

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 k Ω and 15 M Ω . 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 Mbytes/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 Range/Model	Input Impedance	Overvoltage protection
± 1 V	50 Ω	± 2 V
	15 M Ω	
± 5 V	50 Ω	± 10 V
	1.25 k Ω	

- Accuracy: $\pm 1.5\%$ 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 V_{pp}
- Overvoltage protection: 2.5 V_{pp}

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 K Ω 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	1.4 A typical
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