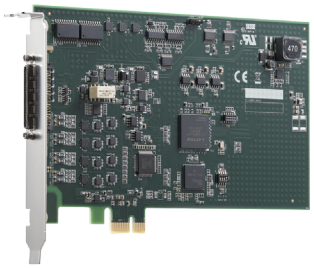
PCIe-9146/9147

4/8 Channels, Simultaneous, High Performance Multifunction Data Acquisition Card



Features

- PCI Express bus
- 4/8 differential analog input channels
- Simultaneous sampling
- 16-bit high A/D resolution
- Onboard 8K-sample A/D FIFO
- Supports programmable voltage input range of ±10V, ±5V, ±2.5V, ±1.25V, ±0.625V, ±0.3125V
- 2-ch 16-bit multiplying analog outputs with waveform generation
- Onboard 1K-sample D/A FIFO
- 16-ch TTL digital input/16-ch TTL digital output
- Up to 2 independent full function general purpose timer counters
- Dedicated 2-ch 4 MHz encoder inputs, supporting AB phase, and CW/CCW
- Direct memory access channels offload CPU utilization
- Internal software and external digital/analog trigger support
- Fully automated calibration
- Board ID switch

Introduction

ADLINK PCIe-9146/9147 are simultaneous-sampling multi-function PCI Express DAQ cards to meet a wide range of application requirements. The devices can simultaneously sample 4/8 AI channels with differential input configuration in order to achieve maximum noise elimination. They also provide two-channel 16-bit multiplying analog outputs with waveform generation capability, which can be performed together with analog input functions. The high-density I/O design allows for easier integration of multiple functions in a single card, making it useful in a variety of applications including data logging, process control, and condition monitoring.

Key Benefits

- **Supported Operating Systems**
  Windows 7/10/11 x86/x64 or later, Linux
- **Drivers and SDK**
  LabVIEW, C/C++, Visual Basic, Visual Studio.NET
- **Software Utilities**
  ACE, Soft Front Panel

Key Benefits

- High density design with many input/output functions packed into each card
- Simultaneous sampling for synchronization between channel to channel
- Programmable gain amplifiers for higher analog input accuracy
- Direct memory access channels offload CPU utilization
- Easy to use utility/SDK simplifies design effort

Ordering Information

- **PCIe-9146**
  4-ch 16-bit 1MS/s Simultaneous Multifunction DAQ
- **PCIe-9147**
  8-ch 16-bit 1MS/s Simultaneous Multifunction DAQ

Terminal Boards & Cables

- **DIN-68S-01**
  Terminal board with one 68-pin SCSI connector and DIN-rail mounting (cables not included.)
- **ACL-10568-1**
  SCSI 68P(M) to VHDCI 68P,1M

Specifications

Model Name	PCIe-9146	PCIe-9147
Analog Input		
Number of Channels	4 differential analog input channels	8 differential analog input channels
Resolution	16-bit	
Sampling Rate	1 MS/s (each channel)	
FIFO Buffer Size	Onboard 8K samples	
Input Range	±10 V, ±5 V, ±2.5 V, ±1.25 V, ±0.625 V, ±0.3125 V	
Input Impedance	1GΩ	
Input Coupling	DC	
Overvoltage Protection	Continuous ±30 V	
Trigger Source	Software Digital Analog	
Data Transfer	Polling DMA	
SNR	80 dB	
ENOB	13 bits	
Analog Output		
Number of Channels	2	
Resolution	16-bit	
Output Range	±10 V	
FIFO Buffer Size	Onboard 1K samples (2-channel share)	
Output Driving Capacity	±5 mA max.	
Slew Rate	10 V/μs	

Specifications

Model Name	PCIe-9146	PCIe-9147
Settling Time (0.1% of Full scale)	5 µs	
Output Coupling	DC	
Output Impedance	< 0.1 ohm	
Trigger Source	Software Digital	
Data Transfers	Polling DMA	
Digital Input		
Number of Channels	16	
Compatibility	TTL	
Input Impedance	pull-low 100K ohm	
Input Frequency Range	0.01Hz to 1MHz	
FIFO Buffer Size	Onboard 512 samples	
Isolation	No	
Trigger Source	Software Digital	
Data Transfer	Polling DMA	
Digital Output		
Number of Channels	16	
Compatibility	TTL	
Impedance	pull-low 100Kohm	
Input Frequency Range	0.01Hz to 1MHz	
FIFO Buffer Size	Onboard 512 samples	
Isolation	No	
Trigger Source	Software Digital	
Data Transfer	Polling DMA	
General Purpose Timer Counter		
Number of Channels	2	
Resolution	32-bit	
Compatibility	TTL	
Clock Source	Internal clock fixed to 33MHz External clock 0.01Hz to 8MHz max. selected by software	
Output Frequency	By internal clock: 16.5MHz By external clock: 32MHz max.	
Encoder Input		
Number of Channels	2	
Encoder Type	CW/CCW encoder, x 1 AB phase encoder, x 2 AB phase encoder, x 4 AB phase encoder	

Specifications

Model Name	PCIe-9146	PCIe-9147
General Specifications		
Bus Type	PCI Express 1.0	
Bus Width	x1 lane	
Dimensions (L x W x H)	181.05mm (L) x 19.4mm (W) x 126.72mm (H)	
Connector	68-pin SCSI-type female	
Weight	100g	
Operating Temperature	0°C to 60°C	
Storage Temperature	-40 to 85 °C	
Power Consumption	Typical: 30 mA@3.3V 650 mA@12V Max: 45 mA@3.3V 770 mA@12V	