Memory

|                                |               |
|--------------------------------|---------------|
| Small signal bandwidth (-3 dB) | 700 kHz       |
| Input FIFO size                | 4,095 samples |
| Scan list memory               | 4,095 entries |

Table 8. AI Data Transfers

|         |                                                  |
|---------|--------------------------------------------------|
| PCI/PXI | DMA (scatter-gather), interrupts, programmed I/O |
| USB     | USB Signal Stream, programmed I/O                |

Table 9. AI Overvoltage Protection for All Analog Input and Sense Channels

|            |                                  |
|------------|----------------------------------|
| Device on  | $\pm 25$ V for up to two AI pins |
| Device off | $\pm 15$ V for up to two AI pins |

Table 10. AI Input Current During Overvoltage Condition

|                                            |                            |
|--------------------------------------------|----------------------------|
| Input current during overvoltage condition | $\pm 20$ mA maximum/AI pin |
|--------------------------------------------|----------------------------|

## Settling Time for Multichannel Measurements

Table 11. Accuracy, Full-Scale Step, All Ranges

|                                     |                            |
|-------------------------------------|----------------------------|
| $\pm 90$ ppm of step ( $\pm 6$ LSB) | 4 $\mu$ s convert interval |
| $\pm 30$ ppm of step ( $\pm 2$ LSB) | 5 $\mu$ s convert interval |
| $\pm 15$ ppm of step ( $\pm 1$ LSB) | 7 $\mu$ s convert interval |

# Typical Performance Graphs

Figure 4. Settling Error versus Time for Different Source Impedances

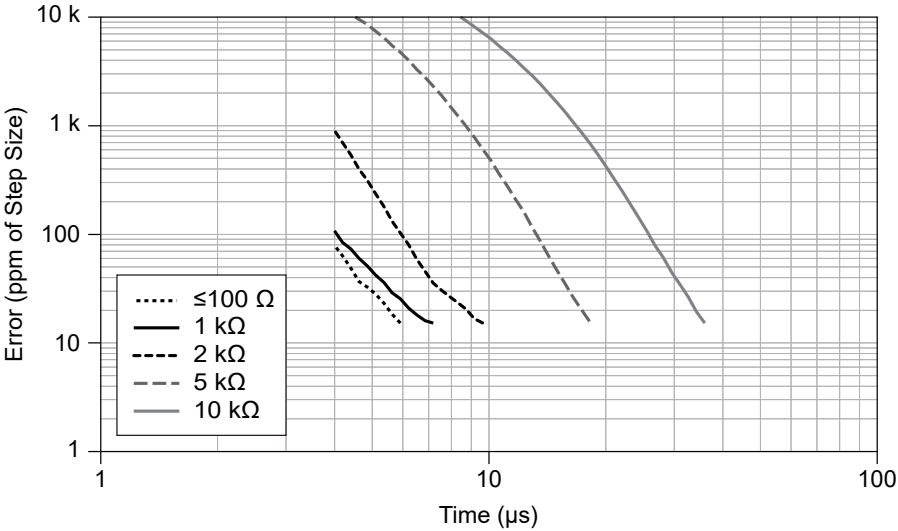


Figure 5. AI Small Signal Bandwidth

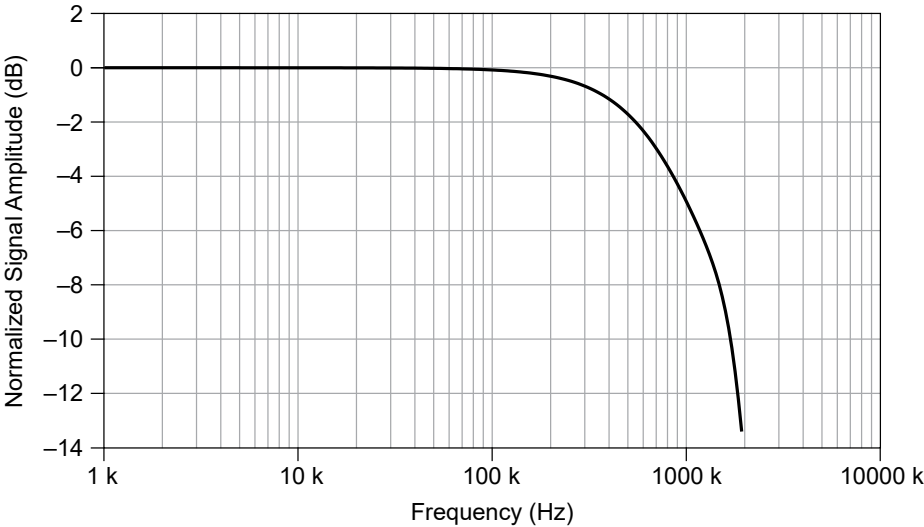
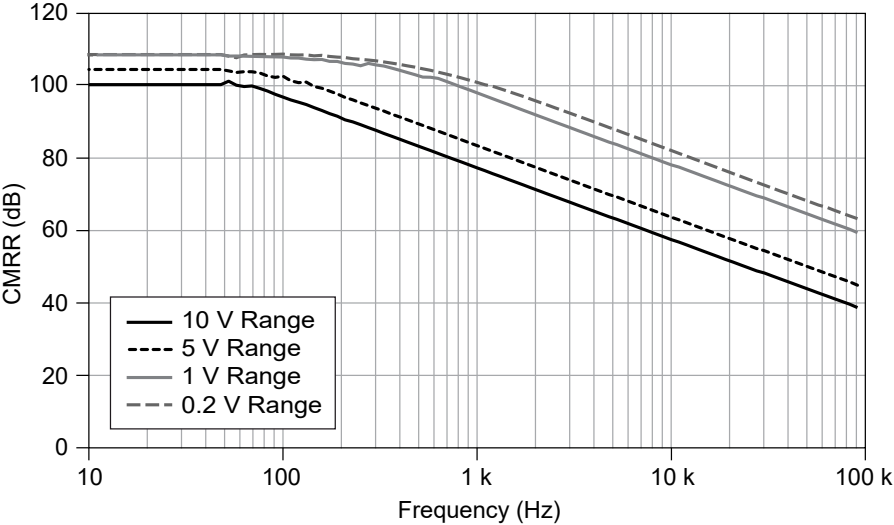


Figure 6. AI CMRR



AI Absolute Accuracy

 **Note** Accuracies listed are valid for up to one year from the device external calibration.

Table 12. AI Absolute Accuracy

| 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, $\sigma$ ( $\mu\text{Vrms}$ ) | Absolute Accuracy at Full Scale ( $\mu\text{V}$ ) | Sensitivity ( $\mu\text{V}$ ) |
|-----------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|---------------------------------|---------------------------------------------|---------------------------------------------------|-------------------------------|
| 10                                | -10                               | 75                                   | 20                                   | 57                              | 244                                         | 3,100                                             | 97.6                          |
| 5                                 | -5                                | 85                                   | 20                                   | 60                              | 122                                         | 1,620                                             | 48.8                          |
| 1                                 | -1                                | 95                                   | 25                                   | 79                              | 30                                          | 360                                               | 12.0                          |
| 0.2                               | -0.2                              | 135                                  | 80                                   | 175                             | 13                                          | 112                                               | 5.2                           |

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

Table 13. AI Absolute Accuracy Values

|             |           |
|-------------|-----------|
| Gain tempco | 25 ppm/°C |
|-------------|-----------|

|                  |                 |
|------------------|-----------------|
| Reference tempco | 5 ppm/°C        |
| INL error        | 76 ppm of range |

### AI Absolute Accuracy Equation

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

- $\text{GainError} = \text{ResidualAIGainError} + \text{GainTempco} \cdot (\text{TempChangeFromLastInternalCal}) + \text{ReferenceTempco} \cdot (\text{TempChangeFromLastExternalCal})$
- $\text{OffsetError} = \text{ResidualAIOffsetError} + \text{OffsetTempco} \cdot (\text{TempChangeFromLastInternalCal}) + \text{INLError}$
- $\text{NoiseUncertainty} = \frac{\text{Random Noise} \cdot 3}{\sqrt{100}}$   
for a coverage factor of 3  $\sigma$  and averaging 100 points.

### AI Absolute Accuracy Example

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

- $\text{TempChangeFromLastExternalCal} = 10^\circ\text{C}$
- $\text{TempChangeFromLastInternalCal} = 1^\circ\text{C}$
- $\text{number\_of\_readings} = 100$
- $\text{CoverageFactor} = 3\sigma$

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

- $\text{GainError} = 75 \text{ ppm} + 25 \text{ ppm} \cdot 1 + 5 \text{ ppm} \cdot 10 = 150 \text{ ppm}$
- $\text{OffsetError} = 20 \text{ ppm} + 57 \text{ ppm} \cdot 1 + 76 \text{ ppm} = 153 \text{ ppm}$
- $\text{NoiseUncertainty} = \frac{244 \mu\text{V} \cdot 3}{\sqrt{100}} = 73 \mu\text{V}$
- $\text{AbsoluteAccuracy} = 10 \text{ V} \cdot (\text{GainError}) + 10 \text{ V} \cdot (\text{OffsetError}) + \text{NoiseUncertainty} = 3,100 \mu\text{V}$

# Analog Output

Table 14. Analog Output Characteristics

|                    |                   |
|--------------------|-------------------|
| Number of channels | 2                 |
| DAC resolution     | 16 bits           |
| DNL                | $\pm 1$ LSB       |
| Monotonicity       | 16 bit guaranteed |

Table 15. AO Maximum Update Rate

|            |                      |
|------------|----------------------|
| 1 channel  | 833 kS/s             |
| 2 channels | 740 kS/s per channel |

Table 16. Analog Output Timing, Output, Overdrive, and Power-On/Off

|                      |                                          |
|----------------------|------------------------------------------|
| Timing accuracy      | 50 ppm of sample rate                    |
| Timing resolution    | 50 ns                                    |
| Output range         | $\pm 10$ V                               |
| Output coupling      | DC                                       |
| Output impedance     | $0.2 \Omega$                             |
| Output current drive | $\pm 5$ mA                               |
| Overdrive protection | $\pm 25$ V                               |
| Overdrive current    | 10 mA                                    |
| Power-on state       | $\pm 20$ mV                              |
| Power-off glitch     | 400 mV for 200 ms                        |
| Output FIFO size     | 8,191 samples shared among channels used |

Table 17. AO Data Transfers

|         |                                                  |
|---------|--------------------------------------------------|
| PCI/PXI | DMA (scatter-gather), interrupts, programmed I/O |
| USB     | USB Signal Stream, programmed I/O                |

Table 18. Analog Output Waveform Modes and Settling Time

|                                                |                                                                                                                                                        |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| AO waveform modes                              | Non-periodic waveform, periodic waveform regeneration mode from onboard FIFO, periodic waveform regeneration from host buffer including dynamic update |
| Settling time, full-scale step, 15 ppm (1 LSB) | 6 $\mu$ s                                                                                                                                              |
| Slew rate                                      | 15 V/ $\mu$ s                                                                                                                                          |

Table 19. AO Glitch Energy

|           |             |
|-----------|-------------|
| Magnitude | 100 mV      |
| Duration  | 2.6 $\mu$ s |

## AO Absolute Accuracy

Absolute accuracy at full-scale numbers is valid immediately following internal calibration and assumes the device is operating within 10 °C of the last external calibration.



**Note** Accuracies listed are valid for up to one year from the device external calibration.

Table 20. AO Absolute Accuracy

| Nominal Range Positive Full Scale | Nominal Range Negative Full Scale | Residual Gain Error (ppm of Reading) | Gain Tempco (ppm/°C) | Residual Offset Error (ppm of Range) | Offset Tempco (ppm of Range/°C) | Absolute Accuracy at Full Scale ( $\mu$ V) |
|-----------------------------------|-----------------------------------|--------------------------------------|----------------------|--------------------------------------|---------------------------------|--------------------------------------------|
| 10                                | -10                               | 90                                   | 10                   | 40                                   | 5                               | 3,230                                      |

Table 21. AO Absolute Accuracy Values

|                  |                  |
|------------------|------------------|
| Reference tempco | 5 ppm/°C         |
| INL error        | 128 ppm of range |

## AO Absolute Accuracy Equation

$$\text{AbsoluteAccuracy} = \text{OutputValue} \cdot (\text{GainError}) + \text{Range} \cdot (\text{OffsetError})$$

- $\text{GainError} = \text{ResidualGainError} + \text{GainTempco} \cdot (\text{TempChangeFromLastInternalCal}) + \text{ReferenceTempco} \cdot (\text{TempChangeFromLastExternalCal})$
- $\text{OffsetError} = \text{ResidualOffsetError} + \text{AOOffsetTempco} \cdot (\text{TempChangeFromLastInternalCal}) + \text{INLError}$

## Digital I/O and PFI

### Static Characteristics

Table 22. Static DIO/PFI Characteristics

|                          |                                                             |
|--------------------------|-------------------------------------------------------------|
| Number of channels       | 24 total, 8 (P0.<0..7>), 16 (PFI <0..7>/P1, PFI <8..15>/P2) |
| 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 <sup>2</sup>                        |

### Waveform Characteristics (Port 0 Only)

Table 23. DIO Waveform Characteristics (Port 0 Only)

|                                 |                                                   |
|---------------------------------|---------------------------------------------------|
| Terminals used                  | Port 0 (P0.<0..7>)                                |
| Port/sample size                | Up to 8 bits                                      |
| Waveform generation (DO) FIFO   | 2,047 samples                                     |
| Waveform acquisition (DI) FIFO  | 2,047 samples                                     |
| DI or DO Sample Clock frequency | 0 MHz to 1 MHz, system and bus activity dependent |
| Data transfers                  | DMA (scatter-gather), interrupts, programmed I/O  |

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

|                                           |                                                                                             |
|-------------------------------------------|---------------------------------------------------------------------------------------------|
| DI or DO Sample Clock source <sup>3</sup> | Any PFI, RTSI, AI Sample or AI Convert Clock, Ctr n Internal Output, and many other signals |
|-------------------------------------------|---------------------------------------------------------------------------------------------|

## PFI/Port 1/Port 2 Functionality

Table 24. PFI/Port 1/Port 2 Functionality

|                          |                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------|
| Functionality            | Static digital input, static digital output, timing input, timing output                |
| Timing output sources    | Many AI, AO, counter, DI, DO timing signals                                             |
| Debounce filter settings | 125 ns, 6.425 $\mu$ s, 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..7>         | —       | -24 mA  |
| Output high current ( $I_{OH}$ ) PFI <0..15>/P1/P2 | —       | -16 mA  |
| Output low current ( $I_{OL}$ ) P0.<0..7>          | —       | 24 mA   |
| Output low current ( $I_{OL}$ ) PFI <0..15>/P1/P2  | —       | 16 mA   |

## Electrical Characteristics

Table 25. Electrical Characteristics

| Level                                 | Minimum | Maximum |
|---------------------------------------|---------|---------|
| Positive-going threshold ( $V_{T+}$ ) | —       | 2.2 V   |

- 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.

| Level                                                      | Minimum | Maximum |
|------------------------------------------------------------|---------|---------|
| Negative-going threshold (VT-)                             | 0.8 V   | —       |
| Delta VT hysteresis (VT+ - VT-)                            | 0.2 V   | —       |
| I <sub>IL</sub> input low current (V <sub>in</sub> = 0 V)  | —       | -10 µA  |
| I <sub>IH</sub> input high current (V <sub>in</sub> = 5 V) | —       | 250 µA  |

## Digital I/O Characteristics

Figure 7. DIO Port 0: I<sub>oh</sub> versus V<sub>oh</sub>

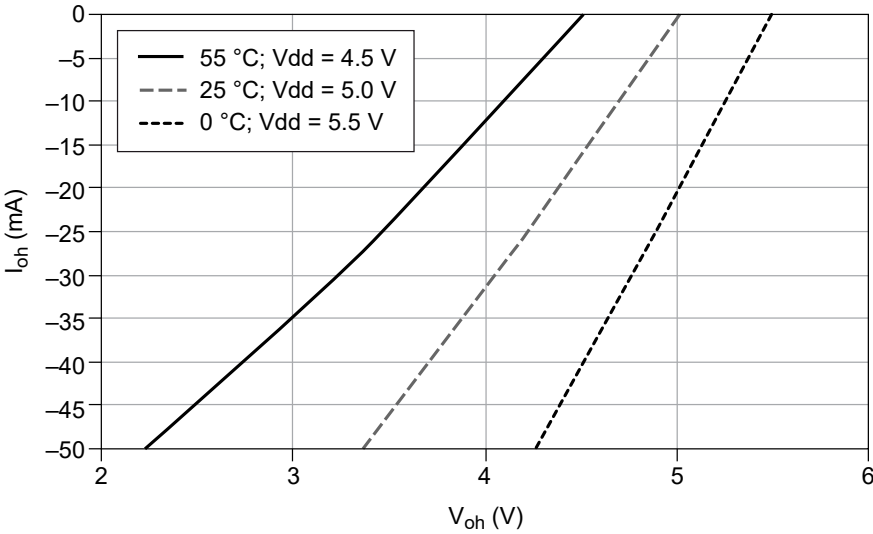


Figure 8. DIO PFI/Port 1/Port 2: I<sub>oh</sub> versus V<sub>oh</sub>

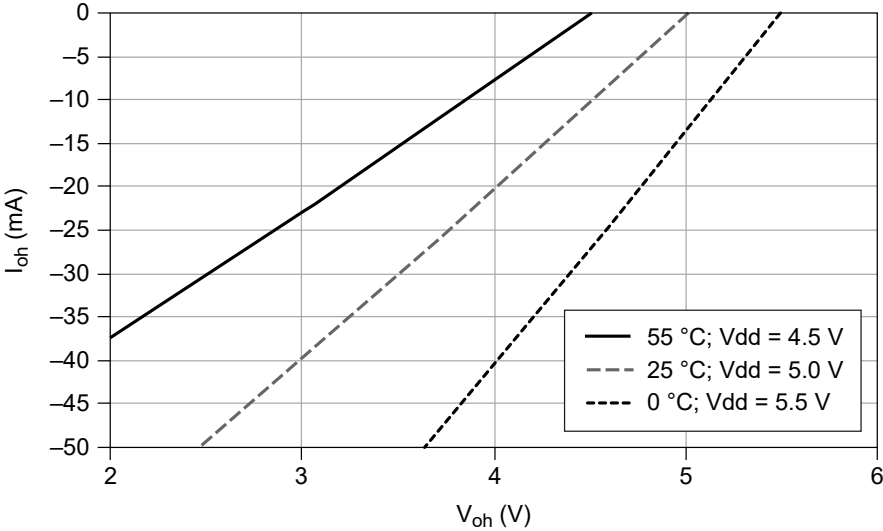


Figure 9. DIO Port 0:  $I_{ol}$  versus  $V_{ol}$

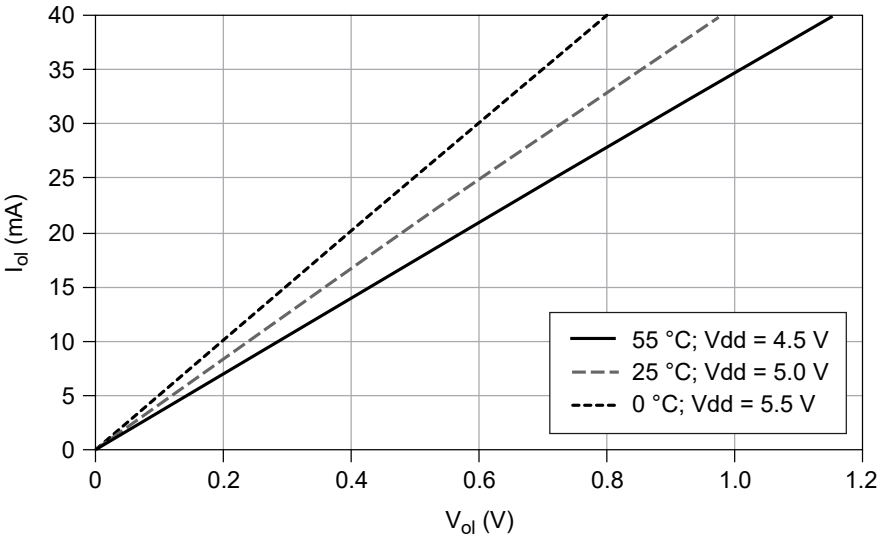
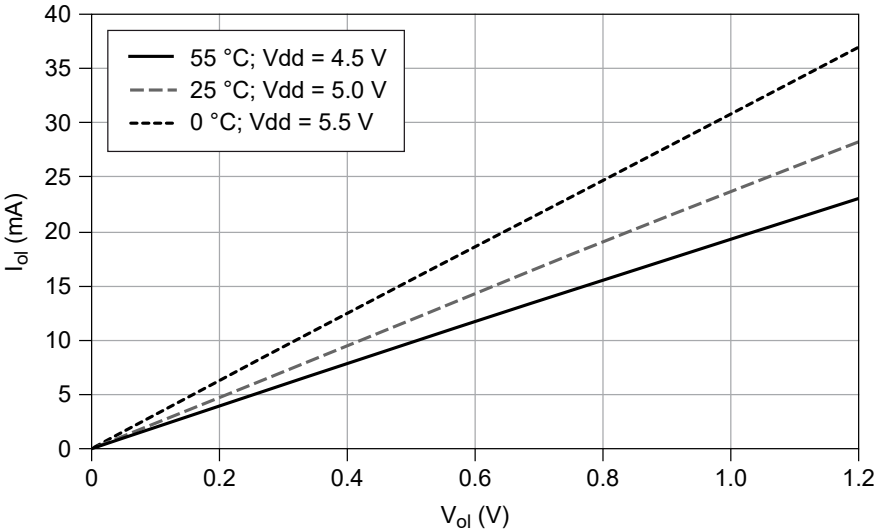


Figure 10. DIO PFI/Port 1/Port 2:  $I_{ol}$  versus  $V_{ol}$



# General-Purpose Counters/Timers

Table 26. General-Purpose Counters/Timer

|                          |                                                                             |
|--------------------------|-----------------------------------------------------------------------------|
| 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 |
| 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                                                                             |

Table 27. Counter/Timer Data Transfers

|         |                                                                                            |
|---------|--------------------------------------------------------------------------------------------|
| PCI/PXI | Dedicated scatter-gather DMA controller for each counter/timer; interrupts, programmed I/O |
| USB     | USB Signal Stream, programmed I/O                                                          |

## Frequency Generator

Table 28. 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) (PCI/PXI Only)

Table 29. 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

Table 30. 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 |
| Analog output function                     | Start Trigger, Pause Trigger, Sample Clock, Sample Clock Timebase                                   |
| 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

Table 31. Device-to-Device Trigger Bus

|                          |                                                                                         |
|--------------------------|-----------------------------------------------------------------------------------------|
| PCI                      | RTSI <0..7> <sup>4</sup>                                                                |
| PXI                      | PXI_TRIG <0..7>, PXI_STAR                                                               |
| USB source               | None                                                                                    |
| Output selections        | 10 MHz Clock, frequency generator output, many internal signals                         |
| Debounce filter settings | 125 ns, 6.425 $\mu$ s, 2.56 ms, disable; high and low transitions; selectable per input |

4. In other sections of this document, RTSI refers to RTSI <0..7> for the PCI devices or PXI\_TRIG <0..7> for PXI devices.

## Bus Interface

Table 32. Bus Interface Characteristics

|                        |                                                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------|
| PCI/PXI                | 3.3 V or 5 V signal environment                                                                                 |
| USB                    | USB 2.0 Hi-Speed or full-speed <sup>5, 6</sup>                                                                  |
| DMA channels (PCI/PXI) | 6, can be used for analog input, analog output, digital input, digital output, counter/timer 0, counter/timer 1 |
| USB Signal Stream      | 4, can be used for analog input, analog output, counter/timer 0, counter/timer 1                                |

The PXI module can be installed in PXI Express hybrid slots. It cannot be used to control SCXI in PXI/SCXI combo chassis.

## Power Requirements

Table 33. Current Draw from Bus During No-Load Condition (Does Not Include P0/PFI/P1/P2 and +5 V Terminals)

|        |        |
|--------|--------|
| +5 V   | 0.02 A |
| +3.3 V | 0.25 A |
| +12 V  | 0.15 A |

Table 34. Current Draw from Bus During AI and AO Overvoltage Condition (Does Not Include P0/PFI/P1/P2 and +5 V Terminals)

|        |        |
|--------|--------|
| +5 V   | 0.02 A |
| +3.3 V | 0.25 A |
| +12 V  | 0.25 A |



**Caution** USB devices must be powered with an NI offered AC adapter or a National Electric Code (NEC) Class 2 DC source that meets the power requirements for the device and has appropriate safety certification marks for country of use.

5. If you are using an USB M Series device in full-speed mode, device performance will be lower and you will not be able to achieve maximum sample/update rates.
6. Operating on a full-speed bus may result in lower performance.

Table 35. USB Power Supply Requirements

|                               |                                                                                                                                  |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| USB power supply requirements | 11 VDC to 30 VDC, 20 W, locking or non-locking power jack with 0.080 in. diameter center pin, 5/16-32 thread for locking collars |
|-------------------------------|----------------------------------------------------------------------------------------------------------------------------------|

## Current Limits



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

Table 36. PCI Current Limits

|                             |                        |
|-----------------------------|------------------------|
| +5 V terminal (connector 0) | 1 A maximum. See note. |
| +5 V terminal (connector 1) | 1 A maximum. See note. |



**Note** Older revisions of the PCI device have a self-resetting fuse that opens when current exceeds the current limit on the +5 V terminal. Newer revisions of the device 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.

Table 37. PXI Current Limits

|                                          |                        |
|------------------------------------------|------------------------|
| +5 V terminal (connector 0)              | 1 A maximum. See note. |
| +5 V terminal (connector 1)              | 1 A maximum. See note. |
| P0/PFI/P1/P2 and +5 V terminals combined | 2 A maximum            |



**Note** Older revisions of the PXI module have a self-resetting fuse that opens when current exceeds the current limit on the +5 V terminal. Newer revisions of the module 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.

Table 38. USB Current Limits

|                                          |                        |
|------------------------------------------|------------------------|
| +5 V terminal                            | 1 A maximum. See note. |
| P0/PFI/P1/P2 and +5 V terminals combined | 2 A maximum            |
| Power supply fuse                        | 2 A, 250 V             |



**Note** Older revisions of the USB device have a self-resetting fuse that opens when current exceeds the current limit on the +5 V terminal. Newer revisions of the device 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.

## Physical Characteristics

Table 39. Dimensions

|                                                           |                                                                |
|-----------------------------------------------------------|----------------------------------------------------------------|
| PCI-6225 printed circuit board                            | 10.6 cm × 15.5 cm (4.2 in. × 6.1 in.)                          |
| PXI-6225 printed circuit board                            | Standard 3U PXI                                                |
| USB-6225 Screw Terminal enclosure (includes connectors)   | 26.67 cm × 17.09 cm × 4.45 cm (10.5 in. × 6.73 in. × 1.75 in.) |
| USB-6225 Mass Termination enclosure (includes connectors) | 18.8 cm × 17.09 cm × 4.45 cm (7.4 in. × 6.73 in. × 1.75 in.)   |
| USB-6225 OEM                                              | Refer to the <i>NI USB-622x/625x/628x OEM User Guide</i>       |

Table 40. Weight

|          |                |
|----------|----------------|
| PCI-6225 | 103 g (3.6 oz) |
|----------|----------------|

|                           |                      |
|---------------------------|----------------------|
| PXI-6225                  | 174 g (6.1 oz)       |
| USB-6225 Screw Terminal   | 1.24 kg (2 lb 11 oz) |
| USB-6225 Mass Termination | 907 g (2 lb)         |
| USB-6225 OEM              | 162 g (5.7 oz)       |

Table 41. I/O Connectors

|                           |                     |
|---------------------------|---------------------|
| PCI/PXI-6225              | 2 68-pin VHDCI      |
| USB-6225 Screw Terminal   | 128 screw terminals |
| USB-6225 Mass Termination | 2 68-pin SCSI       |

Table 42. USB-6225 Screw Terminal Wiring

|                                |                  |
|--------------------------------|------------------|
| USB-6225 Screw Terminal wiring | 16 AWG to 28 AWG |
|--------------------------------|------------------|

**Related information:**

- [USB-622x/625x/628x OEM User Guide](#)
- [Dimensional Drawings](#)

## Calibration

Table 43. Calibration

|                                  |            |
|----------------------------------|------------|
| PCI/PXI recommended warm-up time | 15 minutes |
| USB recommended warm-up time     | 30 minutes |
| Calibration interval             | 1 year     |

# Maximum Working Voltage

Connect only voltages that are below these limits.

Table 44. Maximum Working 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

Table 45. Environmental Characteristics

|                               |                                 |
|-------------------------------|---------------------------------|
| PCI/PXI operating temperature | 0 °C to 55 °C                   |
| USB operating temperature     | 0 °C to 45 °C                   |
| Storage temperature           | -20 °C to 70 °C                 |
| Humidity                      | 10% RH to 90% RH, noncondensing |
| Maximum altitude              | 2,000 m                         |
| Pollution Degree              | 2                               |
| Indoor use only.              |                                 |

## Shock and Vibration (PXI Only)

Table 46. 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>                                                                                                                            |
| Random vibration, 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.) |

## Safety Compliance Standards

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 C22.2 No. 61010-1



**Note** For safety certifications, refer to the product label or the [Product Certifications and Declarations](#) section.

## EMC Standards

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 [Product Certifications and Declarations](#) section.

## CE Compliance

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)

## Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit [ni.com/product-certifications](https://ni.com/product-certifications), search by model number, and click the appropriate link.

### Related information:

- [Product Certifications](#)

## 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 *Engineering a Healthy Planet* web page at [ni.com/environment](https://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.

## EU and UK Customers

-  **Waste Electrical and Electronic Equipment (WEEE)**—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](https://ni.com/environment/weee).

## 电子信息产品污染控制管理办法（中国RoHS）

-  **中国RoHS**—NI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NI中国RoHS合规性信息，请登录 [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china)。(For information about China RoHS compliance, go to [ni.com/environment/rohs\\_china](https://ni.com/environment/rohs_china).)