

2 GS/s, 300 MHz, 8-Bit Digitizer

NI PXI-5152 **NEW!**

- 2 GS/s real-time sampling on 1 channel
- 1 GS/s real-time sampling on 2 channels, simultaneously sampled
- 20 GS/s random-interleaved sampling
- 8-bit resolution
- 300 MHz bandwidth
- 100 mV_{pp} to 10 V_{pp} input range
- 8, 64, or 256 MB memory per channel
- Edge, window, hysteresis, and digital triggering with 5 ps timestamping

Calibration

- Gain, offset, compensated 1 MW attenuator, and timing self-calibration
- 2-year external calibration interval

Operating Systems

- Windows 2000/XP
- LabVIEW Real-Time
- Linux®

Recommended Software

- LabVIEW
- LabWindows™/CVI
- Measurement Studio
- SignalExpress

Driver Software (included)

- NI-SCOPE driver
- LabVIEW Express VIs
- Scope Soft Front Panel



Overview

Applications
Communications
xDSL
Wireless communications
Baseband I & Q
Consumer Electronics
DVD, DVD-R, and PVR
Set-top box
Gaming console
Biomedical and Scientific Research
Ultrasonic medical imaging
Mass spectrometry
Particle physics
Aerospace/Defense
RADAR, SONAR, and LIDAR
Satellite
Signal intelligence

The National Instruments PXI-5152 high-speed digitizer features two 1 GS/s simultaneously sampled input channels with 8-bit resolution, 300 MHz bandwidth, and up to 256 MB of memory per channel, in a compact 3U PXI module. The NI PXI-5152 uses the high-speed PCI bus and the scatter-gather bus mastering of the NI MITE ASIC to move data to the computer at speeds up to 100 times faster than traditional

instrument interfaces, thereby dramatically decreasing overall test time. With the Synchronization and Memory Core (SMC) architecture of the PXI-5152, you can create mixed-signal systems using signal generators and digital waveform generator/analyzers or build a high-channel-count digitizer with subnanosecond synchronization between channels.

Dual 1 GS/s, 8-Bit Input Channels

- 300 MHz input bandwidth with noise filters
- 20 GS/s equivalent-time sampling (ETS) for repetitive signals
- Independent channel-selectable 100 mV_{pp} to 10 V_{pp} input ranges
- Independent channel-selectable 50 Ω or 1 MΩ input impedance
- 2-year calibration interval and 0 to 55 °C operating temperature

Deep Onboard Memory

- 8, 64, or 256 MB of memory per channel
- Capture an infinite number of triggered waveforms in multiple record mode, using hardware rearm in streaming configuration
- Stream data continuously from onboard memory to host memory or disk

Triggering, Clocking, and Synchronization

- Edge, window, hysteresis, and digital triggering with 5 ps timestamping
- Pretrigger and posttrigger acquisition in single and multiple-record mode
- Internal 1 GHz clock or external clock from 350 MHz to 1 GHz
- Phase lock to PXI 10 MHz reference or external reference from 1 to 20 MHz

Software

- IVI-compliant NI-SCOPE driver for LabVIEW, LabWindows/CVI, and Microsoft C++ and Visual Basic with more than 50 built-in measurements
- Scope Soft Front Panel for interactive control

Ordering Information

NI PXI-5152779772-0M¹

¹M (memory per channel): 1 (8 MB), 2 (64 MB), 3 (256 MB)

Includes NI-SCOPE driver and Scope Soft Front Panel.

Recommended PXI Switch

NI PXI-2593 (500 MHz mux/matrix)778793-01

BUY NOW!

For complete product specifications, pricing, and accessory information, call 800 813 3693 (U.S. only) or go to ni.com/modularinstruments.



2 GS/s, 300 MHz, 8-Bit Digitizers

Specifications

These specifications are valid for 0 to 55 °C, unless otherwise stated.

Acquisition System

Number of channels 2 simultaneously sampled
 Vertical resolution 8 bits
 Bandwidth (-3 dB)

Range (V _{pp})	50 Ω	1 MΩ
All except 0.1	340 MHz, typical 300 MHz, minimum	300 MHz, typical 260 MHz, minimum
0.1	165 MHz, typical 135 MHz, minimum	135 MHz, typical 110 MHz, minimum

Bandwidth limit filters (software-selectable) 20 MHz noise filter
 Maximum sampling rate 1 GS/s (2 ch) or 2 GS/s (1 ch) real-time sampling,
 20 GS/s equivalent-time/random-interleaved sampling
 Onboard sample memory 8, 64, or 256 MB per channel (8, 64, or 256 million samples)

Multiple Record Acquisition (0 to 100% pretrigger and posttrigger data)	
Memory/Channel	Maximum Number of Records
8 MB	32,768
64 MB	100,000 ¹
256 MB	100,000 ¹

¹Infinite in streaming configuration.

Input impedance 50 Ω and 1 MΩ || 22 pF, software-selectable

Full-Scale Input Range and Programmable Vertical Offset			
50 Ω		1 MΩ	
Range (V _{pp})	Vertical Offset Range (V)	Range (V _{pp})	Vertical Offset Range (V)
0.1	±1	0.1	±1
0.2	±1	0.2	±1
0.4	±1	0.4	±1
1	±1	1	±1
2	±6	2	±10
4	±5	4	±10
10	±2	10	±10

Maximum input overload 50 Ω: 7 V_{rms} with 1 peaks | ≤10 V, 1 MΩ: 1 peaks | ≤42 V
 Input coupling AC, DC, GND
 AC coupling cutoff frequency (-3 dB) 106 kHz (50 Ω), 12 Hz (1 MΩ)

Accuracy

DC accuracy (0 V offset setting) ±(1.26% of input + 1.0% of FS + 500 μV) for 0.1 to 1 V ranges
 ±(1.26% of input + 1.0% of FS + 5 mV) for 2 to 10 V ranges
 Channel-to-channel crosstalk -80 dB at 10 MHz

Spectral Characteristics (typical)

Dynamic performance (10 MHz, -1 dBFS input signal)

20 MHz Noise Filter	SINAD (dB)	ENOB
Enabled	45	7.3
Disabled	43	7.1

SINAD = Signal-to-noise and distortion

Rms Noise

20 MHz filter enabled 0.24% of FS

Timebase System

Timebase options Internal, external (PFI 0)

Internal

Internal sample clock frequency 1 GS/s sampling rate with decimation by n,
 1 ≤ n ≤ 65,535
 Timebase accuracy ±25 ppm (±0.0025%)

External

External clock sources PFI 0 (SMB connector)
 External clock range 350 MHz to 1 GHz, variable with decimation by n where
 1 ≤ n ≤ 65,535
 External reference sources PFI 0 (SMB connector), PXI_CLK10
 (PXI backplane 10 MHz)
 External reference range 1 to 20 MHz in 1 MHz increments
 Slope Rising or falling
 External clock/reference amplitude Sine wave: 0.65 to 2.8 V_{pp} (0 to 13 dBm)
 External clock/reference impedance 50 Ω, AC coupled

Trigger System

Modes Edge, hysteresis, window, digital, immediate, software
 Sources CH 0, CH 1, TRIG, PXI_Trig <0..6>, PXI star, software
 Rising or falling
 Hysteresis Fully programmable
 High-frequency reject filter 50 kHz software-selectable
 Low-frequency reject filter 50 kHz software-selectable
 Sensitivity
 CH0 and CH1 10% FS
 TRIG 0.5 V_{pp}
 Level accuracy
 CH0, CH1 ±5% FS up to 10 MHz
 TRIG ±1 V up to 10 MHz
 Time resolution 5 ps with time-to-digital converter enabled
 Holdoff¹ From 1 μs to [(2³²-1) x (sample clock period)],
 software-selectable

¹Time-to-digital converter disabled.

External Trigger Channel (TRIG)

Impedance 1 MΩ || 22 pF
 Vertical range ±5 V
 Coupling AC, DC

Intermodule SMC Synchronization Using NI-TClk (typical)

Skew 500 ps
 ≤10 ps after manual adjustment

Power Requirements (typical)

+3.3 VDC	+5 VDC	+12 VDC	-12 VDC	Total Power
2.0 A	1.9 A	500 mA	210 mA	24.6 W

Environment

Operating temperature² 0 to 55 °C (meets IEC-60068-2-1 and IEC-60068-2-2)
 Storage temperature -40 to 71 °C (meets IEC-60068-2-1 and IEC-60068-2-2)
 Relative humidity 10 to 90%, noncondensing (meets IEC-60068-2-56)
²0 to 45 °C in PXI-101x or PXI-1000/8 chassis

Calibration

Self-calibration Gain, offset, compensated 1 MΩ attenuator, triggering, and
 timing for all input ranges
 External calibration interval 2 years

Certification and Compliances

CE Mark Compliance **CE**

For detailed specifications, visit ni.com/manuals.

For access to certifications, marks, and DoCs, visit ni.com/certification.