

DEVICE SPECIFICATIONS

NI 6361

X Series Data Acquisition: 2 MS/s, 16 AI, 24 DIO, 2 AO

| | | | | |
|--|---------|-----|-----|------|
| Français | Deutsch | 日本語 | 한국어 | 简体中文 |
| ni.com/manuals | | | | |

The following specifications are typical at 25 °C, unless otherwise noted. For more information about the NI 6361, refer to the *X Series User Manual* available at ni.com/manuals.

Analog Input

| | |
|--|--|
| Number of channels | 8 differential or 16 single ended |
| ADC resolution | 16 bits |
| DNL | No missing codes guaranteed |
| INL | Refer to the <i>AI Absolute Accuracy</i> section. |
| Sample rate | |
| Single channel maximum | 2.00 MS/s |
| Multichannel maximum (aggregate) | 1.00 MS/s |
| Minimum | No minimum |
| Timing resolution | 10 ns |
| Timing accuracy | 50 ppm of sample rate |
| 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) | 100 dB |
| Input impedance | |
| Device on | |
| AI+ to AI GND | >10 G Ω in parallel with 100 pF |
| AI- to AI GND | >10 G Ω in parallel with 100 pF |

| | |
|--|--------------------------------------|
| 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) | 1.7 MHz |
| Input FIFO size | 2,047 samples |
| Scan list memory | 4,095 entries |
| Data transfers | |
| PCIe/PXIE | DMA (scatter-gather), programmed I/O |
| USB | USB Signal Stream, programmed I/O |
| Overvoltage protection for all analog input and sense channels | |
| Device on | ± 25 V for up to two AI pins |
| Device off | ± 15 V for up to two AI pins |
| Input current during overvoltage condition | ± 20 mA max/AI pin |

Settling Time for Multichannel Measurements

| Range | ± 60 ppm of Step (± 4 LSB for Full-Scale Step) | ± 15 ppm of Step (± 1 LSB for Full-Scale Step) |
|---|---|---|
| ± 10 V, ± 5 V, ± 2 V, ± 1 V | 1 μ s | 1.5 μ s |
| ± 0.5 V | 1.5 μ s | 2 μ s |
| ± 0.2 V, ± 0.1 V | 2 μ s | 8 μ s |

Typical Performance Graphs

Figure 1. Settling Error versus Time for Different Source Impedances

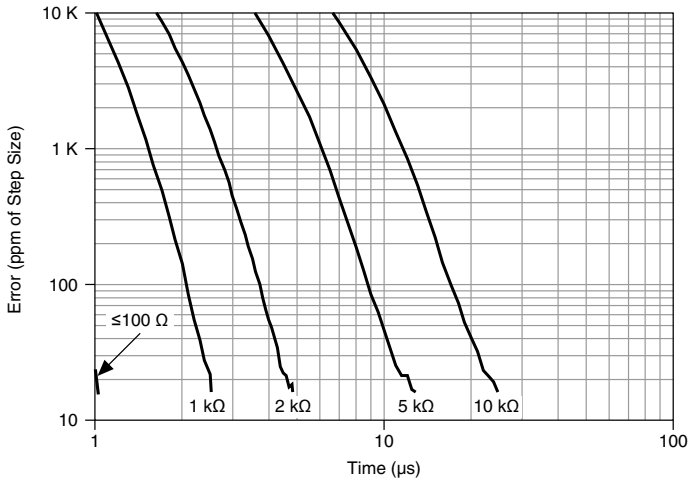


Figure 2. AI <0..15> Small Signal Bandwidth

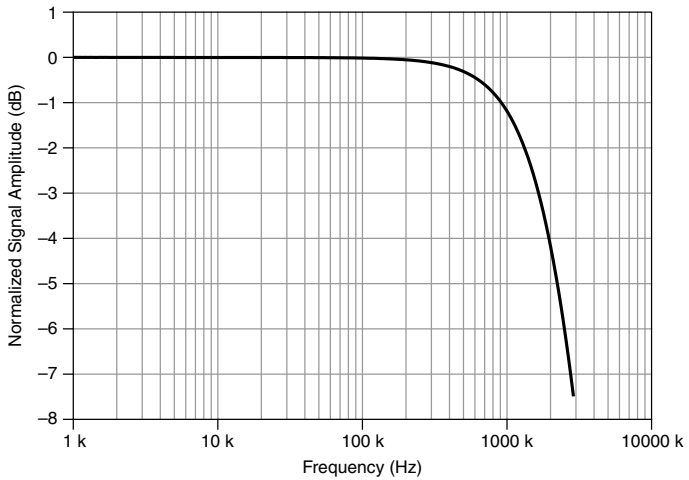
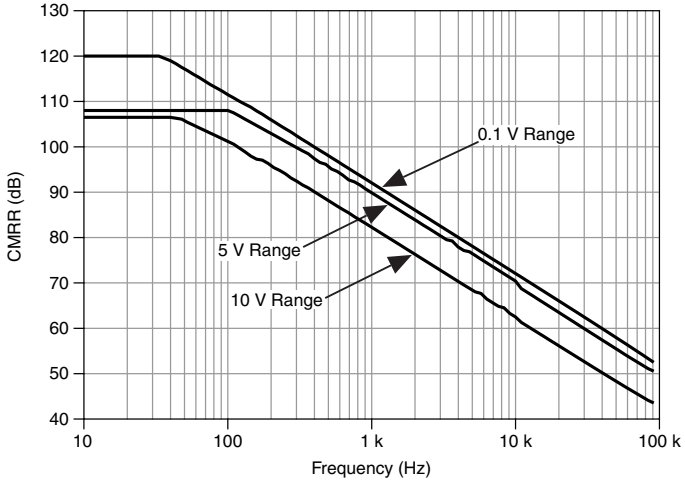


Figure 3. AI <0..15> CMRR



AI Absolute Accuracy

Table 1. 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, σ (μ Vrms) | Absolute Accuracy at Full Scale (μ V) |
|-----------------------------------|-----------------------------------|--------------------------------------|--------------------------------------|---------------------------------|--------------------------------------|--|
| 10 | -10 | 48 | 13 | 21 | 315 | 1,660 |
| 5 | -5 | 55 | 13 | 21 | 157 | 870 |
| 2 | -2 | 55 | 13 | 24 | 64 | 350 |
| 1 | -1 | 65 | 17 | 27 | 38 | 190 |
| 0.5 | -0.5 | 68 | 17 | 34 | 27 | 100 |
| 0.2 | -0.2 | 95 | 27 | 55 | 21 | 53 |
| 0.1 | -0.1 | 108 | 45 | 90 | 17 | 33 |

For more information about absolute accuracy at full scale, refer to the [AI Absolute Accuracy Example](#) section.

| | |
|------------------|-----------------|
| Gain tempco | 13 ppm/°C |
| Reference tempco | 1 ppm/°C |
| INL error | 60 ppm of range |



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

AI Absolute Accuracy Equation

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

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

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

$$NoiseUncertainty = \frac{Random\ Noise \cdot 3}{\sqrt{10,000}} \text{ for a coverage factor of } 3\sigma \text{ and averaging } 10,000 \text{ points.}$$

AI Absolute Accuracy Example

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

- $TempChangeFromLastExternalCal = 10\text{ }^{\circ}\text{C}$
- $TempChangeFromLastInternalCal = 1\text{ }^{\circ}\text{C}$
- $number_of_readings = 10,000$
- $CoverageFactor = 3\sigma$

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

$$GainError = 48\text{ ppm} + 13\text{ ppm} \cdot 1 + 1\text{ ppm} \cdot 10 = 71\text{ ppm}$$

$$OffsetError = 13\text{ ppm} + 21\text{ ppm} \cdot 1 + 60\text{ ppm} = 94\text{ ppm}$$

$$Noise\ Uncertainty = \frac{315\ \mu\text{V} \cdot 3}{\sqrt{10,000}} = 9.4\ \mu\text{V}$$

$$AbsoluteAccuracy = 10\text{ V} \cdot (GainError) + 10\text{ V} \cdot (OffsetError) + NoiseUncertainty = 1,660\ \mu\text{V}$$

Analog Triggers

| | |
|------------------------|---|
| Number of triggers | 1 |
| Source | AI <0..15>, APFI 0 |
| Functions | Start Trigger, Reference Trigger, Pause Trigger, Sample Clock, Convert Clock, Sample Clock Timebase |
| Source level | |
| AI <0..15> | ±Full scale |
| APFI 0 | ±10 V |
| Resolution | 16 bits |
| Modes | Analog edge triggering, analog edge triggering with hysteresis, and analog window triggering |
| Bandwidth (-3 dB) | |
| AI <0..15> | 3.4 MHz |
| APFI 0 | 3.9 MHz |
| Accuracy | ±1% of range |
| APFI 0 characteristics | |
| Input impedance | 10 kΩ |
| Coupling | DC |
| Protection, power on | ±30 V |
| Protection, power off | ±15 V |

Analog Output

| | |
|------------------------------------|-----------------------|
| Number of channels | 2 |
| DAC resolution | 16 bits |
| DNL | ±1 LSB |
| Monotonicity | 16 bit guaranteed |
| Maximum update rate (simultaneous) | |
| 1 channel | 2.86 MS/s |
| 2 channels | 2.00 MS/s |
| Timing accuracy | 50 ppm of sample rate |
| Timing resolution | 10 ns |

| | |
|---|--|
| Output range | $\pm 10\text{ V}$, $\pm 5\text{ V}$, \pm external reference on APFI 0 |
| Output coupling | DC |
| Output impedance | $0.2\ \Omega$ |
| Output current drive | $\pm 5\text{ mA}$ |
| Overdrive protection | $\pm 25\text{ V}$ |
| Overdrive current | 26 mA |
| Power-on state | $\pm 5\text{ mV}$ |
| Power-on/off glitch | |
| PCIe/PXIe | 1.5 V peak for 200 ms |
| USB | 1.5 V for 1.2 s , typical behavior ¹ |
| Output FIFO size | $8,191$ samples shared among channels used |
| Data transfers | |
| PCIe/PXIe | DMA (scatter-gather), programmed I/O |
| USB | USB Signal Stream, programmed I/O |
| 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) | $2\ \mu\text{s}$ |
| Slew rate | $20\text{ V}/\mu\text{s}$ |
| Glitch energy at midscale transition, $\pm 10\text{ V}$ range | $10\text{ nV} \cdot \text{s}$ |

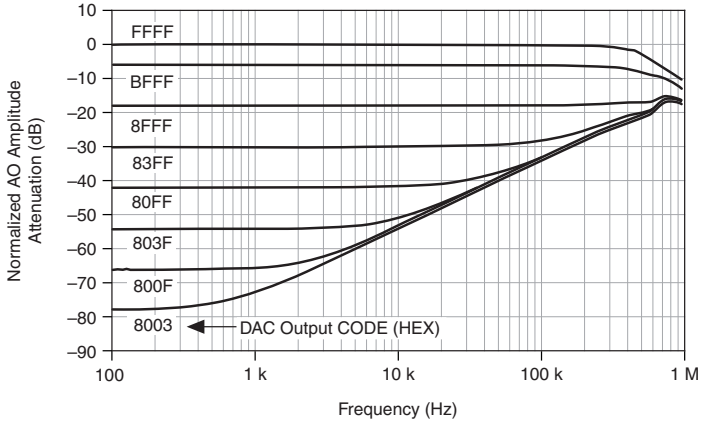
External Reference

APFI 0 characteristics

| | |
|------------------------|---------------------------|
| Input impedance | $10\text{ k}\Omega$ |
| Coupling | DC |
| Protection, device on | $\pm 30\text{ V}$ |
| Protection, device off | $\pm 15\text{ V}$ |
| Range | $\pm 11\text{ V}$ |
| Slew rate | $20\text{ V}/\mu\text{s}$ |

¹ Time period may be longer due to host system USB performance. Time period is longer during firmware updates.

Figure 4. AO External Reference Bandwidth



AO Absolute Accuracy

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

Table 2. AO Absolute Accuracy

| Nominal Range Positive Full Scale | Nominal Range Negative Full Scale | Residual Gain Error (ppm of Reading) | Gain Tempco (ppm/°C) | Reference Tempco (ppm/°C) | Residual Offset Error (ppm of Range) | Offset Tempco (ppm of Range/°C) | INL Error (ppm of Range) | Absolute Accuracy at Full Scale (µV) |
|-----------------------------------|-----------------------------------|--------------------------------------|----------------------|---------------------------|--------------------------------------|---------------------------------|--------------------------|--------------------------------------|
| 10 | -10 | 63 | 17 | 1 | 33 | 2 | 64 | 1,890 |
| 5 | -5 | 70 | 8 | 1 | 33 | 2 | 64 | 935 |



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

AO Absolute Accuracy Equation

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

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

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

Digital I/O/PFI

Static 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 k Ω typical, 20 k Ω minimum |
| Input voltage protection | \pm 20 V on up to two pins |



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

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 | 255 samples |
| DI Sample Clock frequency | |
| PCIe/PXIe | 0 to 10 MHz, system and bus activity dependent |
| USB | 0 to 1 MHz, system and bus activity dependent |
| DO Sample Clock frequency | |
| PCIe/PXIe | |
| Regenerate from FIFO | 0 to 10 MHz |
| Streaming from Memory | 0 to 10 MHz, system and bus activity dependent |

| | |
|------------------------------|---|
| USB | |
| Regenerate from FIFO | 0 to 10 MHz |
| Streaming from memory | 0 to 1 MHz, system and bus activity dependent |
| Data transfers | |
| PCIe/PXIe | DMA (scatter-gather), programmed I/O |
| USB | USB Signal Stream, programmed I/O |
| Digital line filter settings | 160 ns, 10.24 μ s, 5.12 ms, disable |

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 | 90 ns, 5.12 μ s, 2.56 ms, custom interval, disable; programmable high and low transitions; selectable per input |

Recommended Operating Conditions

| | |
|----------------------------------|----------------|
| Input high voltage (V_{IH}) | |
| Minimum | 2.2 V |
| Maximum | 5.25 V |
| Input low voltage (V_{IL}) | |
| Minimum | 0 V |
| Maximum | 0.8 V |
| Output high current (I_{OH}) | |
| P0.<0..7> | -24 mA maximum |
| PFI <0..15>/P1/P2 | -16 mA maximum |
| Output low current (I_{OL}) | |
| P0.<0..7> | 24 mA maximum |
| PFI <0..15>/P1/P2 | 16 mA maximum |

Digital I/O Characteristics

| | |
|---|---------------|
| Positive-going threshold (V_{T+}) | 2.2 V maximum |
| Negative-going threshold (V_{T-}) | 0.8 V minimum |
| Delta VT hysteresis ($V_{T+} - V_{T-}$) | 0.2 V minimum |

I_{IL} input low current ($V_{IN} = 0\text{ V}$) -10 μA maximum

I_{IH} input high current ($V_{IN} = 5\text{ V}$) 250 μA maximum

Figure 5. P0.<0..7>: I_{OH} versus V_{OH}

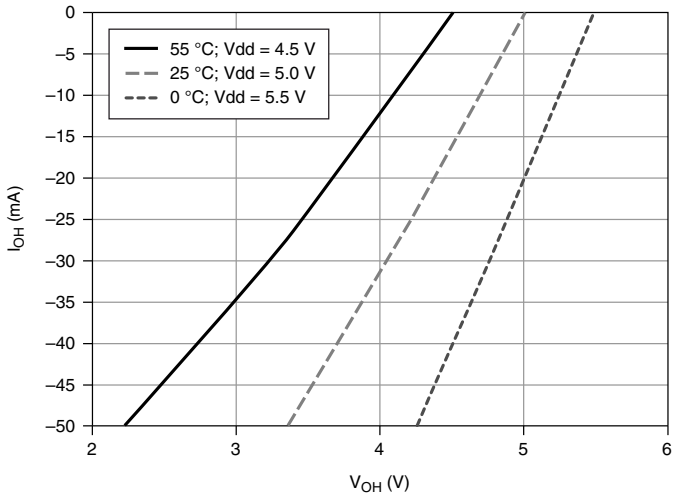


Figure 6. P0.<0..7>: I_{OL} versus V_{OL}

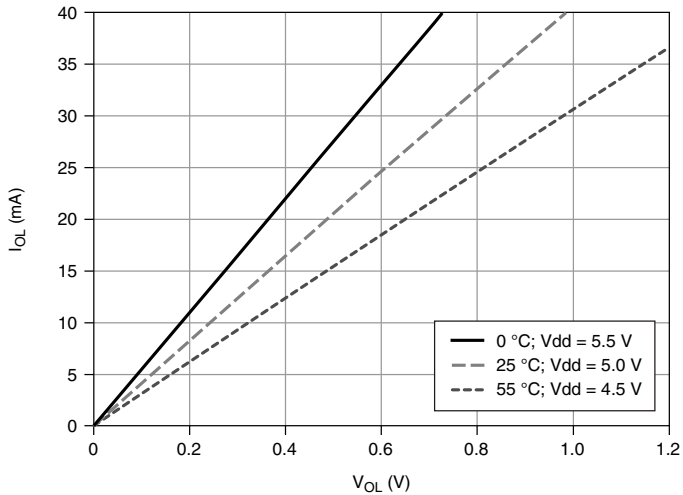


Figure 7. PFI <0..15>/P1/P2: I_{OH} versus V_{OH}

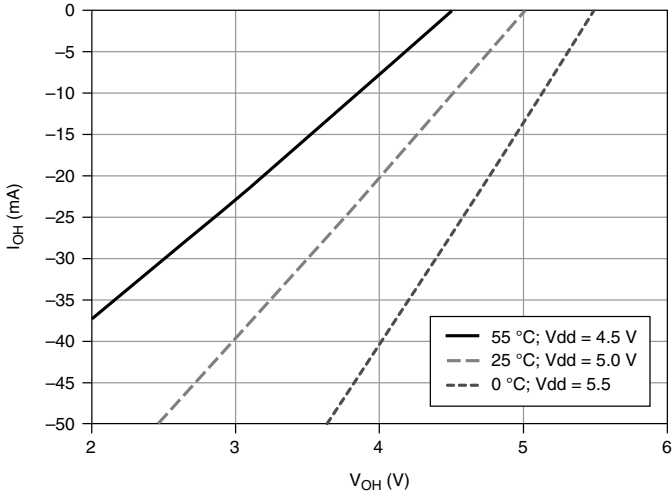
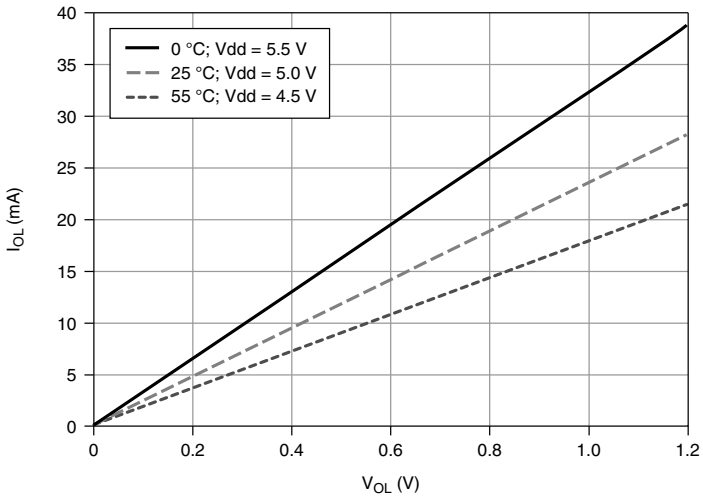


Figure 8. PFI <0..15>/P1/P2: I_{OL} versus V_{OL}



General-Purpose Counters

| | |
|--------------------------|---------|
| Number of counter/timers | 4 |
| Resolution | 32 bits |

| | |
|-------------------------------|---|
| Counter measurements | Edge counting, pulse, pulse width, 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 | 100 MHz, 20 MHz, 100 kHz |
| External base clock frequency | |
| PCIe/USB | 0 MHz to 25 MHz |
| PXIe | 0 MHz to 25 MHz; 0 MHz to 100 MHz on PXIe_DSTAR <A,B> |
| Base clock accuracy | 50 ppm |
| Inputs | Gate, Source, HW_Arm, Aux, A, B, Z, Up_Down, Sample Clock |
| Routing options for inputs | |
| PCIe | Any PFI, RTSI, analog trigger, many internal signals |
| PXIe | Any PFI, PXIe_DSTAR<A,B>, PXI_TRIG, PXI_STAR, analog trigger, many internal signals |
| USB | Any PFI, analog trigger, many internal signals |
| FIFO | 127 samples per counter |
| Data transfers | |
| PCIe/PXIe | Dedicated scatter-gather DMA controller for each counter/timer, programmed I/O |
| USB | USB Signal Stream, programmed I/O |

Frequency Generator

| | |
|---------------------|-------------------------|
| Number of channels | 1 |
| Base clocks | 20 MHz, 10 MHz, 100 kHz |
| Divisors | 1 to 16 |
| Base clock accuracy | 50 ppm |

Phase-Locked Loop (PLL)

Number of PLLs

1

Table 3. Reference Clock Locking Frequencies

| Reference Signal | PCIe Locking Input Frequency (MHz) | PXIe Locking Input Frequency (MHz) | USB Locking Input Frequency (MHz) |
|------------------|------------------------------------|------------------------------------|-----------------------------------|
| PXIe_DSTAR<A,B> | — | 10, 20, 100 | — |
| PXI_STAR | — | 10, 20 | — |
| PXIe_CLK100 | — | 100 | — |
| PXI_TRIG <0..7> | — | 10, 20 | — |
| RTSI <0..7> | 10, 20 | — | — |
| PFI <0..15> | 10, 20 | 10, 20 | 10 |

Output of PLL

100 MHz Timebase; other signals derived from 100 MHz Timebase including 20 MHz and 100 kHz Timebases

External Digital Triggers

Source

PCIe

Any PFI, RTSI

PXIe

Any PFI, PXIe_DSTAR<A,B>, PXI_TRIG, PXI_STAR

USB

Any PFI

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 functions

Gate, Source, HW_Arm, Aux, A, B, Z, Up_Down, Sample Clock

| | |
|--|--|
| Digital waveform generation (DO) function | Start Trigger, Pause Trigger, Sample Clock, Sample Clock Timebase |
| Digital waveform acquisition (DI) function | Start Trigger, Reference Trigger, Pause Trigger, Sample Clock, Sample Clock Timebase |

Device-to-Device Trigger Bus

| | |
|--------------------------|--|
| Input Source | |
| PCIe | RTSI <0..7> ² |
| PXIe | PXI_TRIG <0..7>, PXI_STAR, PXIe_DSTAR<A,B> |
| USB | None |
| Output destination | |
| PCIe | RTSI <0..7> ² |
| PXIe | PXI_TRIG <0..7>, PXIe_DSTARC |
| USB | None |
| Output selections | 10 MHz Clock; frequency generator output; many internal signals |
| Debounce filter settings | 90 ns, 5.12 μs, 2.56 ms, custom interval, disable; programmable high and low transitions; selectable per input |

² In other sections of this document, RTSI refers to RTSI <0..7> for NI PCIe-6363 or PXI_TRIG <0..7> for NI PXIe-6363.

Bus Interface

PCIe

| | |
|--------------------|---|
| Form factor | x1 PCI Express, specification v1.1 compliant |
| Slot compatibility | x1, x4, x8, and x16 PCI Express slots ³ |
| DMA channels | 8, can be used for analog input, analog output, digital input, digital output, counter/timer 0, counter/timer 1, counter/timer 2, counter/timer 3 |

PXIe

| | |
|--------------------|---|
| 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 | 8, can be used for analog input, analog output, digital input, digital output, counter/timer 0, counter/timer 1, counter/timer 2, counter/timer 3 |

All PXIe devices may be installed in PXI Express slots or PXI Express hybrid slots.

USB

| | |
|-------------------|---|
| USB compatibility | USB 2.0 Hi-Speed or full-speed ⁴ |
| USB Signal Stream | 8, can be used for analog input, analog output, digital input, digital output, counter/timer 0, counter/timer 1, counter/timer 2, counter/timer 3 |

³ Some motherboards reserve the x16 slot for graphics use. For PCI Express guidelines, refer to ni.com/pciexpress.

⁴ Operating on a full-speed bus results in lower performance, and you might not be able to achieve maximum sampling/update rates.

Power Requirements



Caution The protection provided by the device can be impaired if the device is used in a manner not described in the *X Series User Manual*.

PCIe

Without disk drive power connector installed

| | |
|--------|-------|
| +3.3 V | 4.6 W |
|--------|-------|

| | |
|-------|-------|
| +12 V | 5.4 W |
|-------|-------|

With disk drive power connector installed

| | |
|--------|-------|
| +3.3 V | 1.6 W |
|--------|-------|

| | |
|-------|-------|
| +12 V | 5.4 W |
|-------|-------|

| | |
|------|------|
| +5 V | 15 W |
|------|------|

PXIe

| | |
|--------|-------|
| +3.3 V | 1.6 W |
|--------|-------|

| | |
|-------|--------|
| +12 V | 19.8 W |
|-------|--------|



Caution The USB device 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.

USB

| | |
|---------------------------|---|
| Power supply requirements | 11 to 30 VDC, 30 W, 2 positions 3.5 mm pitch pluggable screw terminal with screw locks similar to Phoenix Contact MC 1,5/2-STF-3,5 BK |
|---------------------------|---|

| | |
|------------------------------|--|
| Power input mating connector | Phoenix Contact MC 1,5/2-GF-3,5 BK or equivalent |
|------------------------------|--|

Current Limits



Caution Exceeding the current limits may cause unpredictable device behavior.

PCIe

Without disk drive power connector installed

| | |
|--|------------|
| P0/PFI/P1/P2 and +5 V terminals combined | 0.59 A max |
|--|------------|

With disk drive power connector installed

| | |
|-----------------------------|----------------------|
| +5 V terminal (connector 0) | 1 A max ⁵ |
| +5 V terminal (connector 1) | 1 A max ⁵ |
| P0/PFI/P1/P2 combined | 1 A max |

PXIe

| | |
|--|----------------------|
| +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 |

USB

| | |
|--|----------------------|
| +5 V terminal | 1 A max ⁵ |
| P0/PFI/P1/P2 and +5 V terminals combined | 2 A max |

Physical Characteristics

Printed circuit board dimensions

| | |
|------|---|
| PCIe | 9.9 × 16.8 cm (3.9 × 6.6 in.) (half-length) |
| PXIe | Standard 3U PXI |

Enclosure dimensions (includes connectors)

| | |
|------------------|---|
| USB | |
| Mass termination | 18.5 × 17.3 × 3.6 cm (7.3 × 6.8 × 1.4 in.) |
| Screw terminal | 26.4 × 17.3 × 3.6 cm (10.4 × 6.8 × 1.4 in.) |
| BNC | 20.3 × 18.5 × 6.8 cm (8.0 × 7.3 × 2.7 in.) |

Weight

| | |
|----------------------|---------------------|
| PCIe | 161 g (5.6 oz) |
| PXIe | 205 g (7.2 oz) |
| USB Mass Termination | 965 g (2 lb 2.1 oz) |

⁵ Has self-resetting fuse that opens when current exceeds this specification.

| | |
|----------------------|--------------------------------|
| USB Screw Terminal | 1.413 kg (3 lb 1.8 oz) |
| USB BNC | 1.52 kg (3 lb 5 oz) |
| I/O connector | |
| PCIe/PXIe | 1 68-pin VHDCI |
| USB Mass Termination | 1 68-pin VHDCI |
| USB Screw Terminal | 64 screw terminals |
| USB BNC | 20 BNCs and 30 screw terminals |

Table 4. PCIe/PXIe Mating Connectors

| Manufacturer, Part Number | Description |
|---------------------------|--|
| MOLEX 71430-0011 | 68-Pos Right Angle Single Stack PCB-Mount VHDCI (Receptacle) |
| MOLEX 74337-0016 | 68-Pos Right Angle Dual Stack PCB-Mount VHDCI (Receptacle) |
| MOLEX 71425-3001 | 68-Pos Offset IDC Cable Connector (Plug) (SHC68-*) |

| | |
|---|--|
| PCIe disk drive power connector | Standard ATX peripheral connector (not serial ATA) |
| USB screw terminal wiring/BNC screw terminal wiring | 16-24 AWG |

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



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

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 to 500 Hz, 0.3 g _{rms} |
| Nonoperating | 5 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.) |

Environmental

| | |
|-----------------------|-----------------------------|
| Operating temperature | |
| PCIe | 0 to 50 °C |
| PXIe | 0 to 55 °C |
| USB | 0 to 45 °C |
| Storage temperature | -40 to 70 °C |
| Operating humidity | 10 to 90% RH, noncondensing |
| Storage humidity | 5 to 95% RH, noncondensing |
| Pollution Degree | 2 |
| Maximum altitude | 2,000 m |

Indoor use only.

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 generate radio frequency energy for the treatment of material or inspection/analysis purposes.



Note For EMC declarations and certifications, refer to the [Online Product Certification](#) 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)

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.

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电子信息产品污染控制管理办法（中国 RoHS）



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Device Pinouts

Figure 9. NI PCIe/PXIe-6361 Pinout

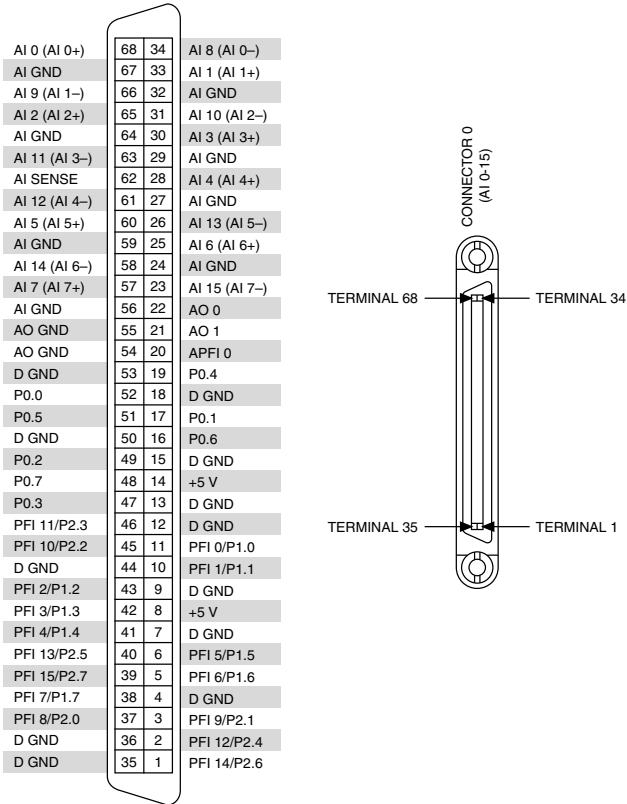


Figure 10. NI USB-6361 Mass Termination Pinout

| | | | |
|---------------|----|----|---------------|
| AI 0 (AI 0+) | 68 | 34 | AI 8 (AI 0-) |
| AI GND | 67 | 33 | AI 1 (AI 1+) |
| AI 9 (AI 1-) | 66 | 32 | AI GND |
| AI 2 (AI 2+) | 65 | 31 | AI 10 (AI 2-) |
| AI GND | 64 | 30 | AI 3 (AI 3+) |
| AI 11 (AI 3-) | 63 | 29 | AI GND |
| AI SENSE | 62 | 28 | AI 4 (AI 4+) |
| AI 12 (AI 4-) | 61 | 27 | AI GND |
| AI 5 (AI 5+) | 60 | 26 | AI 13 (AI 5-) |
| AI GND | 59 | 25 | AI 6 (AI 6+) |
| AI 14 (AI 6-) | 58 | 24 | AI GND |
| AI 7 (AI 7+) | 57 | 23 | AI 15 (AI 7-) |
| AI GND | 56 | 22 | AO 0 |
| AO GND | 55 | 21 | AO 1 |
| AO GND | 54 | 20 | APFI 0 |
| D GND | 53 | 19 | P0.4 |
| P0.0 | 52 | 18 | D GND |
| P0.5 | 51 | 17 | P0.1 |
| D GND | 50 | 16 | P0.6 |
| P0.2 | 49 | 15 | D GND |
| P0.7 | 48 | 14 | +5 V |
| P0.3 | 47 | 13 | D GND |
| PFI 11/P2.3 | 46 | 12 | D GND |
| PFI 10/P2.2 | 45 | 11 | PFI 0/P1.0 |
| D GND | 44 | 10 | PFI 1/P1.1 |
| PFI 2/P1.2 | 43 | 9 | D GND |
| PFI 3/P1.3 | 42 | 8 | +5 V |
| PFI 4/P1.4 | 41 | 7 | D GND |
| PFI 13/P2.5 | 40 | 6 | PFI 5/P1.5 |
| PFI 15/P2.7 | 39 | 5 | PFI 6/P1.6 |
| PFI 7/P1.7 | 38 | 4 | D GND |
| PFI 8/P2.0 | 37 | 3 | PFI 9/P2.1 |
| D GND | 36 | 2 | PFI 12/P2.4 |
| D GND | 35 | 1 | PFI 14/P2.6 |

CONNECTOR 0
(AI 0-15)

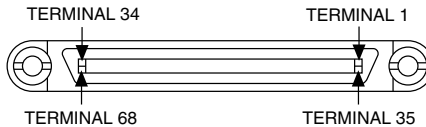


Figure 11. NI USB-6361 Screw Terminal Pinout

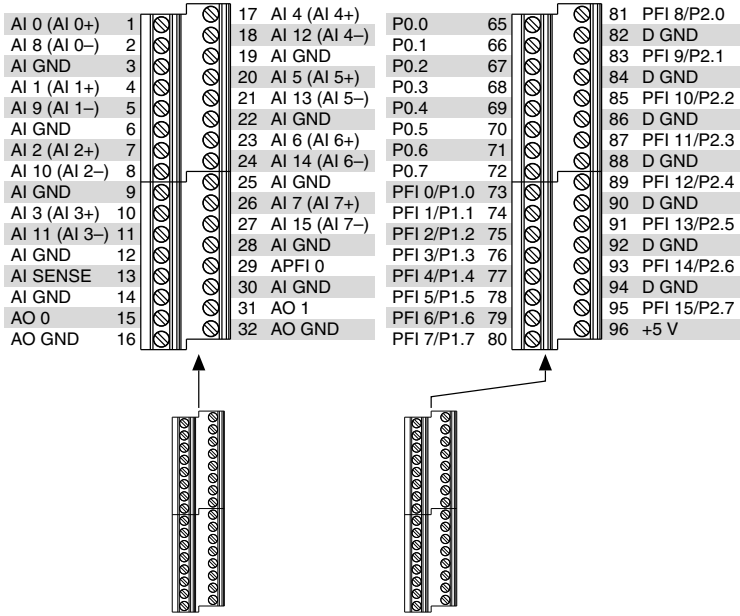
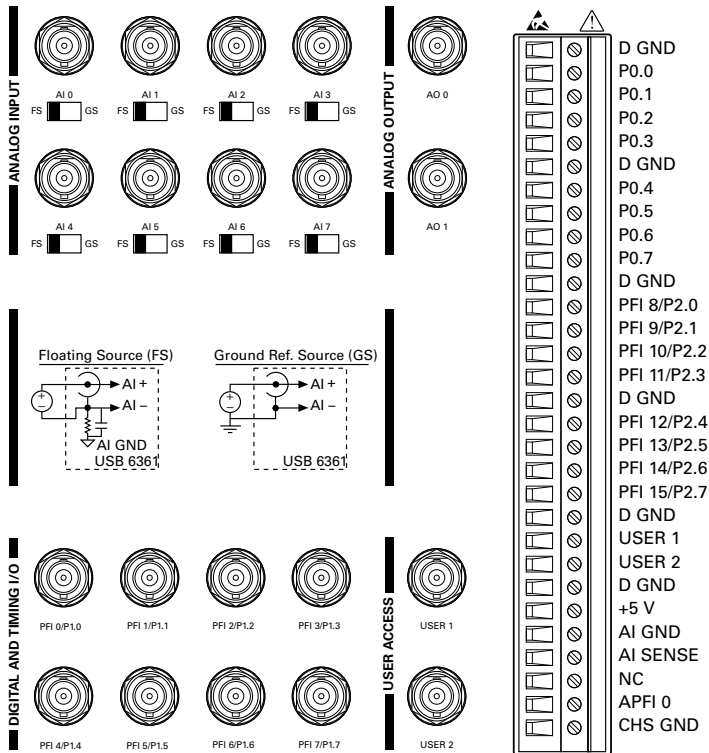


Figure 12. NI USB-6361 BNC Front Panel and Pinout



⊙ POWER



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