

PCIe-69814/69834

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



PCIe-69834

Introduction

The JYTEK PCIe-69814/69834 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 onboard 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-69814/69834, 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 JYTEK PCIe-69814/69834 PCI Express Gen1 x4 digitizers can be used in any standard PCI Express

Features

- Up to 80 MS/s sampling
- 4 simultaneous analog inputs
- High resolution 12-bit ADC (PCIe-69814)/ 16-bit ADC (PCIe-69834)
- Up to 40 MHz bandwidth for analog input
- 1 GB onboard storage memory
- Programmable input voltage range of $\pm 0.5V$, $\pm 1V$, $\pm 5V$, or $\pm 10V$
- 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-69814P/PCIe-69834P only)
- Support for:
 - One external digital trigger input
 - Three SDI inputs(PCIe-69814/69814P only)
- Full auto-calibration

Supported Operating System

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

Driver and SDK

- MATLAB, Visual Studio, Visual Studio.NET

Ordering Information

- PCIe-69814
4-CH 12-Bit 80 MS/s PCI Express Digitizer
- PCIe-69814P
4-CH 12-Bit 80 MS/s PCI Express Digitizer with PLL module
- PCIe-69834
4-CH 16-Bit 80 MS/s PCI Express Digitizer
- PCIe-69834P
4-CH 16-Bit 80 MS/s PCI Express Digitizer with PLL module

Specifications

Analog Input

- Number of channels: 4 single-ended
- Input impedance: 50 Ω or 1M Ω , software selectable
- Input coupling: DC
- Input signal range: $\pm 0.5V$, $\pm 1V$, $\pm 5V$, or $\pm 10V$
($\pm 10V$ only support input impedance 1M Ω)
- Overvoltage protection: $\pm 30V@ 1M \Omega$, $\pm 10V$ and $\pm 5V$; $\pm 10V@ 1M \Omega$, $\pm 1V$ and $\pm 0.5V$; $\pm 10V$ sine wave/7 Vrms@ 50 Ω , $\pm 5V$, $\pm 1V$ and $\pm 0.5V$
- ADC resolution: 12 bits (PCIe-69814)/ 16 bits (PCIe-69834)
- Bandwidth: 40MHz
- Offset Error:

Range	PCIe-69814	PCIe-69834
$\pm 0.5V$	± 0.5 mV	± 0.1 mV
$\pm 1V$	± 0.5 mV	± 0.2 mV
$\pm 5V$	± 4 mV	± 0.5 mV
$\pm 10V$	± 10 mV	± 0.5 mV

- Gain Error:

Input Impedance	Range	PCIe-69814	PCIe-69834
50 Ω	$\pm 0.5V$, $\pm 1V$, $\pm 5V$	$\pm 1\%$	$\pm 0.15\%$
	$\pm 10V$	$\pm 1\%$	$\pm 0.15\%$

- Crosstalk: from DC to 10 MHz

Range	PCIe-69814	PCIe-69834
$\pm 0.5V$	-80 dB	-80 dB
$\pm 1V$, $\pm 5V$, $\pm 10V$	-90 dB	-90 dB

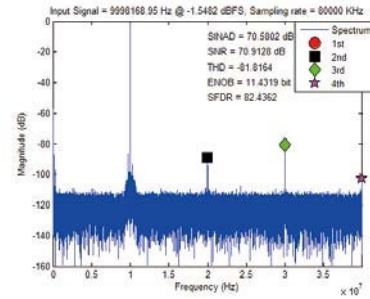
- System Noise:

Range	PCIe-69814(mVrms)	PCIe-69834(mVrms)
$\pm 0.5V$	0.15	0.1
$\pm 1V$	0.3	0.15
$\pm 5V$	1.5	1
$\pm 10V$	2.5	1.5

■ Spectral Characteristics:

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

Range	PCIe-69814	PCIe-69834
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)

■ Sample clock frequency

- Internal: 1.22K Hz ~ 80M Hz
- Internal timebase accuracy: < ±25 ppm

■ External reference clock source

- SDIO (Front panel, only PCIe-69814P)
- REF_CLK (Front panel, only PCIe-69834P)

■ 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-69814 I/O Connector:

- SMB x 4 for analog inputs
- SMB x 1 for external trigger input
- SMB x 3 for synchronous digital input
(SDIO can be shared with Ref clock input, only PCIe-69814P)

■ PCIe-69834 I/O Connector:

- SMB x 4 for analog inputs
- SMB x 1 for external trigger input
- SMB x 1 for External reference clock source input
(only PCIe-69834P)

■ 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:

Power Rail	PCIe-69814		PCIe-69814P	
	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

Power Rail	PCIe-69834		PCIe-69834P	
	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

