PCI-9812/9812A/9810

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

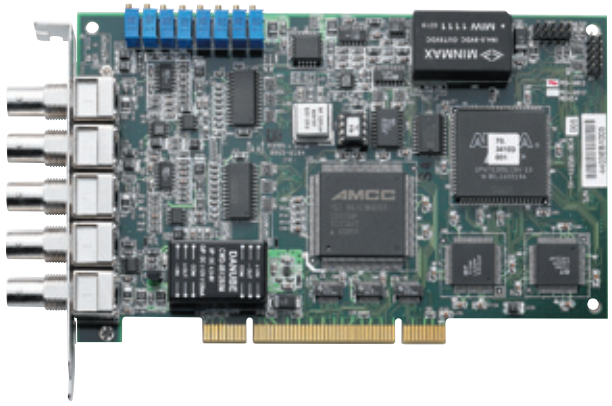
Features

- 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

Operating Systems
- Windows Vista/XP/2000/2003
- Linux
- Windows CE (call for availability)

Recommended Software
- VB.NET/VC.NET/ VB/VC++/BCB/Delphi
- DAQBench

Driver Support
- DAQPilot for Windows
- DAQ-LVIEW PnP for LabVIEW™
- DAQ-MTLB for MATLAB®
- PCIS-DASK for Windows
- PCIS-DASK/X for Linux

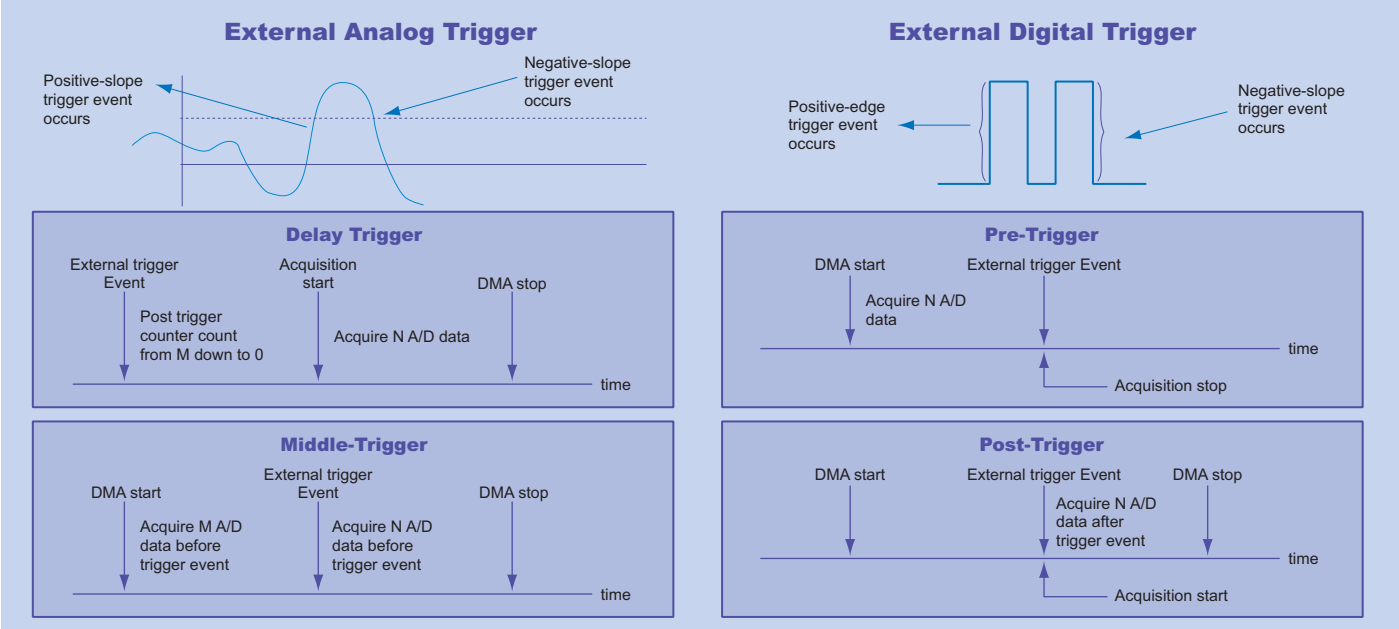


Introduction

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 ±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 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 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 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
  - 32 k samples (PCI-9810 & PCI-9812)
  - 128 k 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_{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 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 40˚C
- Storage temperature: -20 to 70˚C
- Relative humidity: 5 to 95 %, 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

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
DI0	5	6	GND
DI1	7	8	GND
DI2	9	10	GND

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