

# PCI-9812/9812A/9810

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

### Features

- Supports a 32-bit 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  $\Omega$  or high input impedance
- On-board 32 k-sample A/D FIFO (PCI-9810 and PCI-9812)
- On-board 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

### Operating Systems

- Windows 2000/NT/XP/9x
- DOS
- Red Hat Linux
- Windows CE (call for availability)

### Recommended Software

- B/V/C++/BCB/Delphi
- DAQBench

### Driver Support

- PCIS-DASK for Windows 2000/NT/XP/9x
- PCIS-DASK/X for Red Hat Linux
- PCIS-OCX ActiveX controls
- PCIS-LVIEW/PnP for LabVIEW **NEW!**

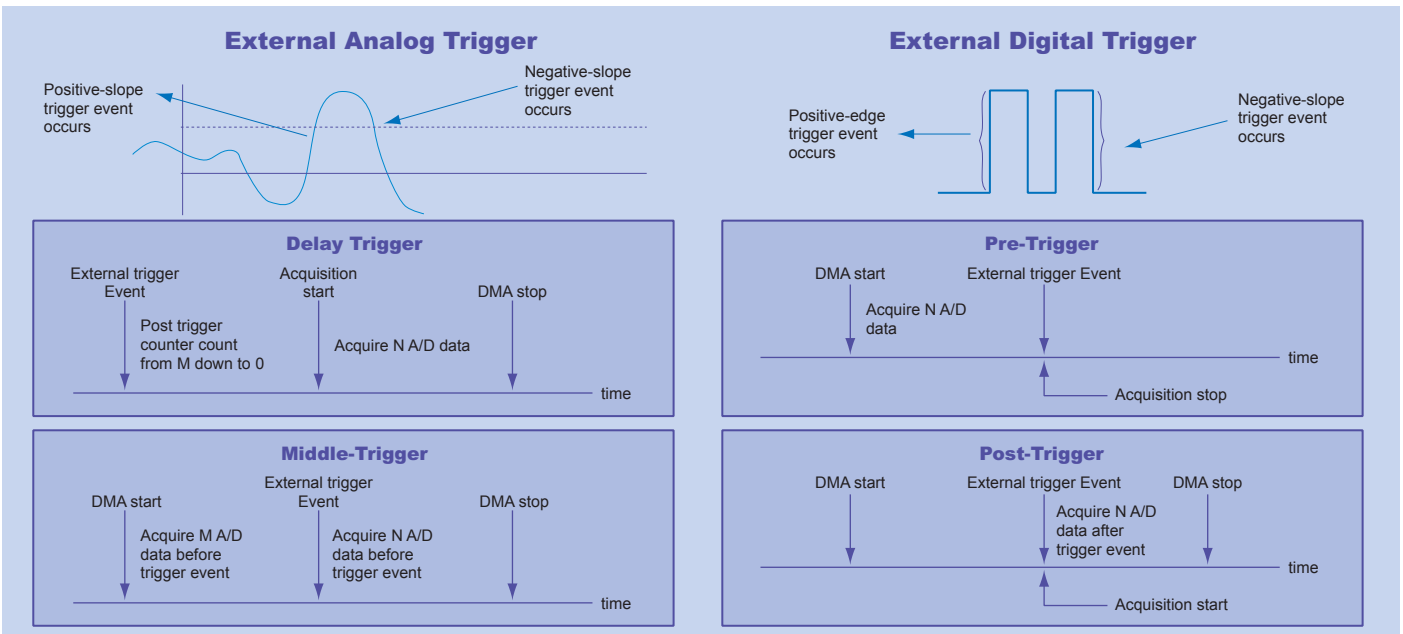


### Introduction

ADLINK 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  $\pm 1$  V,  $\pm 5$  V and input impedances of 50  $\Omega$ , 1.25 k $\Omega$  and 1 M $\Omega$ . The on-board 32k-sample A/D FIFO can buffer the sampled data. When the 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 happen. When four channels operate at 20 MS/s simultaneously, each sample generates two bytes, resulting in 160 Mbytes/s (4 channels \* 20M \* 2 bytes) throughput, which exceeds the peak 132 Mbyte/s bandwidth of PCI bus. To avoid data loss, the 32k-sample FIFO is the limitation of sample count. For applications needing a larger number of samples at full sampling rate, the PCI-9812A features 128K-sample A/D FIFO for storage.

In addition to the on-board 40MHz 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 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/Military applications.



## 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	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
  - •32k samples (PCI-9810 & PCI-9812)
  - •128k samples (PCI-9812A)
- Data transfers: bus mastering DMA

### Triggering

- Analog triggering
  - •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<sub>pp</sub>
- Overvoltage protection: 2.5 V<sub>pp</sub>

### 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 to 50 °C
- Storage temperature: -20 to 80 °C
- Relative humidity: 5 to 95 %, noncondensing
- 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

## Pin Assignment

### J1-J5: Analog Inputs & External Sine Wave Clock

CH0	1	Shield: GND
CH1	2	Shield: GND
CH2	3	Shield: GND
CH3	4	Shield: GND
Ext. Sine Wave CLK	5	Shield: GND

## Pin Assignment

### JP1: External Digital Clock, Digital Trigger & Digital Inputs

Ext. Digital CLK	1	2	GND
Ext. Digital TRIG	3	4	GND
DIO	5	6	GND
D11	7	8	GND
D12	9	10	GND

## Ordering Information

- **PCI-9810**  
4-CH 10-bit 20 MS/s Simultaneous-Sampling Analog Input Card
- **PCI-9812**  
4-CH 12-bit 20 MS/s Simultaneous-Sampling Analog Input Card
- **PCI-9812A**  
4-CH 12-bit 20 MS/s Simultaneous-Sampling Analog Input Card with 128k-sample A/D FIFO

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