PCI-9812/9812A/9810

4-CH 10/12-Bit 20 MS/s Simultaneous-Sampling Analog Input Cards

Introduction

ADLINK's PCI-9812, PCI-9810 and PCI-9812A are 4-CH, 10 or 12-bit, 20 MS/s simultaneous-sampling analog input cards. The high-speed analog input channels are single-ended, with hardware programmable input ranges of ±1 V, ±5 V and input impedances of 50 Ω, 1.25 kΩ and 15 MΩ. The onboard 32 k-sample A/D FIFO can buffer so data throughput is less than 100 Mbytes/s, the FIFO performs as the temporary A/D sample buffer, and as a rule of thumb, no data loss will occur. When four channels operate at 20 MS/s simultaneously, each sample generates two bytes, resulting in 160 Mbyes/s (4 channels * 20 M * 2 bytes) throughput, which exceeds the peak 132 Mbyte/s bandwidth of PCI bus. To avoid data loss, the 32 k-sample FIFO is the limitation of sample count. For applications requiring a larger number of samples at full sampling rate, the PCI-9812A features 128 k sample A/D FIFO for storage.

In addition to the onboard 40 MHz time base, users are able to supply the external time base in either sine wave or digital forms. The PCI-9810 and PCI-9812 also feature external digital trigger and programmable analog trigger, thus the conversion start point of multiple cards can be synchronized to external events. The trigger modes include software-trigger, pre-trigger, post-trigger, middle-trigger and delay trigger, further expands the capabilities of these high-speed devices. ADLINK's PCI-9812, PCI-9810 and 9812A deliver cost-effective and reliable data acquisition capabilities and are ideal for vibration testing, image digitizing, ultrasonic measurement, biomedical research, ATE and other high-end industrial, scientific, and military applications.

Features

- **Supports a 32-bit 3.3 V or 5 V PCI bus**
- **12-bit A/D resolution (PCI-9812 and PCI-9812A)**
- **10-bit A/D resolution (PCI-9810)**
- **Up to 20 MS/s simultaneous-sampling rate**
- **>17 MHz -3 dB bandwidth**
- **4-CH single-ended inputs**
- **Bipolar analog input ranges**
- **User-selectable input impedance of 50 Ω or high-input impedance**
- **Onboard 32 k-sample A/D FIFO (PCI-9810 and PCI-9812)**
- **Onboard 128 k-sample A/D FIFO (PCI-9812A)**
- **Analog and digital triggering**
- **External clock input for customized conversion rate**
- **Bus-mastering DMA for analog inputs**
- **3-CH TTL digital inputs**
- **Compact, half-size PCB**

Supported Operating System

• Windows 7/8 x64/x86, Linux

Driver and SDK

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

Software Utility

• AD-Logger

Specifications

Analog Input

- Number of channels: 4 single-ended Resolution
  - · 12-bit (PCI-9812 and PCI-9812A)
  - · 10-bit (PCI-9810)
- Maximum sampling rate: 20 MS/s
- Input signal ranges, impedance and overvoltage protection

Input RangeModel	Input Impedance	Overvoltage protection
±1 V	50 Ω	±2 V
	15 MΩ	
±5 V	50 Ω	±10 V
	1.25 kΩ	

- Accuracy: ±1.5% typical
- DNL: ±0.4 LSB typical, ±1.0 LSB maximum
- INL: ±1.9 LSB typical
- Input coupling: DC
- Trigger sources: software, analog and digital trigger (5 V/TTL compatible)
- Trigger modes: software-trigger, pre-trigger, post-trigger, middle-trigger & delay trigger
- FIFO buffer size
  - · 32 k samples (PCI-9810 & PCI-9812)
  - · 128 k samples (PCI-9812A)
- Data transfers: bus-mastering DMA

Triggering

- Analog Trigger
  - · Modes: pre-trigger, post-trigger, middle-trigger, delay-trigger
  - · Source: CH0, CH1, CH2 and CH3
  - · Slope: rising/falling
  - · Coupling: DC
  - · Trigger sensitivity: 256 steps in full-scale voltage range
- Digital Triggering
  - · Modes: pre-trigger, post-trigger, middle-trigger, delay-trigger
  - · Source: external digital trigger
  - · Slope: rising edge
  - · Compatibility: 5 V/TTL
  - · Minimum pulse width: 25 ns

External Sine Wave Clock

- Input coupling: AC
- Input impedance: 50 Ω
- Input frequency: 300 kHz to 40 MHz
- Input range: 1.0 to 2.0 Vpp
- Overvoltage protection: 2.5 Vpp

External Digital Clock

- Input coupling: DC
- Input impedance: 50 Ω
- Compatibility: 5 V/TTL
- Input frequency: 20 kHz to 40 MHz
- Overvoltage protection: diode clamping, -0.3 V to +5.3 V

Digital Input

- Number of channels: 3
- Compatibility: 5 V/TTL with 10 KΩ pull down resistors
- Overvoltage protection: Diode clamping, -0.3 V to +5.3 V
- Data transfers: bus-mastering DMA with A/D samples

General Specifications

- I/O connector
  - · BNC x 5
  - · 10-pin ribbon male
- Operating temperature: 0°C to 40°C (32°F to 104°F)
- Storage temperature: -20°C to 70°C (-4°F to 158°F)
- Relative humidity: 10% to 90%, non-condensing
- Power requirements

Device	+5 V
PCI-9812	1.4 A typical
PCI-9812A	
PCI-9810	1 A typical

- Dimensions (not including connectors)
  173 mm x 108 mm (6.74" x 4.21")

Ordering Information

PCI-9810
4-CH 10-Bit 20 MS/s Simultaneous-Sampling Analog Input Card with 32 k-Sample A/D FIFO

PCI-9812
4-CH 12-Bit 20 MS/s Simultaneous-Sampling Analog Input Card with 32 k-Sample A/D FIFO

PCI-9812A
4-CH 12-Bit 20 MS/s Simultaneous-Sampling Analog Input Card with 128 k-Sample A/D FIFO