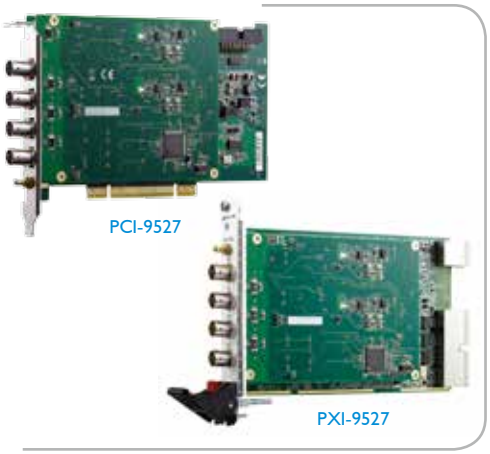
PCI/PXI-9527

24-Bit High-Resolution Dynamic Signal Acquisition and Generation Modules



Introduction

The PCI/PXI-9527 is a high-performance, 2-CH analog input and 2-CH analog output dynamic signal acquisition module. This module is specifically designed for audio testing, acoustic measurement, and vibration analysis applications.

The ADLINK PCI/PXI-9527 features two 24-bit simultaneous sampling analog input channels. The 24-bit sigma-delta ADC provides a sampling rate up to 432 kS/s at high resolutions, making it ideal for higher bandwidth dynamic signal measurements. The sampling rate can be adjusted by setting the module DDS clock source to an appropriate frequency. All channels are sampled simultaneously and accept an input range from ±40 V to ±0.316 V. The PCI/PXI-9527 analog input supports software selectable AC or DC coupling and 4 mA bias current for integrated electronic piezoelectric (IEPE) sensors.

The ADLINK PCI/PXI-9527 also has two channels of 24-bit resolution, high fidelity analog output. The outputs occur simultaneously at software programmable rates up to 216 kS/s. A software programmable output range of ±0.1 V, ±1 V, and ±10 V is available on the output channels.

Features

- **PXI specifications Rev. 2.2 compliant (PXI-9527)**
- **24-bit Sigma-Delta ADC and DAC**
- **2-CH simultaneous sampling analog input**
- **2-CH simultaneous updated analog output**
- **432 kS/s maximum sampling rate with software programmable rate**
- **Programmable input range: ±40 V, ±10 V, ±3.16 V, ±1 V, ±0.316 V**
- **Programmable output range: ±10 V, ±1 V, ±0.1 V**
- **AC or DC input coupling, software selectable**
- **Trigger I/O connector for external digital trigger signal**
- **Supports IEPE output on each analog input, software-configurable**

Supported Operating System

• Windows 7/8 x64/x86, Linux

Driver and SDK

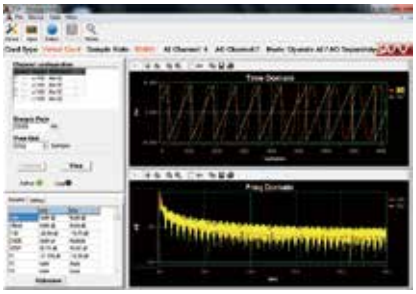
• LabVIEW, MATLAB, C/C++, Visual Basic, Visual Studio.NET

Software Utility

• DSA Utility

Dynamic Signal Assistant

ADLINK's Dynamic Signal Assistant is a ready-to-run software utility designed for dynamic signal acquisition modules, such as the PCI/PXI-9527. This software provides a windows-based configuration interface for setting parameters, in addition to a real-time visualized data display on the screen. An instrument-like user interface is also provided for basic waveform generation. The Dynamic Signal Assistant can also log data acquired from hardware modules. With the Dynamic Signal Assistant, signal acquisition and generation can be performed in just a few minutes without any programming effort.





Specifications

Analog Input

- Number of simultaneously sampled channels: 2
- Input configuration: Differential or pseudo-differential, each channel independently software-selectable
- Input impedance:

Input Impedance	Differential Configuration	Pseudodifferential Configuration
Between positive input and system ground	1 MΩ	1 MΩ
Between negative input and system ground	1 MΩ	50 Ω

- Input coupling: AC or DC, software-selectable on each channel
- ADC resolution: 24-bit
- ADC type: Sigma-Delta
- Sampling rate: Up to 432 kS/s maximum, 2 kS/s to 432 kS/s in 454.7 μS/s increments
- Input signal range: ±0.316 V, ±1.00 V, ±3.16 V, ±10.0 V, ±40.0 V
- Integrated Electronic Piezoelectric (IEPE)
  - · Current: 4 mA each channel independently software-selectable
  - · IEPE compliance: 24 V
- Data transfer: DMA
- FIFO buffer size: 4096 samples shared for AI channels
- Input Common Mode Range: ±10 V for both differential and pseudo-differential configuration
- Overvoltage protection
  - · Differential input: ± 40 V_{pk}
  - · Pseudo-differential:
  - – Positive terminal: ± 40 V_{pk}
  - – Negative terminal: ± 10 V_{pk}

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- AC couple bandwidth
  - · -3dB cutoff frequency: 3.5 Hz
  - · -0.1dB cutoff frequency: 26 Hz

	Input Range	Offset (±mV)
AI Offset Error	±40 V	0.5
	±10 V	0.2
	±3.16 V	0.1
	±1 V	0.05
	±0.316 V	0.05

	Input Range	
AI Gain Error	±40V	±0.5%
	±30V~±0.316V	±0.2%

Crosstalk	
	Crosstalk
Adjacent channel	< -100 dB
Measured with ± 10 V input Input signal is 18 Vpp @ 1KHz sine wave	

Analog Input Channel Bandwidth	
Input Range	Bandwidth (-3dB)
±40 V, ±10 V, ±3.16 V, ±1 V, ±0.316 V	130 KHz

Analog Output

- Number of output channels: 2
- Output configuration:
  Differential or pseudo-differential, each channel independently software-selectable
- DAC resolution: 24-bit
- DAC type: Sigma-Delta
- Update rate:
  1 kS/s to 216 kS/s in 227.3 μS/s increments
- FIFO buffer size: 2048 samples for each analog output channel
- Output signal range: ±0.1 V, ±1 V, ±10 V
- Voltage output coupling: DC
- Minimum working load: 600 Ω
- AO Offset error and gain error:

Output Range	AO Offset Error	AO Gain Error
±0.1 V	±0.05 mV	0.4%
±1 V	±0.25 mV	0.4%
±10 V	±1 mV	0.4%

- Output impedance:

	Differential Configuration	Pseudodifferential Configuration
Between positive output and chassis ground	2.2 KΩ	83 Ω
Between negative output and chassis ground	2.2 KΩ	50 Ω
Between positive and negative outputs	33 Ω	33 Ω

- Analog output, -3dB bandwidth: 110 KHz
- AO THD+N

Output Range	100 Hz to 20 KHz, 200 kS/s
± 0.1 V	-89 dB
± 1 V	-101 dB
± 10 V	-101 dB

Triggers

- Trigger sources:
  - · Software trigger
  - · Analog trigger
  - · External digital trigger
  - · PXI Star trigger (PXI-9527)
  - · PXI Trigger bus [0..7] (PXI-9527)
- Trigger mode:
  - · Post-trigger
  - · Delay-trigger
- Analog trigger
  - · Source: AI0, AI1
  - · Trigger level: full scale input range
  - · Trigger conditions: positive or negative trigger, software selectable
  - · Trigger resolution: 24-bit
- External digital trigger
  - · Source: front panel SMB connector
  - · Compatibility: 5 V TTL
  - · Trigger polarity: rising or falling edge
  - · Pulse width: 300 ns minimum

System Timebase Characteristics

- Clock frequency: 80 MHz
- Accuracy: ±20 ppm, over operating temperature range

Timebase source

- Internal (on board): 125 MHz
- External: PXI backplane 10 MHz (PXI version)

General Specifications

- I/O connector
  - · BNC x 4 for analog inputs/outputs
  - · SMB x 1 for external trigger
- PCI Bus Signaling: Universal PCI, support 3.3 V and 5 V PCI signals
- Dimensions (not including connectors)
  - · PCI-9527: 175 mm (W) x 107 mm (H) (6.82" x 4.17")
  - · PXI-9527: 160 mm (W) x 100 mm (H) (6.24" x 3.9")
- Ambient temperature (Operational):
  - · 0°C to 55°C (32°F to 131°F) (PXI version)
  - · 0°C to 50°C (32°F to 122°F) (PCI version)
- Ambient temperature (Storage):
  - · -20°C to 80°C (-4°F to 176°F)
- Relative humidity:
  - · 10% to 90% non-condensing

Calibration

- Onboard reference: +5 V
- Temperature coefficient: ≦ ±5 ppm/°C
- Recommend Warm-up time: 15 minute
- Power Requirement

Power Rail	Standby Current (mA)	Full Load (mA)
+5 V	930	2330
+12 V	310	350

Certifications

EMC/EMI: CE, FCC Class A

Cable Accessories

Cable	Description
SMB-SMB-1M	1 meter SMB to SMB cable
SMB-BNC-1M	1 meter SMB to BNC cable

Ordering Information

■ **PCI-9527**
2-CH 24-Bit 432 kS/s High-Resolution Dynamic Signal Acquisition and Generation module for PCI bus

■ **PXI-9527**
2-CH 24-Bit 432 kS/s High-Resolution Dynamic Signal Acquisition and Generation module for PXI bus

IO connector definition



PCI-9527

IO connector definition



PXI-9527

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