PCI-9527

24-Bit High-Resolution Dynamic Signal Acquisition and Generation

Introduction

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

The ADLINK PCI-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 idea for higher bandwidth dynamic signal measurements. The sampling rate can be adjusted by setting the onboard 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-9527 analog input supports software selectable AC or DC coupling and 4 mA bias current for integrated electronic piezoelectric (IEPE) sensors.

The ADLINK PCI-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.

For applications requiring multi-channel acquisition, the operation of two or more PCI-9527 can also be synchronize via the System Synchronization Interface (SSI). The PCI-9527 features both analog and digital triggering for signal acquisition. The sources of the trigger can be from software command, analog input channels, external digital trigger input from front panel, or the SSI.

Features

- **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: ±0.1 V, ±1 V, ±10 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**
- **Multiple module synchronization interface for high density analog input channels**

Supported Operating System

- Windows 7/Vista/XP
- Linux

Recommended Application Environments

- VB.NET/VC.NET/VB/VC++/BCB/Delphi

Driver Support

- DAQPilot for Windows
- DAQPilot for LabVIEW™
- DASK for Windows
- DASK/X for Linux

Applications

- Audio testing
- Noise, vibration, and harshness testing
- Machine condition monitoring
- Structure vibration

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	50Ω

- Input coupling: AC or DC, software-selectable on each channel
- ADC resolution: 24-bit
- ADC type: Delta-sigma
- Sampling rate: Up to 432 KS/s maximum, 1 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 to 10 mA, each channel independently software-selectable
  - · IEPE compliance: 24 V
- Data transfer: DMA
- FIFO buffer size: 2048 samples for each analog input channel

Analog Output

- Number of output channels: 2
- Output configuration: Differential or pseudodifferential, each channel independently software-selectable
- DAC resolution: 24-bit
- DAC type: Delta-sigma
- Update rate: 216 KS/s maximum
- FIFO buffer size: 2048 samples for each analog output channel
- Output signal range: ±0.1, ±1, ±10
- Voltage output coupling: DC

Triggers

- Trigger Sources
  - · Software trigger
  - · Analog trigger
  - · External digital trigger
- Analog Trigger
  - · Purpose: Start trigger
  - · Source: AI0 or AI1
  - · Level: Full scale input range
  - · Slope: Positive or negative, software selectable
  - · Resolution: 24 bits
- Digital Trigger
  - · Purpose: Start trigger
  - · Source: Ext. Trig
  - · Compatibility: 5 V TTL
  - · Polarity: Rising or falling edge
  - · Minimum pulse width: 12.5 ns

Internal Timebase Characteristics

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

General Specifications

- Bus Interface: PCI, 32-bit/33 MHz
- PCI Bus Signaling: Universal PCI, support 3.3 V and 5 V PCI signals
- Dimensions (not including connectors): 106.6 mm (H) x 174.6 mm (W)
- Operating Environment:
  - · Ambient temperature range: 0°C to 50°C
  - · Relative humidity range: 10% to 90%, non-condensing
- Storage Environment
  - · Ambient temperature range: -20°C to 70°C
  - · Relative humidity range: 10% to 90%, non-condensing

Certifications

- EMC/EMI: CE, FCC Class A