PCIe-9814/9834

4-CH 12/16-Bit 80 MS/s PCI Express Digitizer

Features

- Up to 80 MS/s sampling
- 4 simultaneous analog inputs
- High resolution 12-bit ADC (PCIe-9814)/ 16-bit ADC (PCIe-9834)
- Up to 40 MHz bandwidth for analog input
- 1 GB onboard storage memory
- Programmable input voltage range of ±0.5V, ±1V, ±5V, or ±10V
- Scatter-Gather DMA data transfer for high speed data streaming
- Provide 10 or 20 MHz digital onboard filter (FPGA)
- Provide PLL module for precise synchronization (PCIe-9814P/PCIe-9834P only)
- Support for:
  - One external digital trigger input
  - One external clock input
  - Three SDI inputs(PCIe-9814/9814P only)
- Full auto-calibration



Introduction

The ADLINK PCIe-9814/9834 are PCI Express digitizer providing speedy, high quality data acquisition. Each of the four input channels supports up to 80MS/s sampling, with 12/16-bit resolution A/D converter. This allows simultaneous recording of signals on all channels with no interchannel phase delay. The extremely large on-board memory enables long recording times even at the highest sampling rates.

Unlike parallel PCI buses, PCI Express slots utilize serial point-to-point connection. Each connection pair (lane) can achieve burst connection speeds of 250MB/s. The PCIe-9814/9834, based on x4 lane slot PCI Express technology, provides a clear advantage in that direct connection of each slot allows full transfer bandwidth for each individual card. The ADLINK PCIe-9814/9834 PCI Express Gen1 x4 digitizers can be used in any standard PCI Express

Supported Operating System

- Windows XP/7/8/10, x64/x86, Linux

Driver and SDK

- LabVIEW, MATLAB, Visual Studio, Visual Studio.NET

Ordering Information

- **PCIe-9814**
  4-CH 12-Bit 80 MS/s PCI Express Digitizer
- **PCIe-9814P**
  4-CH 12-Bit 80 MS/s PCI Express Digitizer with PLL module
- **PCIe-9834**
  4-CH 16-Bit 80 MS/s PCI Express Digitizer
- **PCIe-9834P**
  4-CH 16-Bit 80 MS/s PCI Express Digitizer with PLL module

Specifications

Analog Input

- Number of channels: 4 single-ended
- Input impedance: 50Ω or 1MΩ, software selectable
- Input coupling: DC
- Input signal range: ±0.5V, ±1V, ±5V, or ±10V
  (±10V only support input impedance 1MΩ)
- Overvoltage protection: ±30V@ 1M Ω, ±10V and ±5V ; ±10V@ 1M Ω, ±1V and ±0.5V ; ± 10V sine wave/7 Vrms@ 50 Ω, ±5V, ±1V and ±0.5V
- ADC resolution: 12 bits (PCIe-9814)/ 16 bits (PCIe-9834)
- Bandwidth: 40MHz
- Offset Error:

Range	PCIe-9814	PCIe-9834
±0.5V	±0.5 mV	±0.1 mV
±1V	±0.5 mV	±0.2 mV
±5V	±4 mV	±0.5 mV
±10V	±10 mV	±0.5 mV

- Gain Error:

Input Impedance	Range	PCIe-9814	PCIe-9834
50Ω	±0.5V, ±1V, ±5V	±1%	±0.15%
1MΩ	±0.5V, ±1V, ±5V	±0.5%	±0.15%
	±10 V	±1%	±0.15%

- Crosstalk: from DC to 10 MHz

Range	PCIe-9814	PCIe-9834
±0.5V	-80 dB	-80 dB
±1V, ±5V, ±10V	-90 dB	-90 dB

- System Noise:

Range	PCIe-9814 (mVrms)	PCIe-9834 (mVrms)
±0.5V	0.15	0.1
±1V	0.3	0.15
±5V	1.5	1
±10V	2.5	1.5

- Spectral Characteristics:
  Sampling rate: 80MS/s, 10MHz -1dBFS input signal

Range	PCIe-9814	PCIe-9834
SNR	64 dB	67 dB
THD	-73 dB	-78 dB
SFDR	-74 dB	78 dB

Trigger

- Trigger Sources
  - Software
  - External digital trigger
  - Analog trigger from CH0 ~ CH3
  - SSI
- Trigger Modes
  - Post-trigger
  - Pre-trigger
  - Middle trigger
  - Delay trigger
- External Digital Trigger Input
  - Source: Front panel SMB connector
  - Compatibility: 3.3V TTL, 5V tolerance
  - Input high threshold: 2.0V
  - Input low threshold: 0.8V
  - Maximum input overload: -0.5 V to +5.5 V
  - Trigger polarity: rising or falling edge
  - Pulse width: 20 ns minimum

Timebase

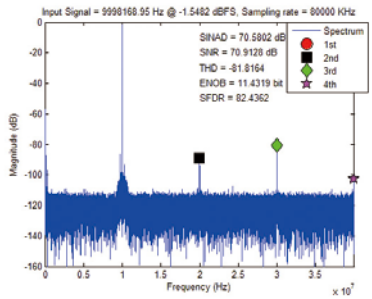
- Sample clock source
  - Internal: onboard clock (oscillator)
  - External: CLK IN (front panel)
- Sample clock frequency
  - Internal: 1.22K Hz ~ 80M Hz
  - External: 20M Hz ~ 80M Hz (CLK IN)
  - Internal timebase accuracy: < ±25 ppm
- External sample clock input range : 1Vpp ~ 5Vpp
- External reference clock source
  - SDI0 (Front panel, only PCIe-9814P)
  - REF_CLK (Front panel, only PCIe-9834P)
- External reference clock frequency: 10M Hz
- External reference clock input range : 3.3V ~ 5V TTL

Data Storage and Transfer

- 1 GB onboard memory, shared among four analog inputs
- Scatter-Gather DMA data transfer Onboard Reference

Onboard Reference

- +1.8V, +0.9V and +0.45V onboard reference voltage
- < 3 ppm/°C reference temperature drift
- 15 minutes recommended warm-up



General Specifications

- PCIe-9814 I/O Connector:
  - SMB x 4 for analog inputs
  - SMB x 1 for external trigger input
  - SMB x 1 for external sample clock input
  - SMB x 3 for synchronous digital input
    (SDI0 can be shared with Ref clock input, only PCIe-9814P)
- PCIe-9834 I/O Connector:
  - SMB x 4 for analog inputs
  - SMB x 1 for external trigger input
  - SMB x 1 for external sample clock input
  - SMB x 1 for External reference clock source input
    (only PCIe-9834P)
- Dimensions (not including connectors):
- 167.64 (W) x 106.68 (H) mm (6.53" x 4.16")
- Bus Interface:PCI Express gen 1 x4
- Ambient Temperature (Operational):0°C to 50°C (32°F to 122°F)
- Ambient Temperature (Storage):-20°C to 80°C (-4°F to 176°F)
- Relative Humidity:10% to 90%, non-condensing Certifications
- Power Consumption:

	PCIe-9814		PCIe-9814P	
Power Rail	Standby (mA)	Full load (mA)	Standby (mA)	Full load (mA)
+3.3V	20	20	20	20
+12V	425	505	655	715
Total Power(W)	5.116	6.126	7.926	8.646

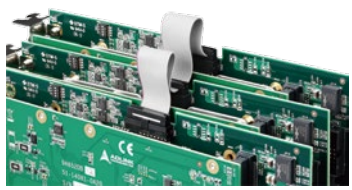
	PCIe-9834		PCIe-9834P	
Power Rail	Standby (mA)	Full load (mA)	Standby (mA)	Full load (mA)
+3.3V	18	18	18.7	21.4
+12V	450	470	675	697
Total Power(W)	5.459	5.699	8.162	8.435

Certifications

- EMC/EMI: CE, FCC Class A

SSI Bus Cables (for multiple card synchronization)

- ACL-eSSI-2/3/4
  SSI bus cable for two, three, and four devices



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