

NI PXI/PCI-5122 Specifications

14-Bit 100 MS/s Digitizer

Unless otherwise noted, the following conditions were used for each specification:

- All filter settings
- All impedance selections
- Sample clock set to 100 MS/s

Typical values are representative of an average unit operating at room temperature. Specifications are subject to change without notice. For the most recent NI 5122 specifications, visit ni.com/manuals.

To access the NI 5122 documentation, including the *NI High-Speed Digitizers Getting Started Guide*, which contains functional descriptions of the NI 5122 signals, navigate to **Start»Programs»National Instruments»NI-SCOPE»Documentation**.



Caution-Hot Surface Allow time to cool before extracting NI 5122 hardware from PXI chassis or PC to reduce risk of burns. Exercise caution when handling, as recently used NI 5122 devices may exceed safe handling temperatures.

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Vertical

Analog Input (Channel 0 and Channel 1)

Table 1.

| Specification | Value | | Comments |
|-------------------------------|------------------------------|---|--|
| Number of Channels | Two (simultaneously sampled) | | — |
| Connector | BNC | | — |
| Impedance and Coupling | | | |
| Input Impedance | 50 Ω \pm 2.0% | 1 M Ω \pm 0.75% in parallel with a typical capacitance of 27 pF \pm 2 pF | Software selectable |
| Input Coupling | AC, DC, GND | | AC coupling available on 1 M Ω only |

Table 1. (Continued)

| Specification | Value | | | | Comments |
|--|---|--|-----------------------------|---------------------------|---|
| Voltage Levels | | | | | |
| Full Scale (FS) Input Range and Programmable Vertical Offset | 50 Ω | | 1 M Ω | | — |
| | Range (V _{pk-pk}) | Vertical Offset Range (V) | Range (V _{pk-pk}) | Vertical Offset Range (V) | |
| | 0.2 | ± 0.1 | 0.2 | ± 0.1 | |
| | 0.4 | ± 0.2 | 0.4 | ± 0.2 | |
| | 1 | ± 0.5 | 1 | ± 0.5 | |
| | 2 | ± 1 | 2 | ± 1 | |
| | 4 | ± 2 | 4 | ± 2 | |
| | 10 | — | 10 | ± 5 | |
| Maximum Input Overload | 50 Ω | | 1 M Ω | | — |
| | 7 V _{rms} with Peaks \leq 10 V | | Peaks \leq 42 V | | |
| Accuracy | | | | | |
| Resolution | 14 bits | | | | — |
| DC Accuracy (Programmable Vertical Offset = 0 V) | Range (V _{pk-pk}) | 50 Ω and 1 M Ω | | | Within ± 5 °C of self-calibration temperature |
| | 0.2, 0.4, 1, 2 | NI PXI-5122: $\pm(0.65\%$ of Input + 1.0 mV) NI PCI-5122: $\pm(0.65\%$ of Input + 2.0 mV) | | | |
| | 4, 10 | $\pm(0.65\%$ of Input + 8.0 mV) | | | |
| | 20 (1 M Ω only) | $\pm(0.65\%$ of Input + 10.0 mV) | | | |
| Programmable Vertical Offset Accuracy | $\pm 0.4\%$ of offset setting | | | | Within ± 5 °C of self-calibration temperature |
| DC Drift | $\pm(0.057\%$ of Input + 0.006% of FS + 100 μ V) per °C | | | | — |

Table 1. (Continued)

| Specification | Value | | Comments |
|---|--|--|---|
| AC Amplitude Accuracy | 50 Ω | 1 M Ω | Within ± 5 °C of self-calibration temperature |
| | ± 0.06 dB ($\pm 0.7\%$) at 50 kHz | ± 0.09 dB ($\pm 1.0\%$) at 50 kHz | |
| Crosstalk, Typical | ≤ -100 dB at 10 MHz | | CH 0 to/from CH 1, External Trigger to CH 0 or CH 1 |
| Bandwidth and Transient Response | | | |
| Bandwidth (-3 dB) | Range (V_{pk-pk}) | 50 Ω and 1 M Ω | Filters off * 78 MHz above 40 °C |
| | All ranges except 0.2 | 100 MHz | |
| | 0.2 | 80 MHz up to 40 °C* | |
| Rise/Fall Time, Typical | Range (V_{pk-pk}) | 50 Ω and 1 M Ω | — |
| | All ranges except 0.2 | 3.5 ns | |
| | 0.2 | 4.2 ns | |
| Bandwidth Limit Filters | Noise Filter | Antialias Filter | Only one filter can be enabled at any given time. The antialias filter is enabled by default. |
| | 20 MHz 2-pole Bessel filter | 40 MHz (-6 dB, typical) 35 MHz (-3 dB) 6-pole Chebyshev filter | |
| AC-Coupling Cutoff (-3 dB) | 12 Hz | | AC coupling available on 1 M Ω only |

Table 1. (Continued)

| Specification | Value | | | Comments |
|-------------------|---------------------|-----------------------|--|----------------------|
| Passband Flatness | Filter Settings | Range (V_{pk-pk}) | 50 Ω and 1 M Ω | Referenced to 50 kHz |
| | Filters Off | All ranges except 0.2 | ± 0.4 dB DC to 20 MHz ± 1 dB 20 MHz to 50 MHz | |
| | | 0.2 | ± 0.4 dB DC to 20 MHz ± 1 dB 20 MHz to 40 MHz | |
| | Antialias Filter On | All ranges | ± 1.2 dB DC to 16 MHz ± 1.6 dB 16 MHz to 32 MHz | |

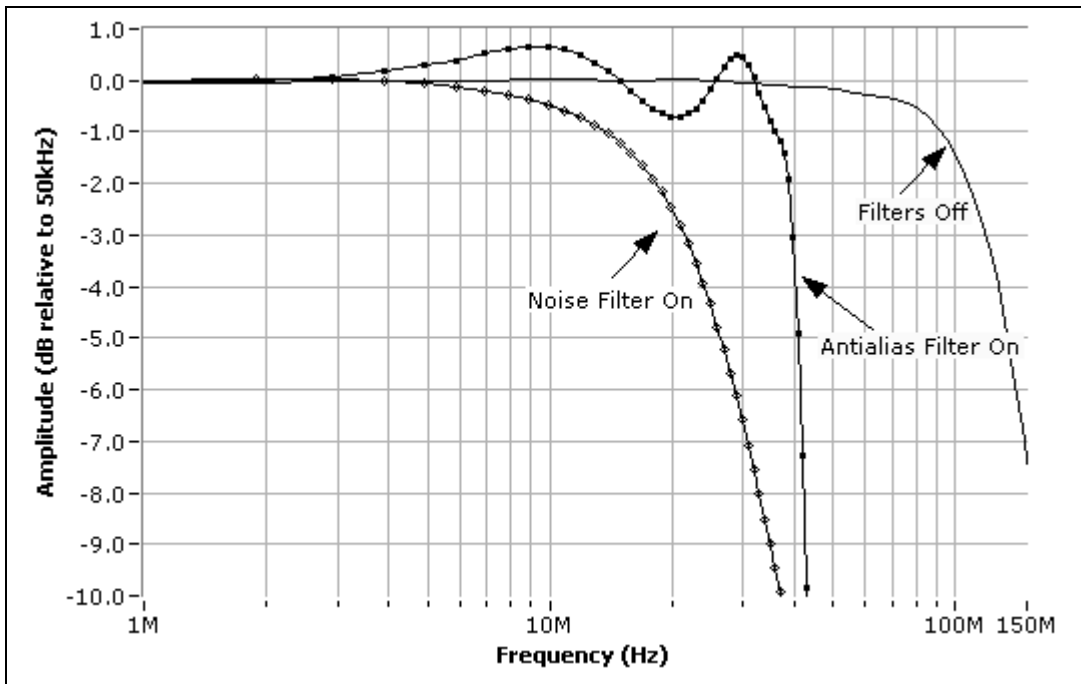


Figure 1. NI 5122 Frequency Response (Typical)

Table 1. (Continued)

| Specification | Value | | | Comments |
|--|------------------------|-------------|--------------|---|
| Spectral Characteristics | | | | |
| Spurious Free Dynamic Range with Harmonics (SFDR), Typical | Range (V_{pk-pk}) | 50 Ω | 1 M Ω | 10 MHz, -1 dBFS input signal. |
| | 0.2 | -75 dBc | -70 dBc | Includes the 2nd through the 5th harmonics. |
| | 0.4 | -75 dBc | -70 dBc | |
| | 1 | -75 dBc | -70 dBc | |
| | 2 | -75 dBc | -70 dBc | |
| | 4 | -65 dBc | -70 dBc | Measured from DC to 50 MHz on NI PXI-5122. |
| | 10 | -65 dBc | -60 dBc | |
| | 20 (1 M Ω only) | N/A | -60 dBc | |

Table 1. (Continued)

| Specification | Value | | | | Comments | |
|--|--|-------------|---------------------|--------------|---|---|
| Total Harmonic Distortion (THD), Typical | Range (V_{pk-pk}) | 50 Ω | | 1 M Ω | | 10 MHz, -1 dBFS input signal. Includes the 2nd through the 5th harmonics. |
| | 0.2 | -75 dBc | | -68 dBc | | |
| | 0.4 | -75 dBc | | -68 dBc | | |
| | 1 | -75 dBc | | -68 dBc | | |
| | 2 | -73 dBc | | -68 dBc | | |
| | 4 | -63 dBc | | -68 dBc | | |
| | 10 | -63 dBc | | -58 dBc | | |
| | 20 (1 M Ω only) | N/A | | -58 dBc | | |
| Intermodulation Distortion, Typical | 0.2 V_{pk-pk} to 2.0 V_{pk-pk} Ranges on 50 Ω Input | | | | Two tones at 10.2 MHz and 11.2 MHz. Each tone is -7 dBFS. | |
| | -75 dBc | | | | | |
| Signal-to-Noise Ratio (SNR), Typical | Range (V_{pk-pk}) | 50 Ω | | 1 M Ω | | 10 MHz, -1 dBFS input signal. Excludes harmonics. Measured from DC to 50 MHz. |
| | | Filters Off | Antialias Filter On | Filters Off | Antialias Filter On | |
| | 0.2 | 60 dB | 60 dB | 56 dB | 60 dB | |
| | 0.4 | 62 dB | 62 dB | 61 dB | 62 dB | |
| | 1 | 62 dB | 62 dB | 62 dB | 62 dB | |
| | 2 | 62 dB | 62 dB | 62 dB | 62 dB | |
| 4 | — | — | 61 dB | 62 dB | | |

Table 1. (Continued)

| Specification | Value | | | | Comments | |
|---|-----------------------|-------------|---------------------|--------------|---------------------|---|
| Signal to Noise and Distortion (SINAD), Typical | Range (V_{pk-pk}) | 50 Ω | | 1 M Ω | | 10 MHz, -1 dBFS input signal. |
| | | Filters Off | Antialias Filter On | Filters Off | Antialias Filter On | |
| | 0.2 | 60 dB | 60 dB | 56 dB | 59 dB | Includes harmonics. Measured from DC to 50 MHz. |
| | 0.4 | 62 dB | 62 dB | 60 dB | 61 dB | |
| | 1 | 62 dB | 62 dB | 61 dB | 61 dB | |
| | 2 | 62 dB | 62 dB | 61 dB | 61 dB | |
| 4 | — | — | 60 dB | 61 dB | | |

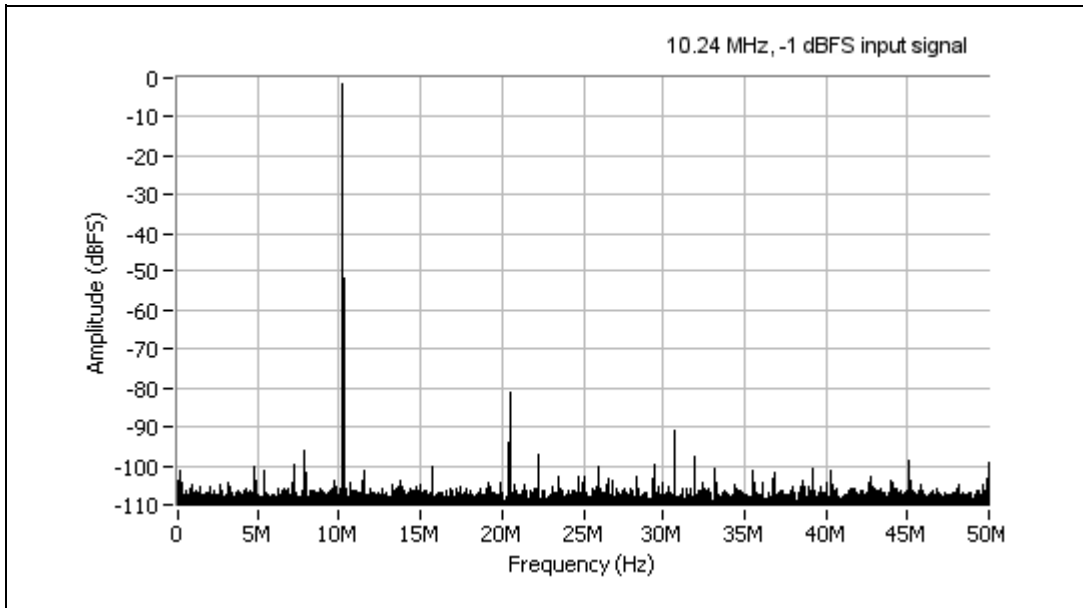


Figure 2. NI 5122 Dynamic Performance, 50 Ω , 1 V_{pk-pk} Range (Typical)

Table 1. (Continued)

| Specification | Value | | | Comments |
|--------------------------------|---------------------------|--|--|---|
| RMS Noise (Noise Filter On) | Range (V_{pk-pk}) | 50 Ω | 1 M Ω | 50 Ω terminator connected to input. |
| | 0.2 | NI PXI-5122: 46 μV_{rms} (0.023% FS) NI PCI-5122: 56 μV_{rms} (0.028% FS) | NI PXI-5122: 60 μV_{rms} (0.030% FS) NI PCI-5122: 72 μV_{rms} (0.036% FS) | |
| | 0.4 | 92 μV_{rms} (0.023% FS) | 92 μV_{rms} (0.023% FS) | |
| | 1 | 230 μV_{rms} (0.023% FS) | 230 μV_{rms} (0.023% FS) | |
| | 2 | 460 μV_{rms} (0.023% FS) | 460 μV_{rms} (0.023% FS) | |
| | 4 | 920 μV_{rms} (0.023% FS) | 920 μV_{rms} (0.023% FS) | |
| | 10 | 2.3 mV _{rms} (0.023% FS) | 2.3 mV _{rms} (0.023% FS) | |
| | 20 (1 M Ω only) | N/A | 4.6 mV _{rms} (0.023% FS) | |

Table 1. (Continued)

| Specification | Value | | | Comments |
|---------------------------------------|---------------------------|--|--|---|
| RMS Noise (Antialias Filter On) | Range (V_{pk-pk}) | 50 Ω | 1 M Ω | 50 Ω terminator connected to input. |
| | 0.2 | NI PXI-5122: 66 μV_{rms} (0.033% FS) NI PCI-5122: 82 μV_{rms} (0.041% FS) | NI PXI-5122: 80 μV_{rms} (0.040% FS) NI PCI-5122: 96 μV_{rms} (0.048% FS) | |
| | 0.4 | 100 μV_{rms} (0.025% FS) | 120 μV_{rms} (0.030% FS) | |
| | 1 | 250 μV_{rms} (0.025% FS) | 300 μV_{rms} (0.030% FS) | |
| | 2 | 500 μV_{rms} (0.025% FS) | 600 μV_{rms} (0.030% FS) | |
| | 4 | 1 mV _{rms} (0.025% FS) | 1.2 mV _{rms} (0.030% FS) | |
| | 10 | 2.5 mV _{rms} (0.025% FS) | 3 mV _{rms} (0.030% FS) | |
| | 20 (1 M Ω only) | N/A | 6 mV _{rms} (0.030% FS) | |

Table 1. (Continued)

| Specification | Value | | | Comments |
|----------------------------|---------------------------|--|--|---|
| RMS Noise (Filters Off) | Range (V_{pk-pk}) | 50 Ω | 1 M Ω | 50 Ω terminator connected to input. |
| | 0.2 | NI PXI-5122: 66 μV_{rms} (0.033% FS) NI PCI-5122: 90 μV_{rms} (0.045% FS) | NI PXI-5122: 110 μV_{rms} (0.055% FS) NI PCI-5122: 110 μV_{rms} (0.055% FS) | |
| | 0.4 | 100 μV_{rms} (0.025% FS) | 160 μV_{rms} (0.040% FS) | |
| | 1 | 250 μV_{rms} (0.025% FS) | 300 μV_{rms} (0.030% FS) | |
| | 2 | 500 μV_{rms} (0.025% FS) | 600 μV_{rms} (0.030% FS) | |
| | 4 | 1 mV _{rms} (0.025% FS) | 1.6 mV _{rms} (0.040% FS) | |
| | 10 | 2.5 mV _{rms} (0.025% FS) | 3 mV _{rms} (0.030% FS) | |
| | 20 (1 M Ω only) | N/A | 6 mV _{rms} (0.030% FS) | |

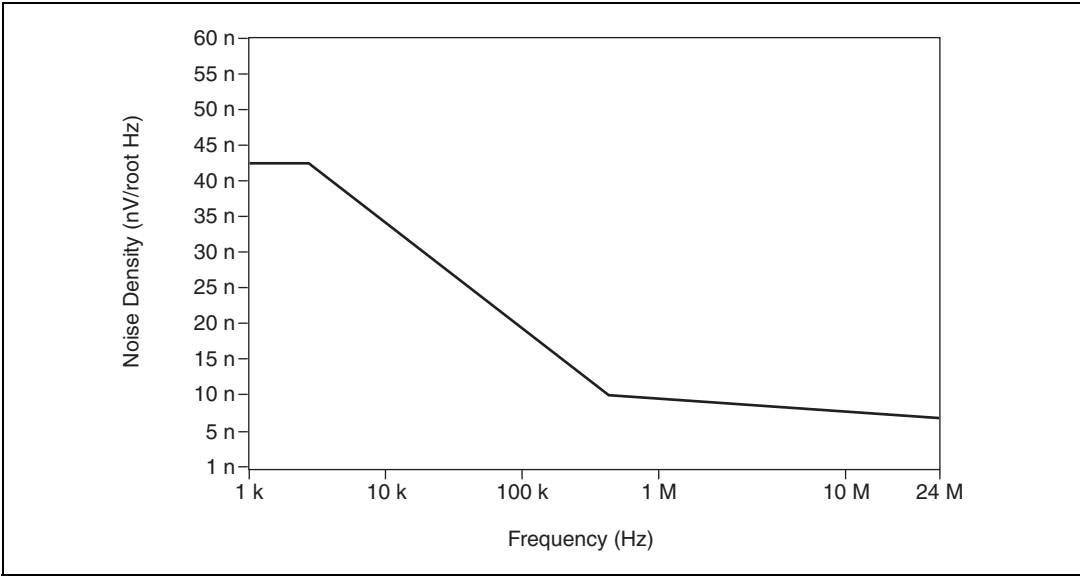


Figure 3. Representation of NI 5122 Spectral Noise Density on 0.2 V Range, Noise Filter Enabled, 1 M Ω Input Impedance

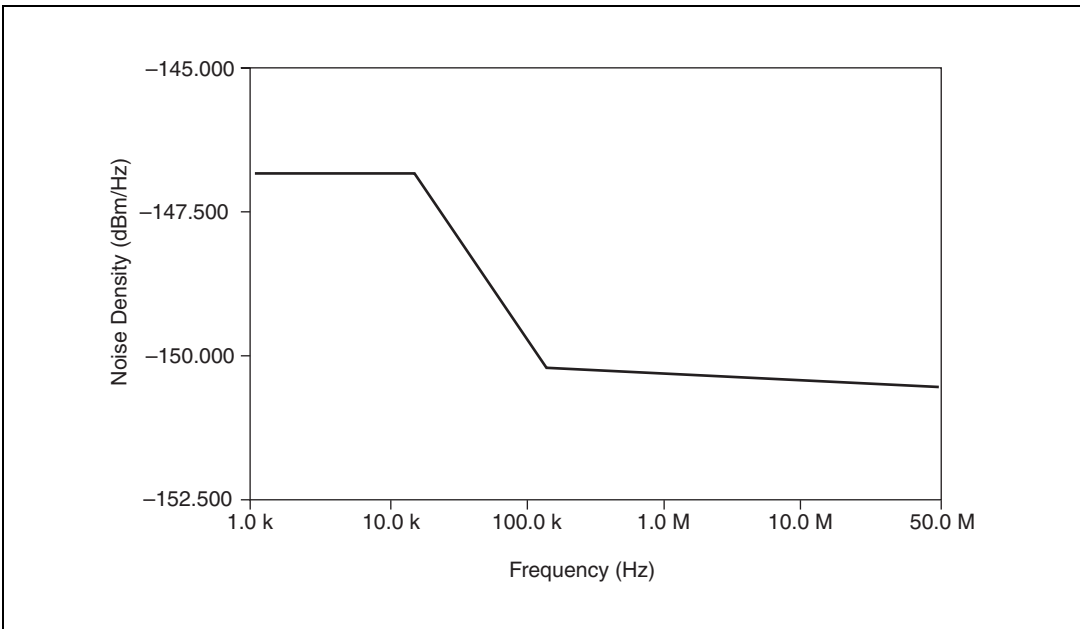


Figure 4. Representation of NI 5122 Spectral Noise Density on 0.2 V Range, Full Bandwidth, 50 Ω Input Impedance (Does Not Include System Spurs. All Spurs \leq 135 dBm/Hz)

Horizontal

Sample Clock

Table 2.

| Specification | Value | | Comments |
|--------------------------------------|--|--|---|
| Sources | NI PXI-5122 | NI PCI-5122 | * Internal Sample Clock is locked to the Reference Clock or derived from the onboard VCXO. |
| | Internal, Onboard Clock (internal VCXO)* | Internal, Onboard Clock (internal VCXO)* | |
| | External, CLK IN (front panel SMB connector) | External, CLK IN (front panel SMB connector) | |
| | External, PXI Star Trigger (backplane connector) | | |
| Onboard Clock (Internal VCXO) | | | |
| Sample Rate Range | Real-Time Sampling (Single Shot) | Random Interleaved Sampling (RIS) | * Divide by n decimation used for all rates less than 100 MS/s. For more information about Sample Clock and decimation, refer to the <i>NI High-Speed Digitizers Help</i> . |
| | 1.526 kS/s to 100 MS/s* | 200 MS/s to 2 GS/s in multiples of 100 MS/s | |
| Phase Noise Density, Typical | < -100 dBc/Hz at 100 Hz < -120 dBc/Hz at 1 kHz < -130 dBc/Hz at 10 kHz | | 10 MHz input signal |
| Sample Clock Jitter, Typical | ≤ 1 ps rms (100 Hz to 100 kHz) ≤ 2 ps rms (100 Hz to 1 MHz) | | Includes the effects of the converter aperture uncertainty and the clock circuitry jitter. Excludes trigger jitter. |
| Timebase Frequency | 100 MHz | | — |

Table 2. (Continued)

| Specification | Value | | Comments |
|-------------------------------|--|---------------------------------------|---|
| Timebase Accuracy | Not Phase-Locked to Reference Clock | Phase-Locked to Reference Clock | — |
| | ±25 ppm | Equal to the Reference Clock accuracy | |
| Sample Clock Delay Range | ±1 Sample Clock period | | — |
| Sample Clock Delay Resolution | 10 ps | | — |
| External Sample Clock | | | |
| Sources | NI PXI-5122 | NI PCI-5122 | — |
| | CLK IN (front panel SMB connector) PXI Star Trigger (backplane connector) | CLK IN (front panel SMB connector) | |
| Frequency Range | 30 MHz to 105 MHz | | Divide by n decimation available where $1 \leq n \leq 65,535$. For more information about Sample Clock and decimation, refer to the <i>NI High-Speed Digitizers Help</i> . |
| Duty Cycle Tolerance | 45% to 55% | | — |

Table 2. (Continued)

| Specification | Value | | Comments |
|------------------------------------|---|-------------------|-------------------------------|
| Sample Clock Exporting | | | |
| Exported Sample Clock Destinations | Destination | Maximum Frequency | * Decimated Sample Clock only |
| | CLK OUT (front panel SMB connector) | 105 MHz | |
| | PXI_Trig <0..6> (backplane connector)* | 20 MHz | |
| | PFI <0..1> (front panel 9-pin mini-circular DIN connector)* | 25 MHz | |
| | RTSI<0..6>* | 20 MHz | |

Phase-Locked Loop (PLL) Reference Clock

Table 3.

| Specification | Value | | Comments |
|---------------------------------------|--|--|----------|
| Sources | NI PXI-5122 | NI PCI-5122 | — |
| | PXI_CLK10 (backplane connector) CLK IN (front panel SMB connector) | RTSI 7 CLK IN (front panel SMB connector) | |
| Frequency Range | 1 MHz to 20 MHz in 1 MHz increments. Default of 10 MHz. The PLL Reference Clock frequency has to be accurate to ± 50 ppm. | | — |
| Duty Cycle Tolerance | 45% to 55% | | — |
| Exported Reference Clock Destinations | NI PXI-5122 | NI PCI-5122 | — |
| | CLK OUT (front panel SMB connector) PFI <0..1> (front panel 9-pin mini-circular DIN connector) PXI_Trig <0..7> (backplane connector) | CLK OUT (front panel SMB connector) PFI <0..1> (front panel 9-pin mini-circular DIN connector) RTSI <0..7> | |

CLK IN (Sample Clock and Reference Clock Input, Front Panel Connector)

Table 4.

| Specification | Value | Comments |
|------------------------|---|----------|
| Input Voltage Range | Sine wave: $0.65 V_{pk-pk}$ to $2.8 V_{pk-pk}$ (0 dBm to 13 dBm) Square wave: $0.2 V_{pk-pk}$ to $2.8 V_{pk-pk}$ | — |
| Maximum Input Overload | $7 V_{rms}$ with $ Peaks \leq 10 V$ | — |
| Impedance | 50Ω | — |
| Coupling | AC | — |

CLK OUT (Sample Clock and Reference Clock Output, Front Panel Connector)

Table 5.

| Specification | Value | Comments |
|-----------------------|-------------|----------|
| Output Impedance | 50 Ω | — |
| Logic Type | 3.3 V CMOS | — |
| Maximum Drive Current | ± 48 mA | — |

Trigger

Reference (Stop) Trigger

Table 6.

| Specification | Value | | | Comments |
|---------------------------|---|------------------------|--|---|
| Trigger Types and Sources | Types | | Sources | Refer to the following sections and <i>NI High-Speed Digitizers Help</i> for more information about what sources are available for each trigger type. |
| | Edge, Window, Hysteresis, Video, Digital, Immediate, and Software | | CH 0, CH 1, TRIG, PXI_Trig <0..6>, PFI <0..1>, PXI Star Trigger, Software, and RTSI <0..6> | |
| Time Resolution | TDC | Onboard Clock | External Clock | TDC = Time to Digital Conversion Circuit |
| | On | 100 ps | N/A | |
| | Off | 10 ns | External Clock Period | |
| Holdoff | TDC | Onboard Clock | External Clock | — |
| | On | 10 μ s to 171.79 s | N/A | |
| | Off | 2 μ s to 171.79 s | 200 \times (External Clock Period) to $(2^{32} - 1) \times$ (External Clock Period) | |

Table 6. (Continued)

| Specification | Value | | Comments |
|--|--|--|--|
| Analog Trigger (Edge, Window, and Hysteresis Trigger Types) | | | |
| Sources | CH 0 (front panel BNC connector) CH 1 (front panel BNC connector) TRIG (front panel BNC connector) | | — |
| Trigger Level Range | CH 0, CH 1 | TRIG (External Trigger) | — |
| | 100% FS | ±5 V | |
| Trigger Level Resolution | 10 bits (1 in 1,024) | | — |
| Edge Trigger Sensitivity | CH 0, CH 1 | TRIG (External Trigger) | — |
| | 2.5% FS up to 50 MHz, increasing to 5% FS at 100 MHz | 0.25 V _{pk-pk} up to 100 MHz, increasing to 1 V _{pk-pk} at 200 MHz | |
| Level Accuracy, Typical | CH 0, CH 1 | TRIG (External Trigger) | — |
| | ±3.5% FS up to 10 MHz | ±0.35 V (±3.5% FS) up to 10 MHz | |
| Jitter | ≤80 ps rms | | Within ±5 °C of self-calibration temperature |
| Trigger Filters | Low-Frequency (LF) Reject | High-Frequency (HF) Reject | — |
| | 50 kHz | 50 kHz | |
| Digital Trigger (Digital Trigger Type) | | | |
| Sources | NI PXI-5122 | NI PCI-5122 | — |
| | PXI_Trig <0..6> (backplane connector) | RTSI <0..6> | |
| | PFI <0..1> (front panel SMB connector) | PFI <0..1> (front panel SMB connector) | |
| | PXI Star Trigger (backplane connector) | | |

Table 6. (Continued)

| Specification | Value | Comments |
|---|--|----------|
| Video Trigger (Video Trigger Type) | | |
| Sources | CH 0 (front panel BNC connector) CH 1 (front panel BNC connector) TRIG (front panel BNC connector) | — |
| Types | Specific Line Any Line Specific Field | — |
| Standard | Negative sync of NTSC, PAL, or SECAM signal | — |

TRIG (External Trigger, Front Panel Connector)

Table 7.

| Specification | Value | Comments |
|-------------------------------|-------------------------------------|----------|
| Connector | BNC | — |
| Impedance | 1 M Ω in parallel with 22 pF | — |
| Coupling | AC, DC | — |
| AC-Coupling Cutoff (-3 dB) | 12 Hz | — |
| Input Voltage Range | ± 5 V | — |
| Maximum Input Overload | $ \text{Peaks} \leq 42$ V | — |

PFI 0 and PFI 1 (Programmable Function Interface, AUX Front Panel Connectors)

Table 8.

| Specification | Value | Comments |
|------------------------------|---|----------|
| Connector | 9-pin mini-circular DIN | — |
| Direction | Bi-directional | — |
| As an Input (Trigger) | | |
| Destinations | Start Trigger (Acquisition Arm) Reference (Stop) Trigger Arm Reference Advance Trigger | — |
| Input Impedance | 150 k Ω | — |
| V _{IH} | 2.0 V | — |
| V _{IL} | 0.8 V | — |
| Maximum Input Overload | -0.5 V to 5.5 V | — |
| Maximum Frequency | 25 MHz | — |
| As an Output (Event) | | |
| Sources | Start Trigger (Acquisition Arm) Reference (Stop) Trigger End of Record Done (End of Acquisition) Probe Compensation (1 kHz, 50% duty cycle square wave, PFI 1 only) | — |
| Output Impedance | 50 Ω | — |
| Logic Type | 3.3 V CMOS | — |

Table 8. (Continued)

| Specification | Value | Comments |
|-----------------------|--------|----------|
| Maximum Drive Current | ±24 mA | — |
| Maximum Frequency | 25 MHz | — |

Waveform Specifications

Table 9.

| Specification | Value | Comments | |
|-------------------------------|-------------------------------|---|---|
| Onboard Memory Size | 8 MB per Channel Standard | 4 megasamples per channel | — |
| | 32 MB per Channel Option | 16 megasamples per channel | |
| | 256 MB per Channel Option | 128 megasamples per channel | |
| | 512 MB per Channel Option | 256 megasamples per channel | |
| Minimum Record Length | 1 Sample | — | |
| Number of Pretrigger Samples | Zero up to full Record Length | Single-record mode and multiple-record mode | |
| Number of Posttrigger Samples | Zero up to full Record Length | Single-record mode and multiple-record mode | |

Table 9. (Continued)

| Specification | Value | | Comments |
|---|---|-----------|----------|
| Maximum Number of Records in Onboard Memory | 8 MB per Channel Standard | 32,768 | — |
| | 32 MB per Channel Option | 131,072 | |
| | 256 MB per Channel Option | 1,048,576 | |
| | 512 MB per Channel Option | 2,097,152 | |
| Allocated Onboard Memory per Record | <i>Record Length</i> in samples + 100 samples. Round the sum up to the next multiple of 64 samples. 1 sample = 2 bytes | | — |

Calibration

Table 10.

| Specification | Value | Comments |
|--|---|----------|
| Self-Calibration | Self-calibration is done on software command. The calibration corrects for gain, offset, frequency response, triggering, and timing adjustment errors for all input ranges. | — |
| External Calibration (Factory Calibration) | The external calibration calibrates the VCXO and the voltage reference. Appropriate constants are stored in nonvolatile memory. | — |
| Interval for External Calibration | 2 years | — |
| Warm-Up Time | 15 minutes | — |

Power

Table 11.

| Specification | Typical Value | | Comments |
|----------------------|----------------------|-------------|-----------------|
| | NI PXI-5122 | NI PCI-5122 | — |
| +3.3 VDC | 1.4 A | 1.4 A | |
| +5 VDC | 1.5 A | 2.4 A | |
| +12 VDC | 110 mA | 110 mA | |
| -12 VDC | 270 mA | 0 A | |
| Total Power | 16.7 W | 17.9 W | |

Software

Table 12.

| Specification | Value | Comments |
|--|---|-----------------|
| Driver Software | NI-SCOPE 2.6 or later NI-SCOPE is an IVI-compliant driver that allows you to configure, control, and calibrate the NI 5122. NI-SCOPE provides application programming interfaces for many development environments. | — |
| Application Software | NI-SCOPE provides programming interfaces, documentation, and examples for the following application development environments: <ul style="list-style-type: none">• LabVIEW• LabWindows™/CVI™• Measurement Studio• Microsoft Visual C/C++• Microsoft Visual Basic | — |
| Interactive Soft Front Panel and Configuration | The Scope Soft Front Panel 2.0.1 or later supports interactive control of the NI 5122. The Scope Soft Front Panel is included on the NI-SCOPE CD. National Instruments Measurement & Automation Explorer (MAX) also provides interactive configuration and test tools for the NI 5122. MAX is included on the NI-SCOPE CD. | — |

Environment

NI PXI-5122 Environment



Note To ensure that the NI PXI-5122 cools effectively, follow the guidelines in the *Maintain Forced Air Cooling Note to Users* included in the NI PXI-5122 kit. The NI PXI-5122 is intended for indoor use only.

Table 13.

| Specification | Value | Comments |
|-----------------------------|---|----------|
| Operating Temperature | 0 °C to +55 °C in all NI PXI chassis except the following: 0 °C to +45 °C when installed in an NI PXI-1000/B or PXI-101x chassis Meets IEC-60068-2-1 and IEC-60068-2-2. | — |
| Storage Temperature | –40 °C to +70 °C. Meets IEC-60068-2-1 and IEC-60068-2-2. | — |
| Operating Relative Humidity | 10% to 90%, noncondensing. Meets IEC-60068-2-56. | — |
| Storage Relative Humidity | 5% to 95%, noncondensing. Meets IEC-60068-2-56. | — |
| Operating Shock | 30 g, half-sine, 11 ms pulse. Meets IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F. | — |
| Storage Shock | 50 g, half-sine, 11 ms pulse. Meets IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F. | — |
| Operating Vibration | 5 Hz to 500 Hz, 0.31 g _{rms} . Meets IEC-60068-2-64. | — |
| Storage Vibration | 5 Hz to 500 Hz, 2.46 g _{rms} . Meets IEC-60068-2-64. Test profile exceeds requirements of MIL-PRF-28800F, Class B. | — |
| Altitude | 2,000 m maximum (at 25 °C ambient temperature) | — |
| Pollution Degree | 2 | — |

NI PCI-5122 Environment



Note To ensure that the NI PCI-5122 cools effectively, follow the guidelines in the *Maintain Forced Air Cooling Note to Users* included in the NI PCI-5122 kit. Also, to maximize airflow and extend the life of the device, leave any adjacent PCI slots empty. The NI PCI-5122 is intended for indoor use only.

Table 14.

| Specification | Value | Comments |
|-----------------------------|---|----------|
| Operating Temperature | 0 °C to +45 °C. Meets IEC-60068-2-1 and IEC-60068-2-2. | — |
| Storage Temperature | –40 °C to +70 °C. Meets IEC-60068-2-1 and IEC-60068-2-2. | — |
| Operating Relative Humidity | 10% to 90%, noncondensing. Meets IEC-60068-2-56. | — |
| Storage Relative Humidity | 5% to 95%, noncondensing. Meets IEC-60068-2-56. | — |
| Storage Shock | 50 g, half-sine, 11 ms pulse. Meets IEC-60068-2-27. Test profile developed in accordance with MIL-PRF-28800F. | — |
| Storage Vibration | 5 Hz to 500 Hz, 2.46 g _{rms} . Meets IEC-60068-2-64. Test profile exceeds requirements of MIL-PRF-28800F, Class B. | — |
| Altitude | 2,000 m maximum (at 25 °C ambient temperature) | — |
| Pollution Degree | 2 | — |

Safety, Electromagnetic Compatibility, and CE Compliance

Table 15.

| Specification | Value | Comments |
|--|---|--|
| Safety | <p>The NI 5122 meets the requirements of the following standards for safety and electrical equipment for measurement, control, and laboratory use:</p> <ul style="list-style-type: none"> • IEC 61010-1, EN 61010-1 • UL 61010-1 • CAN/CSA-C22.2 No. 61010-1 | For UL and other safety certifications, refer to the product label or visit ni.com/certification . |
| Emissions | EN 55011 Class A at 10 m FCC Part 15A above 1 GHz | — |
| Immunity | EN 61326:1997 + A2:2001, Table 1 | — |
| EMC/EMI | <p>CE, C-Tick, and FCC Part 15 (Class A) Compliant.</p> <p>For EMC compliance, operate this device with shielded cabling.</p> | — |
| <p>This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:</p> | | |
| Low-Voltage Directive (safety) | 73/23/EEC | — |
| Electromagnetic Compatibility Directive (EMC) | 89/336/EEC | — |
| <p>Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.</p> | | |

Physical

Table 16.

| Specification | Value | | Comments |
|---|--|---|----------|
| Dimensions | NI PXI-5122 | NI PCI-5122 | — |
| | Single 3U PXI Slot. CompactPCI compatible | 35.5 × 11.3 × 2.0 cm (13.4 × 4.4 × 0.8 in.) | |
| Weight | 3823 g (13.5 oz.) | 455 g (16 oz.) | |
| Front Panel Connectors | | | |
| Label | Function | Connector Type | |
| CH 0 | Analog Input | BNC female | |
| CH 1 | Analog Input | BNC female | |
| TRIG | External Trigger | BNC female | |
| CLK IN | Sample Clock Input and Reference Clock Input | SMB jack | |
| CLK OUT | Sample Clock Output and Reference Clock Output | SMB jack | |
| AUX I/O | PFI 0, PFI 1 | 9-pin mini-circular DIN | |
| NI PXI-5122 Front Panel Indicators | | | |
| Label | Function | For more information, refer to the <i>NI High-Speed Digitizers Help</i> . | |
| ACCESS | The ACCESS LED indicates the status of the PCI bus and the interface from the NI PXI-5122 to the controller. | | |
| ACTIVE | The ACTIVE LED indicates the status of the onboard acquisition hardware of the NI PXI-5122. | | |

