PCI/PXI-9816/9826/9846

4-CH 16-Bit 10/20/40 MS/s Digitizers with 512 MB Memory



PCI-9816/9826/9846



PXI-9816/9826/9846

Features

- **PXI specifications Rev.2.2 compliant (PXI-98x6)**
- **Supports 5 V and 3.3 V PCI signals**
- **Supports the 32-bit /66 MHz PCI interface**
- **4 channels of simultaneous single-ended analog input**
- **16-bit high resolution A/D converter**
- **Up to 10 MS/s, 20 MS/s, and 40 MS/s per channel**
- **512 MB on-board memory for data storage**
- **Software selectable 50 Ω or 1 MΩ input impedance**
- **Programmable input voltage range: ±0.2 V / ±1 V or ±1 V / ±5 V**
- **5.1 MHz, 9.6 MHz, and 20 MHz analog input bandwidth for the PCI/PXI-9816, PCI/PXI-9826 and PCI/PXI-9846, respectively**
- **Multiple module synchronization via the PXI trigger bus or SSI (System Synchronization Interface)**
- **Supports scatter-gather DMA transfer**
- **89 dBc SFDR, 79 dBc SINAD and 12.9-bit ENOB (PXI-9816)**
- **Fully auto-calibration**

Supported Operating System

• Windows 7/8 x64/x86, Linux

Driver and SDK

• LabVIEW, MATLAB, C/C++, Visual Basic, Visual Studio.NET

Software Utility

• AD-Logger

Introduction

The ADLINK PCI/PXI-9816/9826/9846 are 10 MS/s, 20 MS/s, 40 MS/s sampling 16-bit 4-CH digitizers designed for digitizing high frequency and wide dynamic range signals with an input frequency up to 20 MHz. The analog input range can be programmed via software to ±1 V / ±0.2 V or ±5 V / ±1 V, based on the model. With a deep onboard acquisition memory up to 512 MB, the PXI/PCI-9816/9826/9846 are not limited by the data transfer rate of the PCI bus to enable the recording of waveforms for extended periods of time.

The PXI/PCI-9816/9826/9846 are equipped with four high linearity 16-bit A/D converters ideal for demanding applications with a high dynamic range such as radar, ultrasound, and software-defined radio.

Specifications

Analog Input

- Number of channels: 4 single-ended channels
- Input impedance: 50 Ω or 1 MΩ, software selectable
- Input coupling: DC
- Input range: (±0.2 V, ±1 V) or (±1 V, ±5 V), depends on model type
- ADC resolution: 16 bits, 1 in 65536
- Crosstalk: <-80 dB from DC to 1 MHz, for all input ranges
- System noise, unit in LSB_{RMS}:

Input Range	PXI-9816D	PXI-9826D	PXI-9846D	PXI-9846W	PCI-9846D
±0.2 V	5.0	6.0	8.0	15.0	8.0
±1 V	3.0	4.0	5.0	7.0	5.0

Input Range	PCI-9816H	PCI-9826H	PCI-9846H	PXI-9846H
±1 V	5.0	6.0	8.0	8.0
±5 V	3.0	4.0	5.0	5.0

- Offset error:

Model Name	PXI-9816D/9826D/9846D/9846W, PCI-9846D
Offset error	±0.2 mV
Model Name	PXI-9846H, PCI-9816H/9826H/9846H
Offset error	±0.3 mV

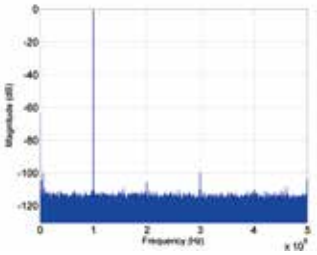
- Gain error:

Input Range	PXI-9816D/9826D/9846D/9846W, PCI-9846D
±0.2 V	±0.1%
±1 V	±0.05%
Input Range	PXI-9846H, PCI-9816H/9826H/9846H
±1 V	±0.1%
±5 V	±0.06%

- -3dB Bandwidth, typical:

Input Range	PXI-9816D	PXI-9826D	PXI-9846D/PCI-9846D	PXI-9846DW
@ 50 Ω and 1 MΩ input impedance				
±0.2 V, ±1 V	5.1 MHz	9.6 MHz	20 MHz	80 MHz (±1 V) 55 MHz (±0.2 V)
Input Range	PCI-9816H	PCI-9826H	PXI-9846H/PCI-9846H	---
@ 50 Ω input impedance				
±1 V, ±5 V	5.1 MHz	9.6 MHz	20 MHz	---
@ 1 MΩ input impedance				
±1 V, ±5 V	90 KHz			---

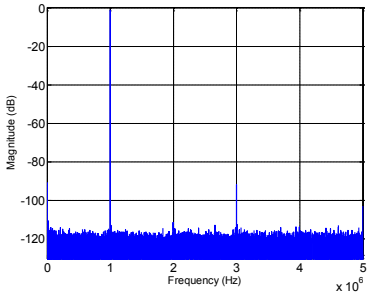
- Spectral Characteristics
  - Model: PXI-9816D/512
  - Input Range: ±0.2 V
  - Sampling Rate: 10 MS/s
  - SINAD: 76.56 dBc
  - SNR: 76.59 dBc
  - THD: -95.91 dBc
  - ENOB: 12.42 bit
  - SFDR: 99.73 dBc

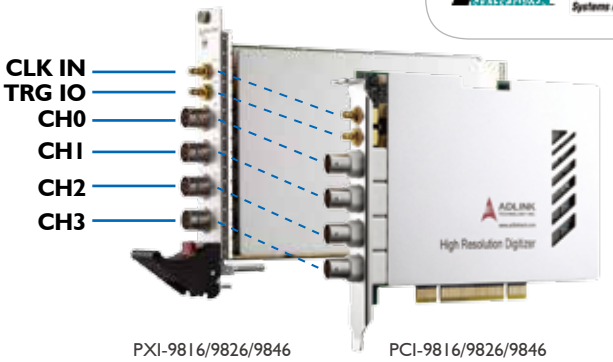


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- Model: PXI-9816D/512
- Input Range: ±1 V
- Sampling Rate: 10 MS/s
- SINAD: 79.80 dBc
- SNR: 80.19 dBc
- THD: -88.61 dBc
- ENOB: 12.96 bit
- SFDR: 89.08 dBc





PXI-9816/9826/9846 PCI-9816/9826/9846

- Typical values are measured using 1 MHz sine wave input at 10 MS/s with amplitude at -1dB at full scale on a ±1 V and ±0.2 V range using the PXI-9816. Acquired data lengths are in 64 K point, calculated with Hanning window FFT.
- Note that these dynamic parameters may vary from one module to another, with different input signal frequencies and signal amplitudes selected.
- For detailed dynamic test results of other modules, please refer to the user manual or visit the ADLINK website.

Timebase

- Sample clock sources
  · Internal: on-board oscillator
  · External: CLK IN (front panel SMB connector), PXI Trigger Bus[0..7], PXI 10 MHz, PXI Star, SSI Bus
- Timebase frequency range
  · PCI/PXI-9816: 1 MHz - 10 MHz
  · PCI/PXI-9826: 1 MHz - 20 MHz
  · PCI/PXI-9846: 1 MHz - 40 MHz

Dedicated External Clock Input From Panel

- Connector type: SMB
- Clock type: sine wave or square wave
- Input impedance: 50 Ω
- Input coupling: AC
- Input range: 1 Vpp to 2 Vpp
- Overvoltage protection: 2.5 Vpp

Triggering

- Trigger sources:
  - software
  - TRG IO (front panel SMB connector)
  - Analog trigger from CH0 - CH3
  - PXI Star (PXI version)
  - PXI Trigger Bus[0..7] (PXI version)
  - SSI (PCI version)
- Trigger modes: Pre-trigger, post-trigger, middle-trigger, delay-trigger

Data Storage and Transfer

- On-board memory: 512 MB, shared among the four AI channels
- Data transfer: scatter-gather DMA

On-board Reference

- On-board reference voltage: +5 V
- Temperature drift: < 3 ppm/°C
- Recommended warm-up time: 15 minutes

General Specifications

- I/O Connector
  - BNC X4 for analog inputs
  - SMB X2 for external digital trigger and external timebase input
- Dimensions (not including connectors)
  - PCI-98x6: 167.6 mm (W) x 107 mm (H) (6.53" x 4.17")
  - PXI-98x6: 160 mm (W) x 100 mm (H) (6.24" x 3.9")
- PCI Bus Interface
  - PCI signaling: support 3.3 V and 5 V signaling
  - PCI interface: 32-bit, 33/66 MHz
- Ambient temperature (Operational):
  - 0°C to 55°C (32°F to 131°F) (PXI version)
  - 0°C to 50°C (32°F to 122°F) (PCI version)
- Ambient temperature (Storage): -20°C to 80°C (-4°F to 176°F)
- Relative humidity: 10% to 90% non-condensing
- Power Requirement, typical:

Power Rails	PXI/PCI-9816	PXI/PCI-9826	PXI/PCI-9846
3.3 V	0.8 A	0.8 A	0.8 A
5 V	1.4 A	1.5 A	2.0 A
12 V	0.3 A	0.3 A	0.3 A

Certifications

- EMC/EMI: CE, FCC Class A

Multi-Module Synchronization

- For PXI version of digitizer modules, they can be synchronized through PXI trigger bus, PXI Star and PXI 10 MHz.
- For PCI version of digitizer modules, they can be synchronized through a dedicate interface, SSI (System Synchronized Interface).



SSI bus cable for multiple module synchronization

Cable Accessories

- SMB-SMB-1M
  1 meter SMB to SMB cable
- SMB-BNC-1M
  1 meter SMB to BNC cable
- ACL-SSI-2
  SSI Bus cable for 2 devices

Ordering Information

Model Name	Sampling Rate	Input Range	Max. -3dB Bandwidth
PCI-9816H/512	10 MS/s	±5 V, ±1 V	5.1 MHz
PCI-9826H/512	20 MS/s	±5 V, ±1 V	9.6 MHz
PCI-9846H/512	40 MS/s	±5 V, ±1 V	20 MHz
PCI-9846D/512	40 MS/s	±1 V, ±0.2 V	20 MHz
PXI-9816D/512	10 MS/s	±-1 V, ±0.2 V	5.1 MHz
PXI-9816H/512	10 MS/s	±5 V, ±1 V	5.1 MHz
PXI-9826D/512	20 MS/s	±1 V, ±0.2 V	9.6 MHz
PXI-9846D/512	40 MS/s	±1 V, ±0.2 V	20 MHz
PXI-9846DW/512	40 MS/s	±1 V, ±0.2 V	80 MHz
PXI-9846H/512	40 MS/s	±5 V, ±1 V	20 MHz

Note: For special features or specifications, such as higher input range or higher bandwidth options, please contact ADLINK for more details.

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