

# NI PXI-5621 SPECIFICATIONS

## DC-Coupled High-Speed Frequency-Domain Digitizer

The NI PXI-5621 is a DC-coupled version of the NI PXI-5620 64 MS/s, 14-bit frequency domain digitizer. Except for its DC coupling, the PXI-5621 is functionally identical to the PXI-5620. Refer to the *NI PXI-562x User Manual* for instructions on installing and using your NI PXI-5621.

The NI PXI-5621 specifications are warranted at 0–50 °C ambient unless otherwise specified, and include a 10 minute warm-up time from ambient conditions.

## General Specifications

Number of channels .....	1
Resolution .....	14 bits
Sample rate range .....	1 kS to 64 MS/s
Onboard memory	
Not using DDC .....	32 MS
Using DDC (complex data) .....	16 MS

## Input

Signal level	
Nominal .....	0 dBm ( $\pm 0.316$ Vp)
Full-scale .....	+10 dBm ( $\pm 1.000$ Vp)
Max with dither enabled .....	+8 dBm ( $\pm 0.794$ Vp)
Non-operating	
Max input level .....	+20 dBm ( $\pm 3.16$ Vp)
Max DC input voltage .....	$\pm 3.0$ V
Input impedance .....	50 $\Omega$ nominal

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Coupling .....DC

DC offset..... $\pm 1$  mV

Analog bandwidth (-3 dB range) .....0 Hz to 36 MHz

Amplitude accuracy ..... $\pm 0.5$  dB

VSWR

    0–25 MHz..... $< 1.5:1$

    25–32 MHz..... $< 3:1$

Dither (can be disabled)

    Frequency range .....150 Hz to 4 MHz

## Frequency

Internal sample clock

    Frequency .....64 MHz/ $n$ , where  $1 < n < 2^{16}$

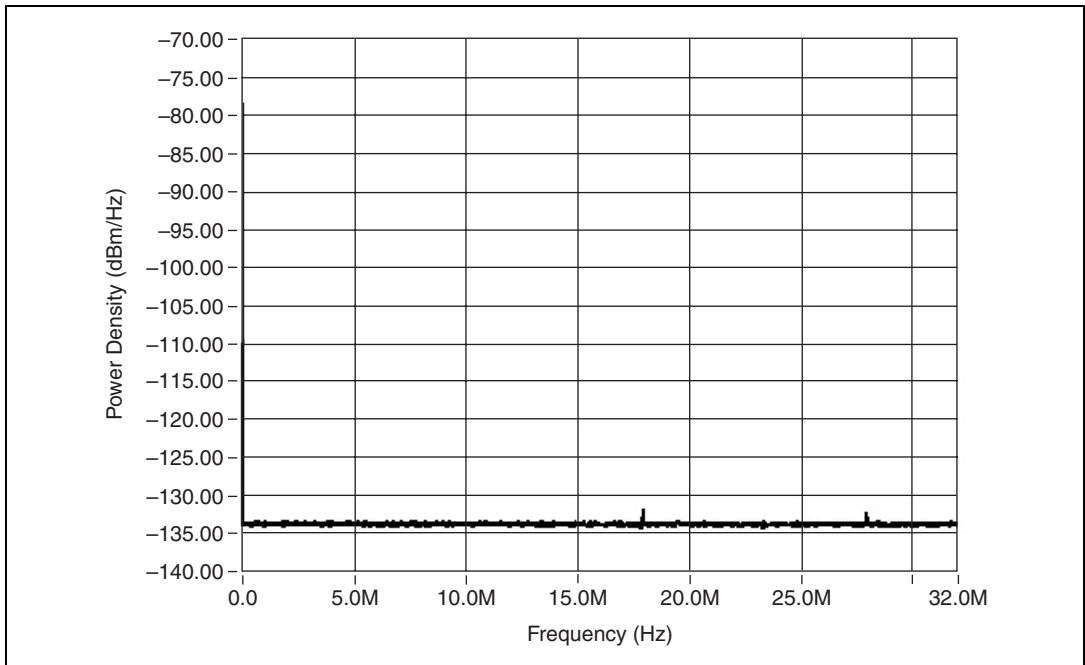
    Accuracy..... $< \pm 25$  ppm

### Phase noise

Offset	Density
100 Hz	$< -100$ dBc/Hz
1 kHz	$< -120$ dBc/Hz
10 kHz	$< -130$ dBc/Hz
100 kHz	$< -130$ dBc/Hz

Residual FM ..... $< 2$  Hz<sub>pk-pk</sub> in 10 ms

# Amplitude

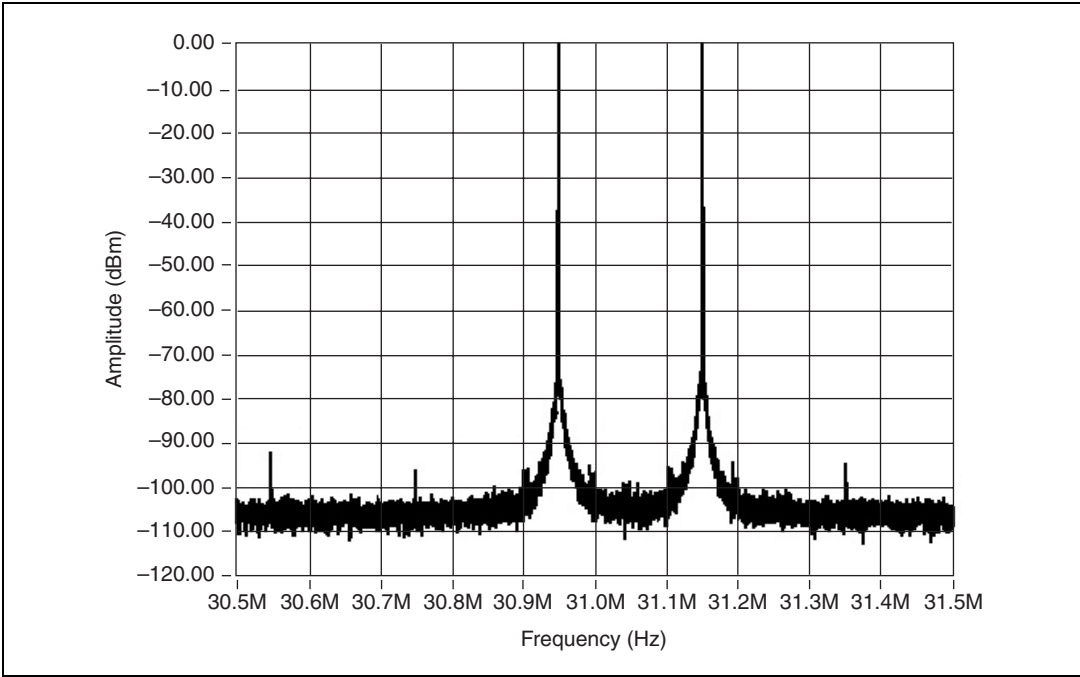


**Figure 1.** Noise Density (Dither Disabled, Input Terminated)

Average noise density  
(dither off) ..... < -129 dBm/Hz

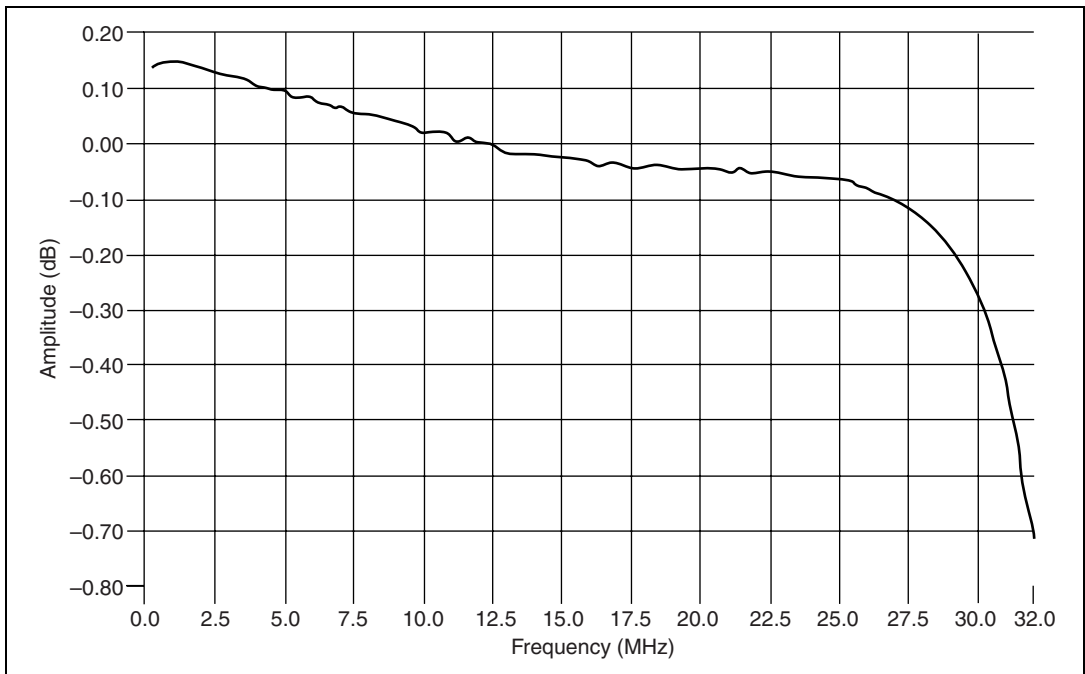
Signal-to-noise ratio  
9 dBm signal, full bandwidth ..... > 62 dB

Harmonic distortion (single tone, 0 dBm signal;  
dither disabled, includes aliased harmonic distortion)  
0–15 MHz, dither enabled ..... < -77 dBm  
0–32 MHz, dither disabled ..... < -71 dBm



**Figure 2.** Intermodulation Distortion

Intermodulation distortion  
 (2-tone, 0 dBm signals, 200 kHz separation)  
     0–15 MHz, dither enabled .....< -86 dBm  
     0–32 MHz, dither disabled .....< -78 dBm  
 Residual responses (input terminated)....< -75 dBm



**Figure 3.** Frequency Response (0.1–32 MHz)

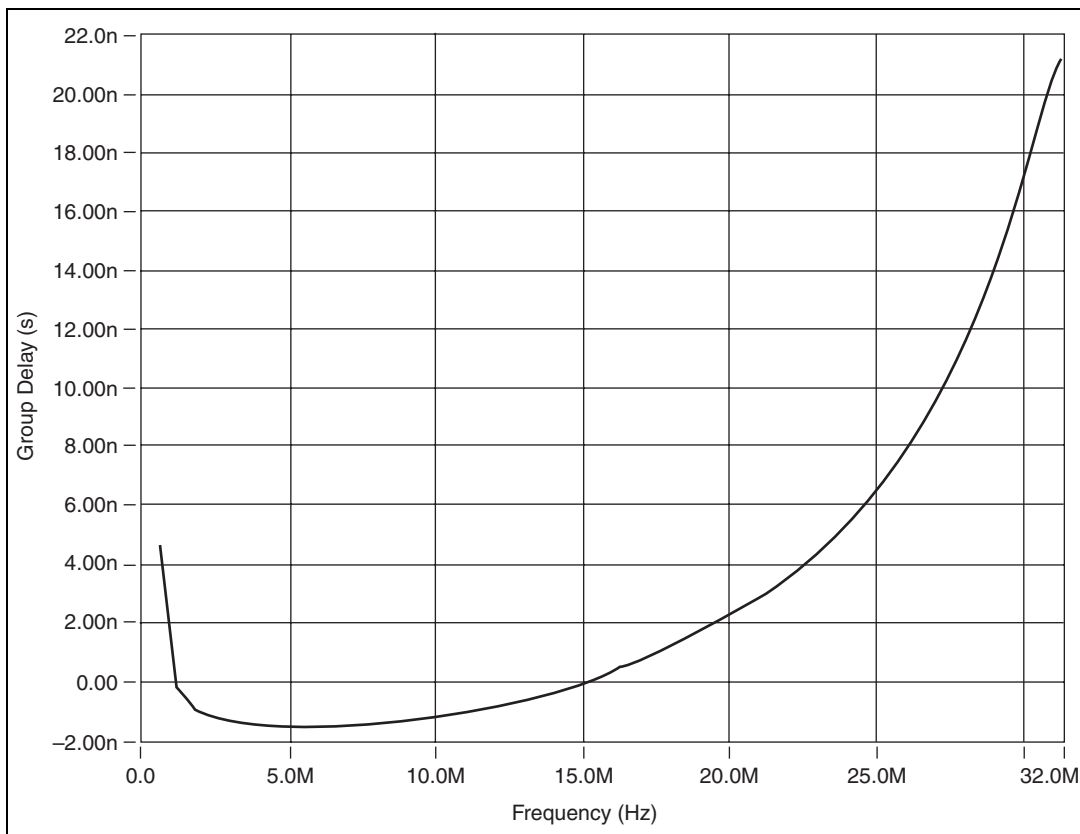
Frequency response (4–25 MHz)

Relative (to response at 15 MHz) ... <  $\pm 0.25$  dB

Absolute ..... <  $\pm 0.6$  dB

Absolute (using calibration table) ... <  $\pm 0.5$  dB

## Phase



**Figure 4.** Group Delay versus Frequency

Group delay variation  
 (5–25 MHz) .....9 ns<sub>pk-pk</sub>

Group delay variation  
 (0.5–30 MHz) .....26 ns<sub>pk-pk</sub>

## DDC

Decimation rate.....32–4,096

DDC tuning resolution.....0.014901 Hz

## Triggering

Modes .....Immediate, software, digital

Sources.....PFI 1, PXI<0..7>, PXI STAR

Export.....	PFI 1, PXI<0..7>
Slope.....	Rising, falling
Pretrigger depth.....	Up to 32 MS
Posttrigger depth .....	Up to 32 MS
Minimum pulse width .....	100 ns

## External Trigger (PFI 1)

PFI 1 connector .....	SMB male
Trigger level.....	TTL
Max input voltage .....	5.5 V

## External Frequency Reference Input

Connector (REF CLK IN).....	SMA female
Impedance .....	50 $\Omega$ nominal
Input amplitude .....	-5 to +15 dBm
Max non-operating input level.....	+20 dBm
Max DC input voltage.....	$\pm 3.5$ VDC
Frequency range.....	10 MHz $\pm 40$ ppm
Crosstalk from reference input.....	< -85 dB

## Calibration

Calibration interval .....	1 year
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## Environmental Specifications

Warm-up time .....	10 minutes
Operating environment	
Ambient temperature .....	0–50 °C
Humidity .....	10–90%, noncondensing
Storage environment	
Storage temperature .....	-20 to 70 °C
Humidity .....	5–95%, noncondensing

Maximum altitude.....2,000 meters

Pollution degree .....2

Indoor use only

## Power Requirements

+3.3 VDC ( $\pm 5\%$ ) .....< 650 mA

+5 VDC ( $\pm 5\%$ ) .....< 1.5 A

+12 VDC ( $\pm 5\%$ ) .....< 650 mA

-12 VDC ( $\pm 5\%$ ).....< 75 mA

## Maximum Working Voltage

Channel-to-earth .....2 V, Installation Category I

## Safety

Meets the requirements of the following standards for safety for electrical equipment for measurement, control, and laboratory use:

EN 61010-1:1993/A2:1995, IEC 61010-1:1990/A2:1995,  
UL 3101-1:1993, UL 3111-1:1994, UL 3121:1998,  
CAN/CSA C22.2 no. 1010.1:1992/A2:1997 d.

## Electromagnetic Compatibility

CE, C-Tick, and FCC Part 15 (Class A) compliant

Electrical emissions .....EN 55011 Class A at 10 m FCC  
Part 15A above 1 GHz

Electrical immunity .....Evaluated to EN  
61326:1997/A1:1998, Table 1



**Note** For full EMC compliance, you must operate this device with shielded cabling. In addition, all covers and filler panels must be installed. See the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain the DoC for this product, click **Declaration of Conformity** at [ni.com/hardref.nsf](http://ni.com/hardref.nsf). This Web site lists the DoCs by product family. Select the appropriate product family, followed by your product, and a link to the DoC (in Adobe Acrobat format) appears. Click the Acrobat icon to download or read the DoC.



## Dimensions

PXI-5621 (1 PXI slot)..... 10 by 16 by 2.0 cm  
(3.9 by 6.3 by 0.8 in.)

## Certifications and Compliances

CE Mark Compliance

## Conductive Immunity

When tested as specified in EN 61000-4-6 at  $3 V_{\text{rms}}$ , the spurious response is within specifications except at the test frequency. A spurious signal of up to  $-45$  dBm may appear at the test frequency.