NI PCI/PXI-5112 Specifications

100 MHz, 100 MS/s 8-bit Digitizer

This document lists the specifications of the NI 5112 high-speed digitizer. These specifications are typical at 25 °C unless otherwise stated. The operating range is 0 °C to 40 °C. All specifications are subject to change without notice.

Note Visit `ni.com/manuals` for the most current specifications and product documentation.

Acquisition System

Resolution	8 bits
Bandwidth (–3 dB)	100 MHz max 20 MHz typical with bandwidth limit enabled
Number of channels	2 simultaneously sampled, single ended
Max real-time sample rate	100 MS/s
Max random interleaved sampling (RIS) sample rate	2.5 GS/s
Onboard sample memory	16 MB or 32 MB per channel, depending on memory option purchased
Calibrated vertical ranges	±25 mV to ±25 V in 10% steps

NATIONAL INSTRUMENTS

Calibrated offset ranges .....±500 mV for vertical ranges smaller than 500 mV
±5 V for vertical ranges between 500 mV and 5 V
Up to ±37 V for vertical ranges greater than 5 V

Note Absolute value of the DC offset for calibrated offset ranges should not exceed (42 V – input range/2). Example: For vertical range of ±10 V the maximum DC offset allowed is ±32 V.

DC accuracy .....±2.5% of range setting
±0.5% of offset setting

Input coupling.....DC or AC, software-selectable

AC coupling cutoff frequency (–3 dB).....11 Hz with 1X probe
1.1 Hz with 10X probe

Input impedance .....1 MΩ ‖ 30 pF or 50 Ω, software-selectable.

Input protection.....±42 V (DC + peak AC) for 1 MΩ, 5 V_{rms} for 50 Ω

Timebase System

Reference clock .....10 MHz square wave

Clock accuracy (as master)..... 50 ppm

Clock input tolerance (as slave).....1% minimum

Clock input levels .....TTL

Sampling clock frequency .....100 MHz fixed, data can be decimated by *n* where 1<*n*<100e6

Reference clock sources .....Backplane 10 MHz reference clock (NI PXI-5112 only), RTSI clock line, PFI lines, and onboard 10 MHz clock.

Triggering System

Modes	Edge, hysteresis, window, digital
Source	CH 0, CH 1, TRIG, PFI<1..2>, RTSI<0..6>, PXI Star (NI PXI-5112 only)
Slope	Rising/falling
Coupling	DC or AC on CH 0, CH 1, TRIG
Pretrigger depth	Up to 16 MB or 32 MB per channel, depending on memory option purchased
Posttrigger depth	Up to 16 MB or 32 MB per channel, depending on memory option purchased
Holdoff time	100 µs to 171.79 s
Trigger resolution	>1,000 steps in full-scale voltage range
DC accuracy	
CH 0, CH 1	±2.5% of range setting ±0.5% of offset setting
TRIG	±500 mV
TRIG input range	±10 V
TRIG input impedance	1 MΩ ‖ 30 pF or 50 Ω, software-selectable
TRIG input protection	±42 V (DC + peak AC) for 1 MΩ, 5 V_{rms} for 50 Ω
Acquisition methods	
random interleaved sampling (RIS)	200 MS/s to 2.5 GS/s effective sample rate for repetitive signals only
Real-time sampling	1 S/s to 100 MS/s sample rate for transient and repetitive signals

Calibration

Self-calibration ..... Self-calibration is done by software command. The calibration involves gain, offset, frequency response, triggering, and timing adjustment for all input ranges.

Interval..... 24 hours, or any time temperature changes beyond ±2 °C from temperature at which last internal calibration was performed

External calibration..... Internal reference requires external recalibration

Interval..... 1 year

Warm-up time..... 15 minutes

Power Requirements

+3.3 VDC..... 0.5 A

+5 VDC..... 1.5 A

+12 VDC..... 80 mA

–12 VDC..... 120 mA

Physical Characteristics

Dimensions

PCI..... 10 cm by 17.5 cm (3.9 in. by 6.8 in.)

PXI..... 10 cm by 16 cm (3.9 in. by 6.3 in.)

I/O Connectors

Analog inputs CH 0, CH 1..... BNC female

Analog trigger TRIG ..... BNC female

Digital trigger PFI 1..... SMB female

Digital trigger PFI 2. ..... 9-pin DIN

Maximum working voltage
(signal voltage plus common-mode voltage)

Channel to earth ..... 42 V, Installation Category I

Channel to channel..... 42 V, Installation Category I

Environmental Requirements

Operating temperature..... 0 °C to 40 °C

Storage temperature ..... –20 °C to 70 °C

Humidity ..... 10% to 90%, noncondensing

Maximum altitude ..... 2,000 m

Pollution degree 2

Indoor use only

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 3111-1, UL 61010B-1
- CAN/CSA C22.2 No. 1010.1

Note For UL and other safety certifications, refer to the product label or to `ni.com`.

Electromagnetic Compatibility

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

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

Immunity..... EN 61326:1997 + A2:2001, 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, visit `ni.com/hardref.nsf`.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE Marking, as follows:

Low-Voltage Directive (safety).....73/23/EEC

Electromagnetic Compatibility
Directive (EMC).....89/336/EEC

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information.

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