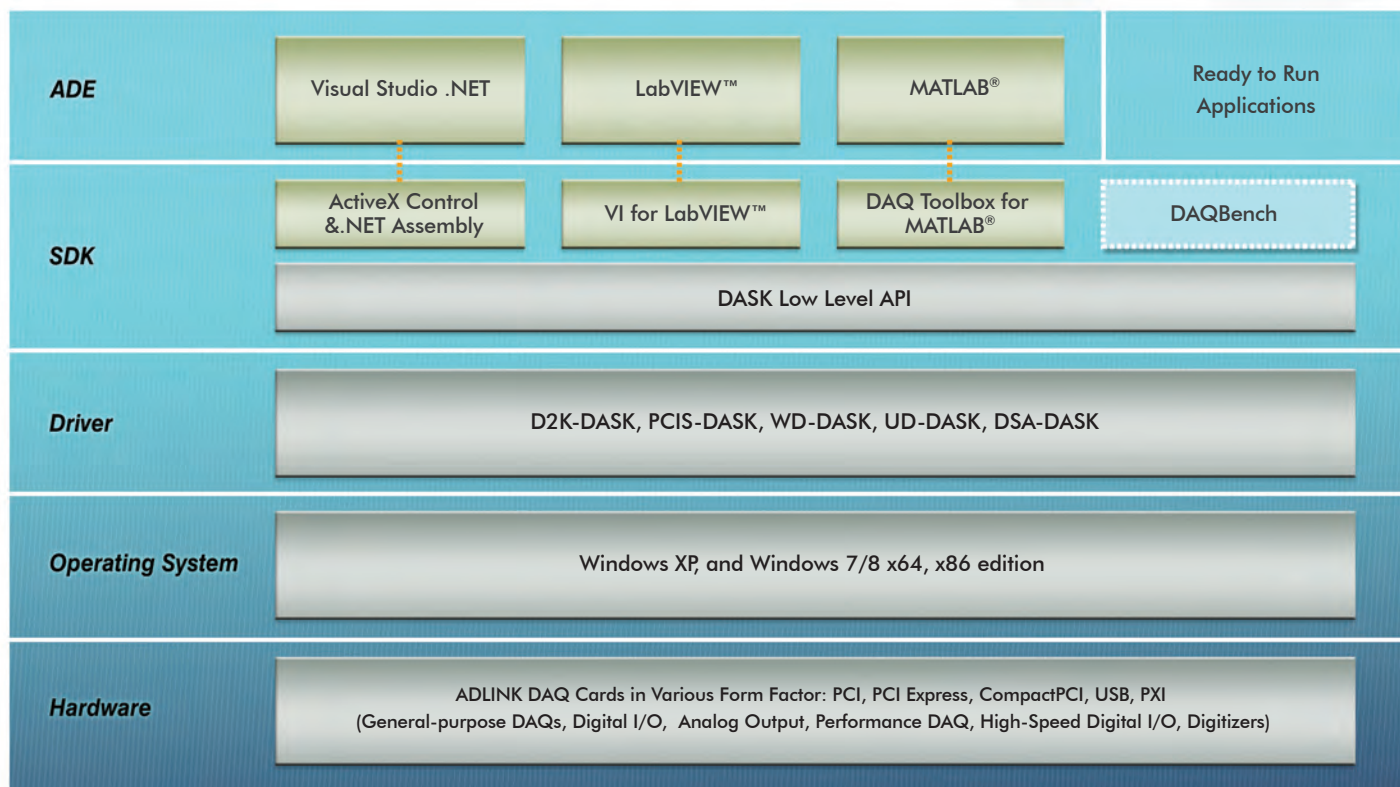


Software Overview



ADLINK delivers robust software support for their comprehensive line of DAQ cards in a variety of form factors: USB, PCI Express®, PCI, CompactPCI, and PXI. ADLINK offers driver for mainstream Windows and Linux Operating Systems, and provide various SDK support for third-party applications including Visual Studio, LabVIEW™ and MATLAB®. In addition, ADLINK also provides componentware for measurement and HMI, and ready-to-run Application, like Data Logger software.

ADLINK Software Supporting Microsoft® Windows® Frameworks



* National Instruments and LabVIEW are trademarks of National Instrument, Inc.

* MATLAB® is a trademark of The MathWorks, Inc.

Multiple OS Support

For different operating systems, we design API with the native programming logic, so users can simply install the driver without modifying the program when migrating between different operating systems. ADLINK provides drivers to support Windows 2000/XP, Windows 7/8 (x86 and x64) and Mainstream Linux distributions: Ubuntu, Fedora. And also provides legacy driver/SDK for legacy ISA-bus DAQ Cards.



- Windows 2000/XP
- Windows 7/8 x64/x86



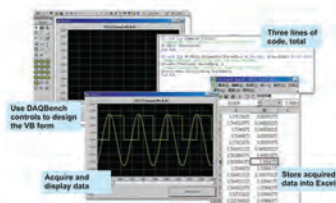
- Linux
- ✓ Ubuntu
- ✓ Fedora

SDK & Componentware

ADLINK provide various SDK to its comprehensive line of data acquisition products. DAQPilot is a task-oriented Software Development Kit, include ActiveX Controls/.NET Assembly, Express VI and Polymorphic VI for LabVIEW and DAQ Toolbox for MATLAB. For Low Level API, we also provide DASK Native Libraries for different product lines. DAQBench is the componentware for developing HMI application.



- DAQPilot : ADLINK Task-oriented SDK for Windows



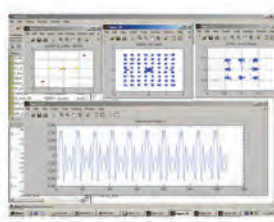
- DAQBench : 32-Bit ActiveX Controls for Measurement and SCADA/HMI

Third-party Software Support

For LabVIEW users, ADLINK provide Express VI and Polymorphic VI libraries. For MATLAB users, ADLINK provides MATLAB Data Acquisition Toolbox Adapter for all DAQ Cards. In addition, ADLINK is a Math Works Connections Program partner for long term product support.



- Express VI and Polymorphic VIs for LabVIEW™



- MATLAB® DAQ Toolbox for ADLINK DAQ Cards

Ready to Run Application

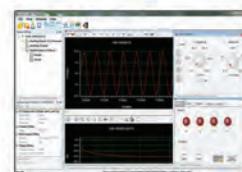
ADLINK provides various ready-to-run applications, like AD-Logger, a Data logger Software; DAQMaster, a configuration tool for data acquisition devices requiring no programming, and specific ready-to-use utilities for USB DAQ by U-Test and for Dynamic Signal Acquisition Modules by DSA-Utility.



- AD-Logger : Configuration-Based Data Logger for ADLINK DAQ Cards



- DAQMaster : Configuration-Based Device Manager for ADLINK DAQ Cards



- U-Test : Full function testing of ADLINK USB DAQ

8 Steps to Get ADLINK Products Ready



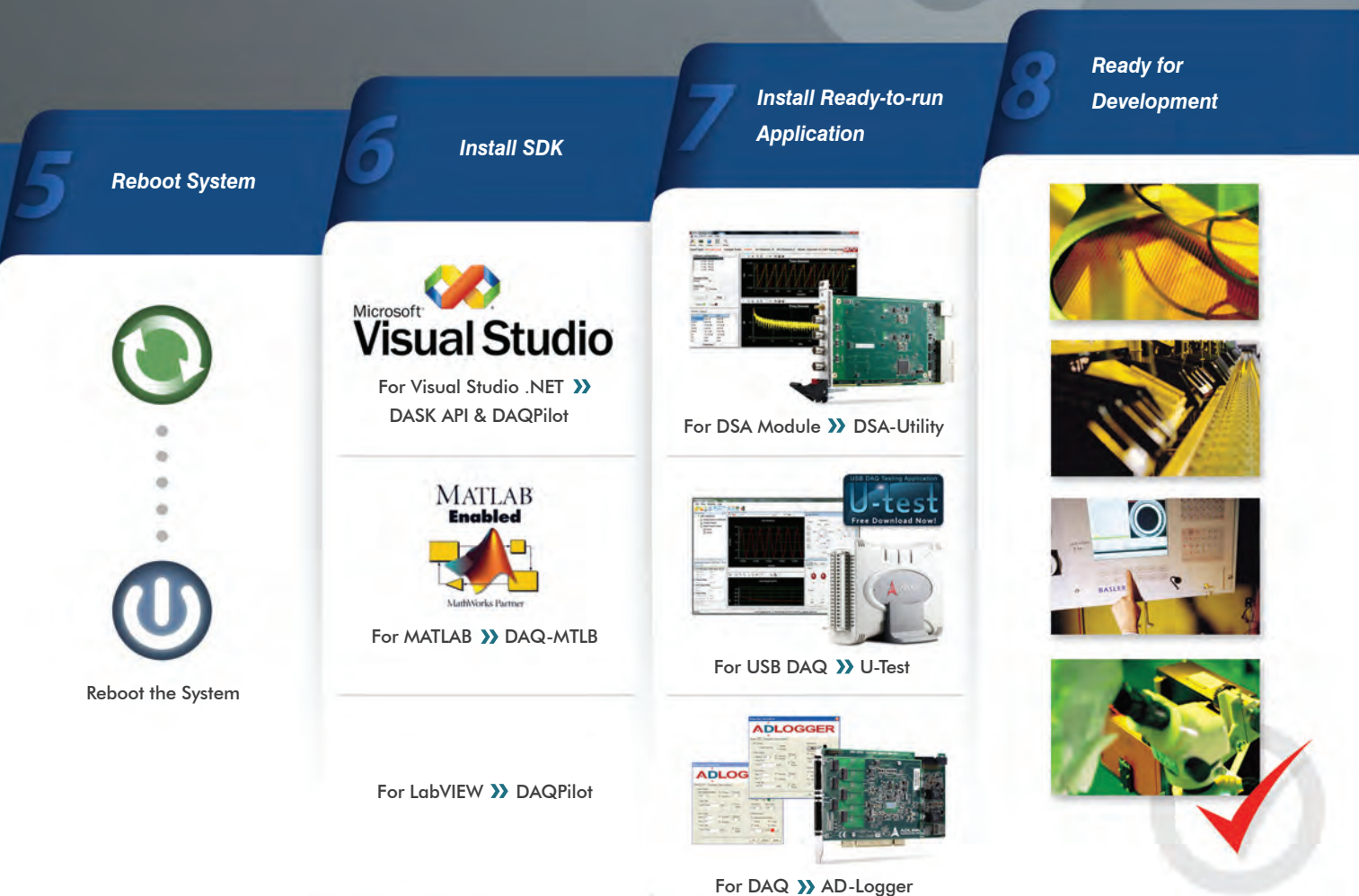
NOTES: *Please download Windows drivers and API Library from the corresponding product page at the ADLINK website.

*Linux drivers and API Library are also available. For more information, please visit http://www.adlinktech.com/MAPS/linux_daq.html

*DAQMaster support for ADLINK DAQ/DAQe/PXI-2000, 6000, 8000, 91XX, 92XX Series Cards.

8 STEPS

ADLINK provides the key concepts of data acquisition and aims to help you get started quickly. The diagram takes you through the eight steps of driver installing, system manager configuring and testing, SDK & ready-to-run applications installing of your data acquisition application. Using these eight steps will reduce your hardware set-up and software development time for your data acquisition applications!



DAQPilot	Task-oriented SDK for ADLINK DAQ Cards
DAQ-MTLB	MATLAB® Data Acquisition Toolbox Adapter for ADLINK DAQ Cards
DSA-Utility	Utility for ADLINK Dynamic Signal Acquisition Modules
U-Test	Utility for USB DAQ Modules
AD-Logger	Configuration-based Data Logger

NOTE: Please download the SDK and ready-to-run applications from the corresponding product page at the ADLINK website.

Wide Selection of Modular Instruments



Overview

From entry-level to high-end, data acquisition to digital input/output, ADLINK provides a diversity of modular instruments with market-leading price/performance ratio, for bigger and better measurement and automation systems. Now high-speed digitizer, switching, simultaneous data acquisition, high-density multi-function data acquisition, analog output, digital multimeter, and arbitrary waveform generator categories are all available.

High-Speed Digitizers

Digitizers offer quick and precise input signal acquisition and are widely used in IC testing, video testing, automatic test equipment, radar and sonar testing, among others. Digitizers optimized for automated test take advantage of the high-throughput PXI and PXI Express buses to lower test times, and offer picosecond-level synchronization between modules. ADLINK provides full spectrum modules including the PXIe-9848 8-CH 14-bit 100 MS/s digitizer, the PCI/PXI-98X6 Series with 4-CH 16-bit and 10/20/40 MS/s, the PCIe-9852 with 200 MS/s 14-bit 2-CH performance, and many other choices.

Switches

Switches are widely used in automatic test equipment (ATE), process control systems, data acquisition systems, etc. ADLINK offers several types of switches to meet your application requirements. ADLINK switches include 16-CH general-purpose relays, 24-CH scanners or multiplexers, and a 32 cross-point two-wire matrix.

Dynamic Signal Analyzer

A dynamic signal analyzer provides highly accurate measurements and analysis widely used in audio testing, acoustic measurements, environmental noise testing, vibration analysis, NVH measurement, machine condition monitoring, and rotating machinery evaluation. ADLINK's PCI/PXI-9527 features a high resolution of 24 bits, two analog inputs with sampling rates up to 432 kS/s and two analog outputs with update rates up to 216 kS/s. The PCI/PXI-9527 offers the flexibility needed to create a wide variety of automatic test systems with optimal cost-performance.

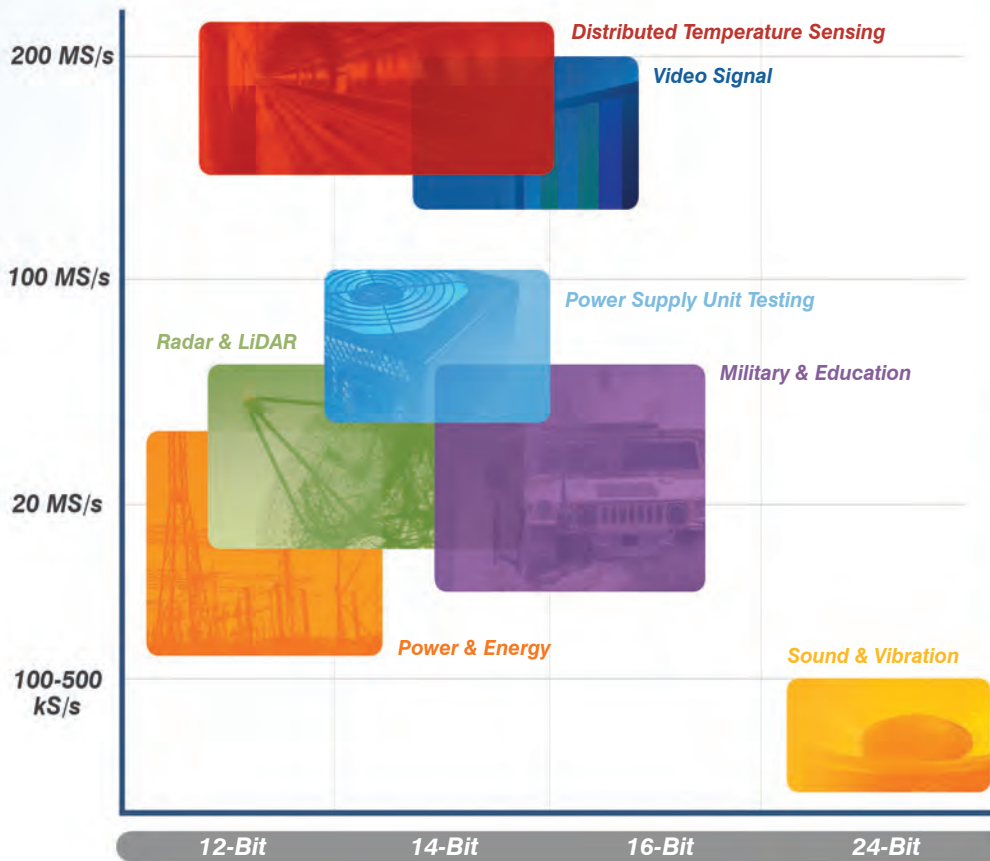
Arbitrary Waveform Generators

Arbitrary waveforms generate user-defined signals in automation and measurement application. The TE-5201, a single channel PXI-based AWG, provides a high-speed waveform to stimulate signal distortion, power line cycle dropouts, video signals, and power supply transience.

Digitizer Applications

- For quantifying and analyzing physical energy
- Leveraging processing power and high-resolution display of PC – PC-based oscilloscope
- Defining custom measurement functions by software, such as spectrum analysis, frequency domain analysis, rise/fall time of signals, and more

Sampling Rate



PCIe/PXIe-9852 200 MS/s 14-Bit 2-CH High Speed Digitizers	P 2-11
PCIe/PXIe-9842 200 MS/s 14-Bit 1-CH High Speed Digitizers	P 2-15
PXIe-9848 100 MS/s 14-Bit 8-CH High Density Digitizers	P 2-9
PXI-98x6 10/20/40 MS/s 16-Bit 4-CH Digitizers	P 2-13
PCI/PXI-9820 65 MS/s 14-Bit 2-CH PCI/PXI Digitizers	P 2-16
PCI-9812/9810 20 MS/s 10/12-Bit 4-CH PCI Digitizers	P 2-17
PXIe-9529 24-Bit 192 kS/s 8-CH High-Resolution DSA	P 2-18
PCI/PXI-9527 24-Bit 432 kS/s High-Resolution DSA	P 2-19

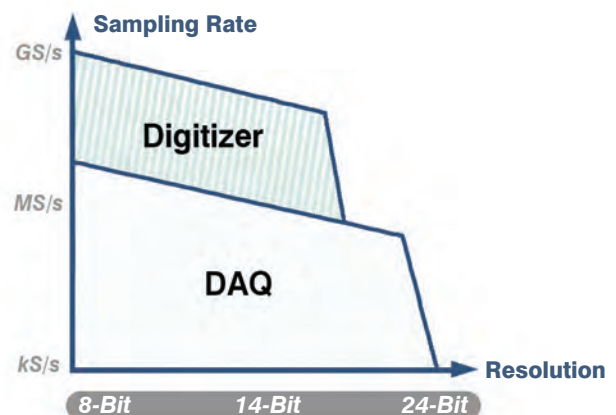
Resolution

Digitizers v.s. DAQs

How to make the choice between a Data Acquisition (DAQ) board and a High-Speed Digitizer?

The difference between a digitizer and standard DAQ is the sampling rate and the bandwidth. A digitizer can extend its sampling rate from MS/s to GS/s grade, and the bandwidth can also extend from 10 MHz to GHz. Additionally, the input impedance or the module's memory capacity can provide more options for use in different application environments. Given the features of what are referred to as high accuracy signals, only a digitizer with high sampling rate and high bandwidth can successfully accomplish the task.

- Sampling rate from MS/s to GS/s
- Bandwidth ranges from 10 MHz to GHz
- Input impedance : 50 Ω , 75 Ω ,...high impedance
- Onboard memory support (512 MB, 1 GB, ...)



Selection Guide



Digitizer

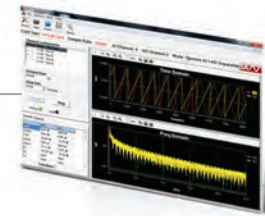
Form Factor	Channels	Sampling Rate	Input Resolution	Onboard Memory	Digital Input	Module Name	Page
PCI	4-CH	40 MS/s	16-Bit	512 MB	-	PCI-9846	2-13
		20 MS/s			-	PCI-9826	2-13
			128 k samples	3-CH	PCI-9812A	2-17	
					32 k samples	PCI-9812	2-17
		32 k samples	PCI-9810		2-17		
	10 MS/s	16-Bit	512 MB	-	PCI-9816	2-13	
	2-CH	65 MS/s (External) 60 MS/s (Internal)	14-Bit	512 MB	-	PCI-9820	2-16
2-CH	200 MS/s	1 GB		-	PCIe-9852 NEW	2-11	
1-CH		-		-	PCIe-9842	2-15	
PXI	4-CH	40 MS/s	16-Bit	512 MB	-	PXI-9846	2-13
		20 MS/s			-	PXI-9826	2-13
		10 MS/s			-	PXI-9816	2-13
	2-CH	65 MS/s (External) 60 MS/s (Internal)	14-Bit	512 MB	2-CH	PXI-9820	2-16
8-CH	100 MS/s	512 MB		-	PXIe-9848 NEW	2-9	
2-CH	200 MS/s	1 GB		-	PXIe-9852 NEW	2-11	
1-CH	200 MS/s	-		-	PXIe-9842	2-15	



Dynamic Signal Analyzer

Form Factor	Analog Input				Analog Output			Digital IO	Module Name	Page
	Analog Input Channels	Max. Sampling Rates (S/s)	AD Resolution (bits)	FIFO Size (sample)	Voltage Output Channels	Update Rate (S/s)	DA Resolution (bits)	Digital IO		
PCI	4+4 (4-ch load cell inputs & 4-ch general purpose AD)	Up to 30 kS/s	24	256 K	2	5 K	16	8 DI, 8 DO (Isolated)	PCI-9524	2-21
	2	432 kS/s		4096 k		216 kS/s	24	-	PCI-9527	2-19
PXI								PXI-9527	2-19	
PXIe	8	192 kS/s			-	-	-	-	PXIe-9529 NEW	2-18

Software Selection Guide



Products		Page	OS Information		Software Compatibillity			Software Recommendations			
			Windows® (Note1)	Linux® (Note2)	LabVIEW™ (Note3)	Visual Studio.NET (Note4)	MATLAB® (Note5)	DAQBench	DAQ Master	AD Logger	Others
Digitizers	PCI-9810	2-17	PCIS-DASK	PCIS-DASK/X	DAQPilot	WD-DASK DAQPilot	DAQ-MTLB	✓	✓	✓	
	PCI-9812	2-17						✓	✓		
	PCI/PXI-9820	2-16						✓	✓		
	PCI/PXI-9816	2-13	WD-DASK	WD-DASK/X					✓	✓	
	PCI/PXI-9826	2-13							✓	✓	
	PCI/PXI-9846	2-13							✓	✓	
	PCIe/PXIe-9842	2-15							✓		
	PXIe-9848	2-9							✓		
	PCIe/PXIe-9852	2-11							✓		
High Resolution	PCI-9524	2-21	PCIS-DASK	PCIS-DASK/X	DAQPilot	WD-DASK DAQPilot	DAQ-MTLB	✓	✓		
	PCI/PXI-9527	2-19	DSA-DASK					✓	✓		DSA Utility
	PXIe-9529	2-18									

Note.

- (1) Windows Support for Windows 2000/XP, and Windows 7/8 x64/x86
- (2) Linux Support for Ubuntu 12.04.1 LTS, Fedora Core 17, and OpenSuse 12.1
- (3) Compatible with LabVIEW™ 8.0 and above
- (4) Compatible with Visual Studio .NET 2005/2008, DASK for API, and DAQPilot for Componentware
- (5) MATLAB® Data Acquisition Toolbox 2.2 (and above) compliant



High Speed Arbitrary Waveform Generator & PXI Switch Modules

Model Name	TE-5201
Analog Output	1-CH
DAC	14-Bit
Resolution	14-Bit
Update Rate	50 S/s to 100 MS/s
Output Range	80 mVpp to 8 Vpp into 50 Ω load
Output Impedance	50 Ω
Standard Waveform	Sine, Triangle, Square, Pulse, Ramp, Sinc, Gaussian Pulse, Exponential Decay/ Rise Pulse, Noise, DC
Arbitrary Waveform Memory	1 M points
Sample Clock Modulation	FM, FSK, Ramped FSK, Sweep
Page Number	2-22

Model Name	PXI-7901	PXI-7921	PXI-7931
Description	General-purpose	Two-wire Multiplexer	4-groups 2x4 Two-wire Matrix
No. of Channel	16	24 (two-wire) 48 (one-wire)	32 (two-wire)
Relay Type	SPDT (1 Form C)	DPDT (2 Form C)	DPDT (2 Form C)
Max. Switching Current	3 A @ 20 VDC	2 A @ 30 Vdc	2 A @ 30 Vdc
Max. Switching Voltage	220 VDC, 250 VAC	220 VDC, 125 VAC	220 VDC, 125 VAC
Max. Switching Power	50 VA, 60 W	50 VA, 60 W	50 VA, 60 W
Max. Carrying Current	3 A	2 A	3 A
Failure Rate	10 μA @ 10 mVdc	10 μA @ 10 mVdc	10 μA @ 10 mVdc
Contact Resistance	150 mΩ max.	100 mΩ max.	150 mΩ max.
Page Number	2-23	2-24	2-24

PXle-9848

8-CH 14-Bit 100 MS/s High-Speed PXI Express Digitizer



Features

- PXI Express specification Rev. 1.0 compliant
- Up to 100 MS/s sampling rate
- 8 simultaneously analog inputs
- High resolution 14-bit ADC
- Up to 100 MHz bandwidth for analog input
- 512 MB onboard storage memory
- Programmable input voltage range of $\pm 0.2\text{ V}$ or $\pm 2\text{ V}$
- Scatter-Gather DMA data transfer for high speed data streaming
- One external digital trigger input
- Full auto-calibration

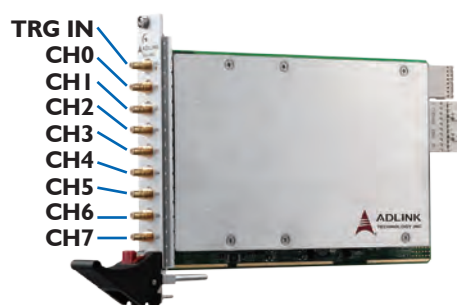
OS Information

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

Software Compatibility

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

IO connector definition



Introduction

The ADLINK PXle-9848 is a 8-CH 14-bit 100 MS/s digitizer for high frequency and wide dynamic range signals with an input frequency up to 100 MHz. The 100 MHz bandwidth analog input with 50 Ω impedance receives $\pm 0.2\text{ V}$ or $\pm 2\text{ V}$ high speed signals. With a PCI Express bus interface and ample onboard acquisition memory up to 512 MB, the PXle-9848 easily manages simultaneous 8-CH data streaming.

Equipped with high speed and high linearity 14-bit A/D converters, the PXle-9848 is ideal for applications requiring high-speed data acquisition, such as power module testing, LIDAR testing, and video signal analysis.

Highlights

Flexible Use Options

The PXle-9848 provides a flexible input range from $\pm 0.2\text{ V}$ to $\pm 2\text{ V}$, software selectable 50 Ω or 1M Ω input impedance, a wide variety of triggering options, and tight synchronization capability, all maximizing convenience of use.

High Density Simultaneous 8-CH Data Streaming

Benefiting from PXle architecture, the PXle-9848 easily manages simultaneous 8-CH data streaming. Users can synchronize multiple PXle-9848 digitizers to mount a test system providing up to 64 channels in a single 9-slot PXI Express chassis.

Extra Buffering

The PXle-9848 provides built-in memory up to 512 MB for massive data storage, enabling users to extend acquisition for preset durations.

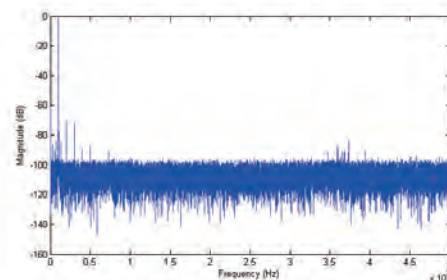


Equipped with ADLINK PXES-2590 PXle chassis and PXle-9848 modules, high density testing system with up to 64 channels can be implemented. Note: For PXES-2590 details, please refer to pages 1-13.

Specifications

Analog Input

- Number of channels: 8 single-ended
- Input impedance: 50 Ω or 1M Ω , software selectable
- Input Coupling: AC or DC, software selectable
- Input signal range: $\pm 0.2\text{ V}$ or $\pm 2\text{ V}$
- Overvoltage protection: $\pm 5\text{ V}$
- ADC resolution: 14 bits, 1 in 16384
- Crosstalk: < -80 dB from DC to 1 MHz, for all input ranges
- -3 dB bandwidth: 100MHz
- Offset error: $\pm 1\text{ mV}$
- Gain error: $\pm 0.5\%$
- System noise:
- Spectral Characteristics
 - Sampling rate: 100MS/s
 - SINAD: 65 dB
 - SNR: 66 dB
 - THD: -72 dB
 - ENOB: 10.58 bit
 - SFDR: 74 dB



Typical values are measured using 1 MHz sine wave input at 100 MS/s with amplitude at -1dB of full scale on a $\pm 2\text{ V}$ range. Acquired data lengths are in 64k points, calculated with Hanning window FFT.

Trigger

- Trigger Source
 - Software
 - External digital trigger
 - Analog trigger from CH0 ~ CH7
 - PXI_STAR
 - PXI trigger bus [0..7]
 - PXIe_DSTARB
- Trigger Modes
 - Post-trigger
 - Pre-trigger
 - Middle trigger
 - Delay trigger
- External Digital Trigger Input
 - Source: Front panel SMB connector
 - Configurable threshold: 0.8 mV to 3.3 V, default 1.67 V
 - 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: on-board clock (oscillator)
 - External: PXI_CLK10 or PXIe_CLK100
- Timebase frequency: 100 MHz
- Sampling rate: 100 MS/s to 1025.9 S/s
- Internal timebase accuracy: < ±25 ppm

Data Storage and Transfer

- 512 MB onboard memory, shared among the eight analog inputs (64 MB/per channel)
- Scatter-Gather DMA data transfer

Onboard Reference

- +2.5 V onboard reference voltage
- < 3.0 ppm/°C reference temperature drift
- 15 minutes recommended warm-up

General Specifications

- I/O Connector:
 - SMB x 8 for analog inputs
 - SMB x 1 for external digital input
- Dimensions (not including connectors):
 - 160 (W) x 100 (H) mm (6.24" x 3.9")
- Bus Interface:
 - PCI Express gen 1 x4
- Ambient Temperature (Operational):
 - 0°C to 55°C (32°F to 131°F)
- Ambient Temperature (Storage):
 - -20°C to 80°C (-4°F to 176°F)
- Relative Humidity:
 - 10% to 90%, non-condensing
- Power consumption:

Power Rail	Standby current (mA)	Full load (mA)
+3.3 V	5350	5900
+12 V	470	500

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information**■ PXIe-9848**

8-CH 14-Bit 100 MS/s High-Speed PXI Express Digitizer

■ PXIe-9848H

8-CH 14-Bit 100 MS/s High Speed PXI Express Digitizer with x15/x50 attenuator

■ Attenuator dedicated fit for PXIe-9848

The attenuator is specifically designed to support the ADLINK PXIe-9848 as a signal conditioning module, providing 8 simultaneous analog inputs and 15:1 or 50:1 attenuation ratio. Input impedance, analog input connectors, over-voltage protection, and mechanical design make the attenuator board a transparent match with the PXIe-9848. The attenuator delivers the best solution to measurement range expansion in the PXI system.

**Specifications**

Attenuation ratio	15:1	50:1
Bandwidth (-3 dB)	45 MHz	35 MHz
DC gain error	1%	1%
Offset error	< ±2mV	< ±2mV
Passband flatness	< ±0.4 dB	< ±0.4 dB
Input impedance	1MΩ	920kΩ
Input Capacitance	13.75pF	15pF
Compensation Range	6.5 ~ 30pF	6.5 ~ 30pF
SNR	65 dB	66 dB

- The attenuator is connected with the PXIe-9848 for all test conditions
- Dimensions: 99.5 (W) x 94 (H) mm (3.88" x 3.67")
- Ambient Temperature (Operational): 0°C to 55°C (32°F to 131°F)
- Relative Humidity: 10% to 90%, non-condensing

PCle/PXIe-9852

2-CH 14-Bit 200 MS/s High-Speed PCI Express/PXI Express Digitizers



Introduction

The ADLINK PCIe/PXIe-9852 is a 2-CH 14-bit 200 MS/s digitizer for high frequency and wide dynamic range signals with an input frequency up to 90 MHz. The 90 MHz bandwidth analog input with 50 Ω impedance is designed to receive ± 0.2 V, ± 2 V, or ± 10 V high speed signals. With a PCI Express bus interface and ample onboard acquisition memory up to 1 GB, the PCIe/PXIe-9852 easily manages simultaneous 2-CH data streaming. With high speed and high linearity 14-bit A/D converters and high stable onboard reference, the PCIe/PXIe-9852 provides both high accuracy and high dynamic performance, making it ideal for applications requiring high-speed data acquisition, such as optical fiber and LIDAR testing, and video signal analysis.

Highlights

Data Streaming Up to 800MB/s

Based on PCI Express Gen2 technology, the PCIe/PXIe-9852 can stream data on both channels at its maximum data rate (200 MS/s), and continuously stream data to the host PC at rates up to 800 MB/s. An 8 x 500 GB driver RAID system (4TB) extends capture sessions to more than one hour.

Onboard Signal Averaging Technology

Every PCIe/PXIe-9852 provides onboard Signal Averaging, allowing detection of small repetitive signals in noisy environments with no CPU loading, suitable for applications requiring extraction of small signals from background noise such as optical fiber testing.

Features

- PCI Express specification Rev. 2.0 compliant (PCIe-9852)
- PXI Express specification Rev. 1.0 compliant (PXIe-9852)
- Up to 200 MS/s sampling rate
- 2 simultaneous analog inputs
- High resolution 14-bit ADC
- Up to 90 MHz bandwidth for analog input
- 1 GB onboard storage memory
- Programmable input voltage range of ± 0.2 V, ± 2 V, or ± 10 V
- Scatter-gather DMA data transfer for high speed data streaming
- One external digital trigger input and one external trigger output
- One external clock input
- Full auto-calibration
- Supports signal averaging

OS Information

- Windows XP/7/8, x64/x86

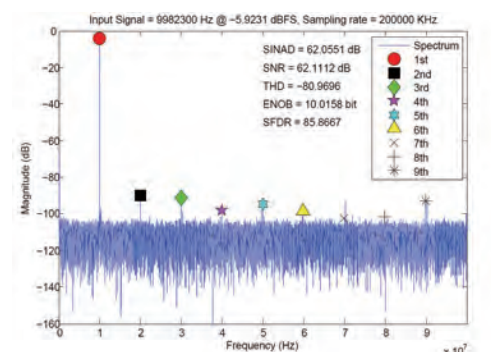
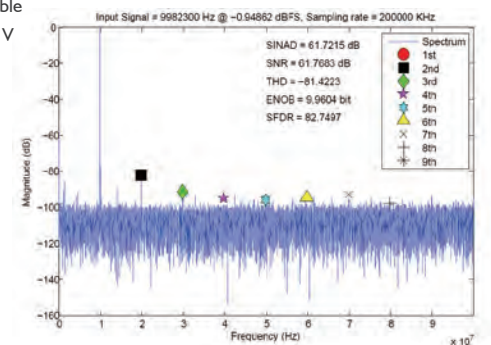
Software Compatibility

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

Specifications

Analog Input

- Number of Channels: 2 single-ended
- Input Coupling: AC or DC, software selectable
- AC coupling cutoff frequency: 11 Hz
- -3 dB Bandwidth: 90MHz
- Input Impedance: 50 Ω or 1M Ω , software selectable
- Input Signal Range: Range: ± 0.2 V, ± 2 V, or ± 10 V
- Overvoltage Protection:
 - with 50 Ω : ± 10 V sine wave, 7Vrms
 - with 1M Ω : ± 10 V
- ADC Resolution: 14 bits, 1 in 16384
- Gain Error: $\pm 0.65\%$ of input
- Offset error: ± 1 mV
- Crosstalk: < -80 dB
- Spectral Characteristics
 - Input Range: ± 0.2 V
 - Sampling Rate: 200 MS/s
 - SINAD: 61.72 dBc
 - SNR: 61.77 dBc
 - THD: -81.42 dBc
 - ENOB: 9.96 bit
 - SFDR: 82.75 dBc
- Spectral Characteristics
 - Input Range: ± 2 V
 - Sampling Rate: 200 MS/s
 - SINAD: 62.06 dBc
 - SNR: 62.11 dBc
 - THD: -80.97 dBc
 - ENOB: 10.02 bit
 - SFDR: 85.87 dBc



Trigger

- Trigger Source
 - Software
 - External digital
 - Analog inputs
 - SSI (PCIe-9852)
 - PXI_STAR (PXIe-9852)
 - PXI_trigger bus [0..7] (PXIe-9852)
 - PXI_DSTARB (PXIe-9852)
- Trigger Modes
 - Post-trigger
 - Pre-trigger
 - Middle trigger
 - Delay trigger
- External Digital Trigger Input
 - Source: Front panel SMA connector
 - Compatibility: 3.3V TTL, 5V tolerance
 - Input high threshold: 2.0 V
 - Input low threshold: 0.8V
 - Maximum input overload: -0.5V ~ +5.5V
 - Trigger polarity: Rising or falling edge, software programmable
 - Pulse width: 20 ns minimum
- External Digital Trigger Output
 - Compatibility: 5V TTL
 - Output high threshold: 2.4V
 - Output low threshold: 0.2V
 - Trigger polarity: Positive or negative
 - Pulse width: 50 ns, 100 ns, 150 ns, 200 ns, 500 ns, 1 μ s, 2 μ s, 7.5 μ s, and 10 μ s
 - Driving capacity: Capable of driving 50 Ω load

Timebase

- Timebase options
 - Internal: onboard synthesizer
 - External: CLK IN (front panel)
- Sampling clock frequency
 - Internal: 200M Hz
 - External: 40M Hz ~ 200M Hz (CLK IN)
 - Timebase accuracy: < ± 25 ppm
- External reference clock source: Front panel, SSI PCIe-9852, PXI_CLK10 or PXIe_CLK100 PXIe-9852
- External reference clock: 10M Hz or 100M Hz
- External reference clock input range: 500mVpp ~ 5Vpp (AC/DC compliant)
- External sampling clock input range: 1Vpp ~ 5Vpp (AC/DC compliant)

Data Storage and Transfer

- 1 GB onboard memory, shared among the two analog inputs
- Scatter-Gather DMA data transfer

Onboard Reference

- +5V and +2.5V onboard reference voltage
- < 3.0 ppm/°C reference temperature drift
- 15 minutes recommended warmup

Ordering Information

- **PCIe-9852**
2-CH 14-Bit 200 MS/s High-Speed PCI Express Digitizer

- **PXIe-9852**
2-CH 14-Bit 200 MS/s High-Speed PXI Express Digitizer

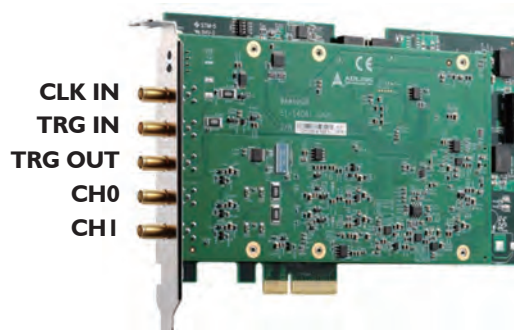
General Specifications

- I/O Connector
 - SMA x 2 for analog inputs
 - SMA x 1 for external trigger input
 - SMA x 1 for external trigger output
 - SMA x 1 for external clock input
- Dimensions (not including connectors):
 - PCIe-9852 : 167.64 (W) x 106.68 (H) mm (6.53" x 4.16")
 - PXIe-9852 : 160 (W) x 100 (H) mm (6.24" x 3.9")
- Bus Interface: PCI Express Gen 2 x4
- Ambient Temperature (Operating):
 - PCIe-9852 : 0°C to 50°C (32°F to 122°F)
 - PXIe-9852 : 0°C to 55°C (32°F to 131°F)
- Ambient Temperature (Storage): -20°C to 80°C (-4°F to 176°F)
- Relative Humidity: 10% to 90%, non-condensing
- Power consumption:

Power Rail	Standby current (mA)	Full load (mA)
+3.3 V	102	102.2
+12 V	20	20
+5 V	1920	2010

Certifications

- EMC/EMI: CE, FCC Class A

IO connector definition**SSI Bus Cables (for multiple card synchronization)**

■ ACL-eSSI-2/3/4

SSI bus cable for two, three, and four devices



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 M Ω 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
- OS Information
 - Windows XP/7/8, x64/x86
- Software Compatibility
 - LabVIEW, MATLAB, Visual Studio, Visual Studio.NET
- Software Recommendations
 - AD-Logger, DAQBench

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/PXI-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/PXI-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 M Ω , 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	PXI-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	PXI-9816H	PXI-9826H	PXI-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:

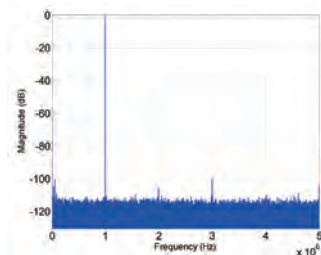
Input Range	PXI-9816D/9826D/9846D/9846W, PCI-9846D
± 0.2 V	$\pm 0.1\%$
± 1 V	$\pm 0.05\%$
Input Range	PXI-9846H, PCI-9816H/9826H/9846H
± 1 V	$\pm 0.1\%$
± 5 V	$\pm 0.06\%$

- -3dB Bandwidth, typical:

Input Range	PXI-9816D	PXI-9826D	PXI-9846D/PCI-9846D	PXI-9846DW
@ 50 Ω and 1 M Ω 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 M Ω input impedance				
± 1 V, ± 5 V	90 KHz			---

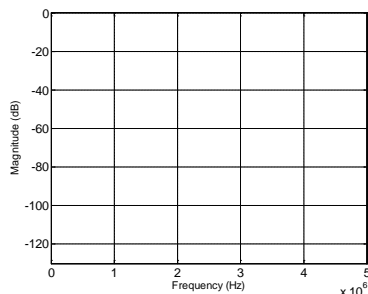
- Spectral Characteristics

- 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





- 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



- Typical values are measured using 1 MHz sine wave input at 10 MS/s with amplitude at -1 dB 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 V_{p-p} to 2 V_{p-p}
- Overvoltage protection: 2.5 V_{p-p}

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

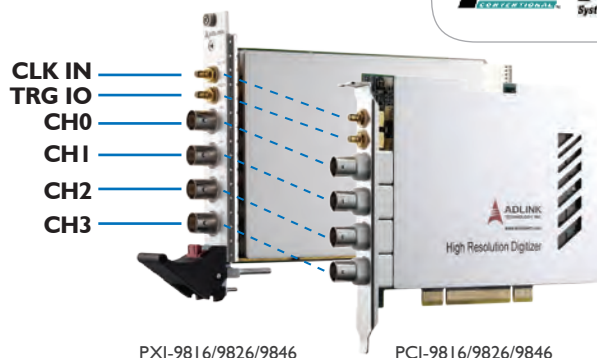
- On-board memory: 512 MB, shared among the four AI channels
- Data transfer: scatter-gather DMA

On-board Reference

- On-board reference voltage: +5 V
- Temperature drift: < 3 ppm/ $^{\circ}$ 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, 66 MHz
- Ambient temperature (Operational):
 - 0 $^{\circ}$ C to 55 $^{\circ}$ C (32 $^{\circ}$ F to 131 $^{\circ}$ F) (PXI version)
 - 0 $^{\circ}$ C to 50 $^{\circ}$ C (32 $^{\circ}$ F to 122 $^{\circ}$ F) (PCI version)
- Ambient temperature (Storage): -20 $^{\circ}$ C to 80 $^{\circ}$ C (-4 $^{\circ}$ F to 176 $^{\circ}$ 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
- ACL-SSI-3
SSI Bus cable for 3 devices
- ACL-SSI-4
SSI Bus cable for 4 devices

Ordering Information

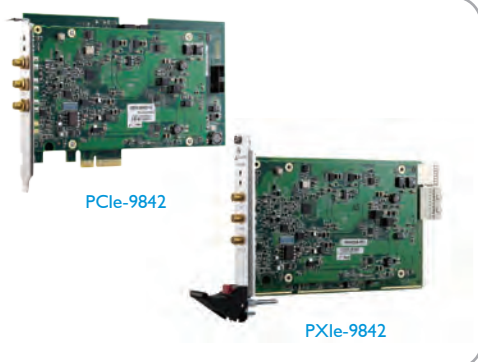
Model Name	Sampling Rate	Input Range	Max. -3dB Bandwidth
PCI-9816H/512	10 MS/s	± 5 V, ± 1 V	5.1 MHz
PCI-9826H/512	20 MS/s	± 5 V, ± 1 V	9.6 MHz
PCI-9846H/512	40 MS/s	± 5 V, ± 1 V	20 MHz
PCI-9846D/512	40 MS/s	± 1 V, ± 0.2 V	20 MHz
PXI-9816D/512	10 MS/s	± 1 V, ± 0.2 V	5.1 MHz
PXI-9816H/512	10 MS/s	± 5 V,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

PCIe/PXIe-9842

I-CH 14-Bit 200 MS/s High-Speed PCI Express /PXI Express Digitizers

PCI EXPRESS® **PXI**Express™



Introduction

The ADLINK PCIe/PXIe-9842 is a I-CH 14-bit 200 MS/s digitizer designed for applications such as LIDAR testing, optical fiber testing, and radar signal acquisition. The 100 MHz bandwidth analog input with 50 ohm impedance is designed to receive ± 1 V high speed signal. With this simplified front-end design and high stable onboard reference, the PCIe/PXIe-9842 not only provides high accuracy measurement results but also delivers high dynamic performance.

For applications that require data to be acquired and transferred in real time, the PCIe/PXIe-9842 utilizes the PCI Express x4 bus as its interface. When signals are converted from analog to digital data, data transfer to host system memory is continuous, enabled by the PCI Express' increased bandwidth.

Features

- PXI Express specification Rev. 1.0 compliant (PXIe-9842)
- Up to 200 MS/s sampling rate
- High resolution 14-bit ADC
- ± 1 V Input range with 50 Ω input impedance and DC couple
- Up to 100 MHz bandwidth for analog input
- High speed PCI Express Gen 1 x4 bus interface
- Scatter-Gather DMA data transfer for high speed data streaming
- One external digital trigger input
- One digital trigger output to stimulate external instruments
- Full auto-calibration
- OS Information
 - Windows XP/7/8, x64/x86
- Software Compatibility
 - LabVIEW, MATLAB, Visual Studio, Visual Studio.NET

Specifications

Analog Input

- Number of Channels: One single-ended channel
- Input Impedance: 50 $\Omega \pm 2\%$
- Input Coupling: DC
- Input Signal Range: ± 1.0 V
- Overvoltage Protection: ± 5 V
- ADC Resolution: 14 bits, 1 in 16384
- Offset Error: ± 1 mV
- Gain Error: $\pm 0.5\%$ of input
- -3dB Bandwidth: 100 MHz

Timebase

- Sample Clock Source: onboard oscillator
- Timebase Frequency: 200 MHz

Auto Calibration

- Reference Voltage: +5.000 V
- Reference Temperature drift: < 5.0 ppm/°C
- Recommended warm-up time: 15 minutes

Trigger

- Trigger Source
 - Software
 - External digital
 - PXI STAR (PXIe version)
 - PXI trigger bus [0..7] (PXIe version)
- Trigger Mode
 - Post-Trigger
- External Digital Trigger Input
 - Compatibility: 3.3 V TTL
 - Trigger condition: Rising edge or falling edge, software programmable
 - Minimum pulse width: 20 ns
- Digital Trigger Output
 - Compatibility: 3.3 V TTL
 - Trigger Condition: Positive or negative, software programmable

General Specifications

- Ambient temperature (Operational): 0°C to 55°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
- Physical
 - Dimensions (not including connectors)
 - PCIe-9842: 175 mm (W) x 107 mm (H) (6.82" x 4.17")
 - PXIe-9842: 160 mm (W) x 100 mm (H) (6.24" x 3.9")
- IO Connector
 - SMA x 1 for analog input
 - SMA x 2 for external trigger input and trigger output
- Bus Interface
 - PCI Express Gen 1 x4

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

- **PCIe-9842**
I-CH 14-Bit 200 MS/s High-Speed PCI Express Digitizer
- **PXIe-9842**
I-CH 14-Bit 200 MS/s High-Speed PXI Express Digitizer

PCI/PXI-9820

2-CH 14-Bit 65 MS/s PCI/PXI Digitizers with SDRAM



PCI-9820



PXI-9820

Features

- Supports a 32-bit 3.3 V or 5 V PCI bus
- PXI specifications Rev.2.2 compliant (PXI-9820)
- 14-bit A/D resolution
- Up to 60 MS/s (with internal timebase) & 65 MS/s (with external timebase) sampling rate per channel
- Up to 130 MS/s sampling rate in "ping pong" mode
- 2-CH single-ended bipolar inputs
- >30 MHz -3 dB bandwidth
- Up to 512 MB onboard SODIMM SDRAM
- Programmable ranges of ± 1 V and ± 5 V
- User-configurable input impedance of 50 Ω or high input impedance
- Scatter-gather DMA
- Analog and digital triggering
- 2-CH synchronous digital inputs (PXI-9820)
- Fully auto calibration
- Multiple modules synchronization capability

OS Information

- Windows XP/7/8, x64/x86

Software Compatibility

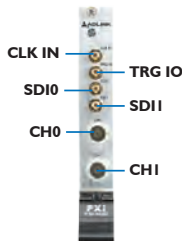
- LabVIEW, MATLAB, Visual Studio, Visual Studio.NET

Software Recommendations

- AD-Logger, DAQBench



CLK IN
TRG IO
CH0
CHI



CLK IN
SDIO
CH0
CHI
TRG IO
SDII

Introduction

ADLINK's PCI/PXI-9820 is a 65 MS/s, high-resolution PXI digitizer with deep SODIMM SDRAM memory. The device features flexible input configurations, including programmable input ranges and user-configurable input impedance. With the deep onboard acquisition memory, the PCI-9820/PXI-9820 is not limited by the 132 MB/s bandwidth of PCI bus and can record the waveform for a long period of time. The PCI-9820/PXI-9820 is ideal for high-speed waveform capturing, such as radar and ultrasound applications, as well as software radio applications, or those signal digitizing applications which need deep memory for data storage.

Specifications

Analog Input

- Number of channels: 2 simultaneous-sampled single-ended
- Resolution: 14 bits
- Maximum sampling rate
 - 65 MS/s for 2 inputs
 - 130 MS/s for Ping-Pong mode using external timebase
- Onboard sample memory
 - 512 MB
- Bandwidth (-3 dB): 30 MHz minimum
- Input signal ranges: (software programmable) ± 5 V, ± 1 V
- Input Coupling: DC
- Overvoltage protection

Range	Overvoltage Protection
± 5 V	± 14 V
± 1 V	± 5 V

- Input Impedance (soldering selectable): 50 Ω , 1.5 M Ω
- Crosstalk: < -80 dB, DC to 1 MHz
- Total harmonic distortion (THD): -75 dB
- Signal-to-Noise ratio (SNR)

Range	SNR
± 5 V	66 dB
± 1 V	62 dB

- Spurious-free dynamic range (SFDR): 75 dB
- Data transfer: bus-mastering DMA with scatter-gather

Auto Calibration

- Onboard reference: +5 V
- Onboard reference temperature drift: 2 ppm/ $^{\circ}$ C
- Stability: 6 ppm/1000 Hrs

External Timebase Input

- PCI-9820: direct external timebase input
- PXI-9820: 10 MHz input for PLL or direct external timebase input
- Connector: SMB
- Impedance: 50 Ω
- Coupling: AC
- Input amplitude: 1 V_{pp} to 2 V_{pp}
- Overvoltage protection: 2.5 V_{pp}
- Frequency range: 500 kHz - 65 MHz

Triggering

Analog Triggering

- Modes: pre-trigger, post-trigger, middle-trigger, delay-trigger
- Sources: CH0 and CH1
- Coupling: DC

Digital triggering

- Modes: pre-trigger, post-trigger, middle-trigger, delay-trigger
- Source: external digital trigger from SMB
- Compatibility: 5 V/TTL

Synchronous Digital Input (For PXI-9820 Only)

- Number of channels: 2
- Compatibility: 5 V/TTL
- Data transfer: bus-mastering DMA with scatter/gather

General Specifications

- I/O connector
 - BNC x 2 for analog inputs
 - SMB x 4 for external digital trigger, external time base, and synchronous digital inputs
- Operating temperature: 0 $^{\circ}$ C to 50 $^{\circ}$ C (32 $^{\circ}$ F to 122 $^{\circ}$ F)
- Storage temperature: -20 $^{\circ}$ C to 80 $^{\circ}$ C (-4 $^{\circ}$ F to 176 $^{\circ}$ F)
- Relative humidity: 10% to 90%, non-condensing
- Power requirements

Power Rail	Current	
	PXI-9820	PCI-9820
5 V	900 mA typical	895 mA
12 V	305 mA typical	295 mA
3.3 V	500 mA typical (with 512 MB SDRAM)	430 mA (with 512 MB SDRAM)

- Dimensions (not including connectors)
 - PCI-9820: 175 mm x 107 mm (6.82" x 4.17")
 - PXI-9820: 160 mm x 100 mm (6.24" x 3.9")

Certifications

- EMC/EMI: CE, FCC Class A

Cable Accessories

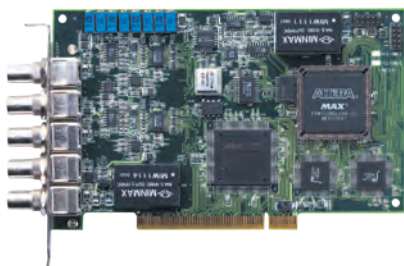
Cable	Description	PXI-9820	PCI-9820
SMB-SMB-1M	1-meter SMB to SMB cable	✓	✓
SMB-BNC-1M	1-meter SMB to BNC cable	✓	✓
ACL-SSI-2	SSI Bus cable for 2 devices	-	✓
ACL-SSI-3	SSI Bus cable for 3 devices	-	✓
ACL-SSI-4	SSI Bus cable for 4 devices	-	✓

Ordering Information

- **PCI-9820D**
2-CH 14-Bit 65 MS/s Digitizer

PCI-9812/9812A/9810

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



Introduction

ADLINK's 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 $\pm 1\text{ V}$, $\pm 5\text{ V}$ and input impedances of $50\ \Omega$, $1.25\text{ k}\Omega$ and $15\text{ M}\Omega$. The onboard 32 k-sample A/D FIFO can buffer so 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 occur. When four channels operate at 20 MS/s simultaneously, each sample generates two bytes, resulting in 160 Mbytes/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's 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, and military applications.

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 $50\ \Omega$ 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

OS Information

- Windows XP/7/8, x64/x86

Software Compatibility

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

Software Recommendations

- AD-Logger, DAQBench

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/Model	Input Impedance	Overvoltage protection
$\pm 1\text{ V}$	$50\ \Omega$	$\pm 2\text{ V}$
	$15\text{ M}\Omega$	
$\pm 5\text{ V}$	$50\ \Omega$	$\pm 10\text{ V}$
	$1.25\text{ k}\Omega$	

- Accuracy: $\pm 1.5\%$ typical
- DNL: $\pm 0.4\text{ LSB}$ typical, $\pm 1.0\text{ LSB}$ maximum
- INL: $\pm 1.9\text{ LSB}$ 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 Trigger
 - 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: $50\ \Omega$
- Input frequency: 300 kHz to 40 MHz
- Input range: 1.0 to 2.0 Vpp
- Overvoltage protection: 2.5 Vpp

External Digital Clock

- Input coupling: DC
- Input impedance: $50\ \Omega$
- 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 $10\text{ k}\Omega$ 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°C to 40°C (32°F to 104°F)
- Storage temperature: -20°C to 70°C (-4°F to 158°F)
- Relative humidity: 10% to 90%, 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 (6.74" x 4.21")

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

PXIe-9529

8-CH 24-Bit High-Resolution Dynamic Signal Acquisition Module

PXIExpress™


Features

- PXI Express specification Rev. 1.0 compliant
- 24-Bit Sigma-Delta ADC
- 8 simultaneous sampling analog input
- 192 kS/s maximum sampling rate
- AC or DC input coupling, software selectable
- One external digital trigger input
- Support IEPE output on each analog input, software configurable
- Full auto-calibration
- OS Information
 - Windows XP/7/8, x64/x86
- Software Compatibility
 - LabVIEW, MATLAB, Visual Studio, Visual Studio.NET
- Software Recommendations
 - DSA Utility

Ordering Information

- **PXIe-9529**
8-CH 24-Bit High-Resolution Dynamic Signal Acquisition Module for PXIe bus
- **PCle-9529 (call for availability)**
8-CH 24-Bit High-Resolution Dynamic Signal Acquisition Module for PCIe bus

Introduction

The ADLINK PXIe-9529 is a high-performance, high density, 8-CH analog input dynamic signal acquisition module. The PXIe-9529 features eight 24-bit simultaneously sampling analog input channels. The 24-bit sigma-delta ADC provides a sampling rate of 192 kS/s at high resolution, making it ideal for higher dynamic range signal measurement. All channels are sampled simultaneously and accept input range up to $\pm 10V$, and the analog inputs support software-selectable AC or DC coupling and 4 mA bias current for integrated electronic piezoelectric (IEPE) sensors. The module is especially designed to meet the requirements of vibration analysis and audio testing.

Specifications

Analog Input

- Number of simultaneously sampled channels: 8
- Input configuration: Differential or pseudo-differential
- Input impedance:

Input Impedance	Differential Configuration	Pseudodifferential Configuration
Between positive input and system ground	1 M Ω	1 M Ω
Between negative input and system ground	1 M Ω	50 Ω

- Input coupling: AC or DC, software selectable
- AC coupling cutoff frequency: 0.5 Hz
- ADC resolution: 24-bit
- ADC type: Delta-sigma
- FIFO buffer size: 1,024 samples dedicated for per channel
- Sampling rate: 192 kS/s maximum, 8 kS/s to 54 kS/s in 192 μ S/s increments, 54 kS/s to 108 kS/s in 576 μ S/s increments, 108 kS/s to 192 kS/s in 768 μ S/s increments
- Input signal range: $\pm 10V$, or $\pm 1V$
- Integrated Electronic Piezoelectric (IEPE):
 - Current: 4 mA for each channel
 - IEPE compliance: 24 V
- Overvoltage protection
 - Differential : $\pm 42.4V$
 - Pseudo-differential :
 - Positive terminal : $\pm 42.4V$
 - Negative terminal : Not protected, rated at $\pm 2.5V$
- Offset error: ± 2 mV max
- Gain error: $\pm 0.5\%$ of FSR
- Crosstalk: < -100 dB
- THD: < -104 dB

Trigger

- Trigger Sources
 - Software trigger
 - Analog trigger
 - External digital trigger

- PXI STAR trigger
- PXI trigger bus [0..7]
- Trigger Modes
 - Post-trigger
 - Delay trigger
- External Digital Trigger Input:
 - 5 V TTL compatibility
 - Trigger polarity: rising or falling edge
 - Pulse width: 20 ns minimum

Timebase

- Onboard oscillator sample clock source
- 80 MHz timebase frequency

Data Storage and Transfer

- 512 MB onboard memory, shared among the eight analog inputs
- Scatter-Gather DMA data transfer

Onboard Reference

- +5,000 V onboard reference voltage
- < 5.0 ppm/°C reference temperature drift
- 15 minutes recommended warmup

General Specifications

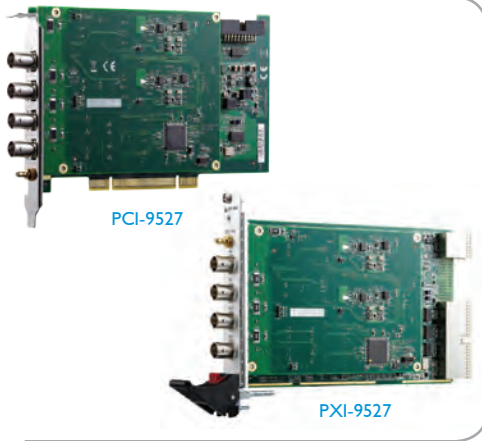
- I/O Connector:
 - SMB x 8 for analog inputs
 - SMB x 1 for external digital input
- Dimensions (not including connectors)
 - 160 (W) x 100 (H) mm (6.24" x 3.9")
- Bus Interface:
 - PCI Express Gen 1 x4
- Ambient Temperature (Operational):
 - 0°C to 55°C (32°F to 131°F)
- Ambient Temperature (Storage):
 - -20°C to 80°C (-4°F to 176°F)
- Relative Humidity:
 - 10% to 90%, non-condensing

Certifications

- EMC/EMI: CE, FCC Class A

PCI/PXI-9527

24-Bit High-Resolution Dynamic Signal Acquisition and Generation Modules



Introduction

The PCI/PXI-9527 is a high-performance, 2-CH analog input and 2-CH analog output dynamic signal acquisition module. This module is specifically designed for audio testing, acoustic measurement, and vibration analysis applications.

The ADLINK PCI/PXI-9527 features two 24-bit simultaneous sampling analog input channels. The 24-bit sigma-delta ADC provides a sampling rate up to 432 kS/s at high resolutions, making it ideal for higher bandwidth dynamic signal measurements. The sampling rate can be adjusted by setting the module DDS clock source to an appropriate frequency. All channels are sampled simultaneously and accept an input range from ± 40 V to ± 0.316 V. The PCI/PXI-9527 analog input supports software selectable AC or DC coupling and 4 mA bias current for integrated electronic piezoelectric (IEPE) sensors.

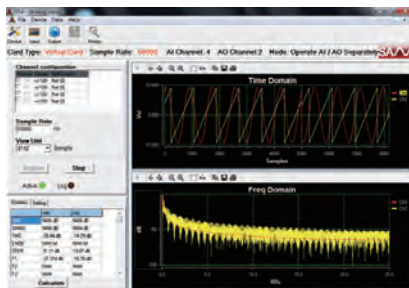
The ADLINK PCI/PXI-9527 also has two channels of 24-bit resolution, high fidelity analog output. The outputs occur simultaneously at software programmable rates up to 216 kS/s. A software programmable output range of ± 0.1 V, ± 1 V, and ± 10 V is available on the output channels.

Features

- PXI specifications Rev. 2.2 compliant (PXI-9527)
- 24-bit Sigma-Delta ADC and DAC
- 2-CH simultaneous sampling analog input
- 2-CH simultaneous updated analog output
- 432 KS/s maximum sampling rate with software programmable rate
- Programmable input range: ± 40 V, ± 10 V, ± 3.16 V, ± 1 V, ± 0.316 V
- Programmable output range: ± 10 V, ± 1 V, ± 0.1 V
- AC or DC input coupling, software selectable
- Trigger I/O connector for external digital trigger signal
- Supports IEPE output on each analog input, software-configurable
- OS Information
 - Windows XP/7/8, x64/x86
- Software Compatibility
 - LabVIEW, MATLAB, Visual Studio, Visual Studio.NET
- Software Recommendations
 - AD-Logger, DAQBench, DSA Utility

Dynamic Signal Assistant

ADLINK's Dynamic Signal Assistant is a ready-to-run software utility designed for dynamic signal acquisition modules, such as the PCI/PXI-9527. This software provides a windows-based configuration interface for setting parameters, in addition to a real-time visualized data display on the screen. An instrument-like user interface is also provided for basic waveform generation. The Dynamic Signal Assistant can also log data acquired from hardware modules. With the Dynamic Signal Assistant, signal acquisition and generation can be performed in just a few minutes without any programming effort.



Specifications

Analog Input

- Number of simultaneously sampled channels: 2
- Input configuration: Differential or pseudo-differential, each channel independently software-selectable
- Input impedance:

Input Impedance	Differential Configuration	Pseudodifferential Configuration
Between positive input and system ground	1 M Ω	1 M Ω
Between negative input and system ground	1 M Ω	50 Ω

- Input coupling: AC or DC, software-selectable on each channel
- ADC resolution: 24-bit
- ADC type: Delta-sigma
- Sampling rate: Up to 432 kS/s maximum, 2 kS/s to 432 kS/s in 454.7 μ S/s increments
- Input signal range: ± 0.316 V, ± 1.00 V, ± 3.16 V, ± 10.0 V, ± 40.0 V
- Integrated Electronic Piezoelectric (IEPE)
 - Current: 4 mA each channel independently software-selectable
 - IEPE compliance: 24 V
- Data transfer: DMA
- FIFO buffer size: 4096 samples shared for AI channels
- Input Common Mode Range: ± 10 V for both differential and pseudo-differential configuration
- Overvoltage protection
 - Differential input: ± 40 V_{pk}
 - Pseudo-differential:
 - Positive terminal: ± 40 V_{pk}
 - Negative terminal: ± 10 V_{pk}

- AC couple bandwidth
 - -3dB cutoff frequency: 3.5 Hz
 - -0.1dB cutoff frequency: 26 Hz

AI Offset Error	Input Range	Offset (±mV)
	±40 V	0.5
	±10 V	0.2
	±3.16 V	0.1
	±1 V	0.05
	±0.316 V	0.05

AI Gain Error	Input Range	
	±40V	±0.5%
	±30V~±0.316V	±0.2%

Crosstalk	
	Crosstalk
Adjacent channel	< -100 dB
Measured with ±10 V input Input signal is 18 Vpp @ 1KHz sine wave	

Analog Input Channel Bandwidth	
Input Range	Bandwidth (-3dB)
±40 V, ±10 V, ±3.16 V, ±1 V, ±0.316 V	130 KHz

Analog Output

- Number of output channels: 2
- Output configuration:
Differential or pseudo-differential, each channel independently software-selectable
- DAC resolution: 24-bit
- DAC type: Delta-sigma
- Update rate:
1 kS/s to 216 kS/s in 227.3 μS/s increments
- FIFO buffer size: 2048 samples for each analog output channel
- Output signal range: ±0.1 V, ±1 V, ±10 V
- Voltage output coupling: DC
- Minimum working load: 600 Ω
- AO Offset error and gain error:

Output Range	AO Offset Error	AO Gain Error
±0.1 V	±0.05 mV	0.4%
±1 V	±0.25 mV	0.4%
±10 V	±1 mV	0.4%

- Output impedance:

	Differential Configuration	Pseudodifferential Configuration
Between positive output and chassis ground	50 KΩ	10 KΩ
Between negative output and chassis ground	50 KΩ	50 Ω
Between positive and negative outputs	10 KΩ	10 KΩ

- Analog output, -3dB bandwidth: 110 KHz
- AO THD+N

Output Range	100 Hz to 20 KHz, 200 kS/s
± 0.1 V	-89 dB
± 1 V	-101 dB
± 10 V	-101 dB

Triggers

- Trigger sources:
 - Software trigger
 - Analog trigger
 - External digital trigger
 - PXI Star trigger (PXI-9527)
 - PXI Trigger bus [0..7] (PXI-9527)
- Trigger mode:
 - Post-trigger
 - Delay-trigger
- Analog trigger
 - Source: AI0, AI1
 - Trigger level: full scale input range
 - Trigger conditions: positive or negative trigger, software selectable
 - Trigger resolution: 24-bit
- External digital trigger
 - Source: front panel SMB connector
 - Compatibility: 5 V TTL
 - Trigger polarity: rising or falling edge
 - Pulse width: 300 ns minimum

System Timebase Characteristics

- Clock frequency: 80 MHz
- Accuracy: ±20 ppm, over operating temperature range

Timebase source

- Internal (on board): 125 MHz
- External: PXI backplane 10 MHz (PXI version)

General Specifications

- I/O connector
 - BNC x 4 for analog inputs/outputs
 - SMB x 1 for external trigger
- PCI Bus Signaling: Universal PCI, support 3.3 V and 5 V PCI signals
- Dimensions (not including connectors)
 - PCI-9527: 175 mm (W) x 107 mm (H) (6.82" x 4.17")
 - PXI-9527: 160 mm (W) x 100 mm (H) (6.24" x 3.9")
- 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

Calibration

- Onboard reference: +5 V
- Temperature coefficient: ≤ ±5 ppm/°C
- Recommend Warm-up time: 15 minute
- Power Requirement

Power Rail	Standby Current (mA)	Full Load (mA)
+5 V	930	2330
+12 V	310	350

Certifications

EMC/EMI: CE, FCC Class A

Cable Accessories

Cable	Description
SMB-SMB-1M	1 meter SMB to SMB cable
SMB-BNC-1M	1 meter SMB to BNC cable

Ordering Information

- **PCI-9527**
2-CH 24-Bit 432 kS/s High-Resolution Dynamic Signal Acquisition and Generation module for PCI bus
- **PXI-9527**
2-CH 24-Bit 432 kS/s High-Resolution Dynamic Signal Acquisition and Generation module for PXI bus

IO connector definition

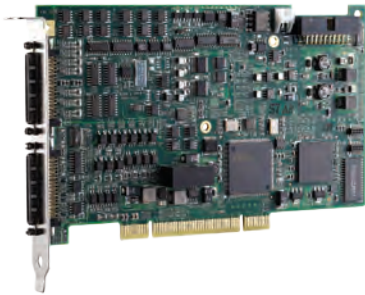


IO connector definition



PCI-9524

24-Bit Precision Load Cell Input Card



Introduction

The PCI-9524 is a robust, multi-purpose module designed for turnkey material test systems (MTS). Equipped with four strain gauge-based full-bridge transducer input channels, four general purpose analog input channels, and a 3-axis motion controller, the PCI-9524 delivers a complete hardware solution for MTS manufacturers. The PCI-9524 easily integrates physical quantity measurement and implements strategy of software-based close-loop control in a single module package. For transducer measurement, the PCI-9524 supports sensitivity from 1.0 mV/V to 4.0 mV/V and provides a 1/200000 accuracy of measurement of full scale. These features make the PCI-9524 suitable for precise measurement in large-scale transducers.

The PCI-9524 is also equipped with four, 24-bit general purpose analog input channels that allow accurate measurements of the LVDT (Linear Variable Differential Transducer) and Linear wire potentiometer signals to achieve high-resolution of displacement.

With motion control capability and 16-bit DA channels, the PCI-9524 comes with three stepper/servo motor axes and two channels of hydraulic system control function. The built-in incremental encoder feedback channels enable the PCI-9524 to implement the stratagem of MTS' software-based closed-loop control.

The impressive PCI-9524 features permit easy implementation of required control or measurement functionalities with just a single module, saving precious development and integration time for MTS manufacturers, CNC machines, and civil testing equipment.

Features

- Transducer Inputs for precise measurement
 - 4-CH full-bridge load cell transducer inputs
 - Accuracy up to 1/200,000 counts at full-scale
 - Sensitivity from 1.0 mV/V to 4.0 mV/V
 - 2.5/10 Vdc excitation voltage, software selectable
 - Internal 24-bit A/D resolution
- Motion control interface for stepper and hydraulic system control
 - 3-axis PWM output with OUT/DIR and CW/CCW mode
 - 2-CH 16-bit analog outputs
 - A-B phase encoder input with 24-bit counter
- General-Purpose Analog Inputs for accurate measurements of LVDT¹ and linear wire potentiometer signals
 - 4-CH analog input with 24-bit resolution
 - Programmable gains of ± 1.25 V, ± 2.5 V, ± 5 V, ± 10 V
 - Up to 30 kS/s sampling rate (single channel)

Note 1: LVDT: Linear Variable Differential Transducer

OS Information

- Windows 2000/XP, Windows 7 x64/x86

Software Compatibility

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

Software Recommendations

- DAQBench, DAQMaster

Specifications

4-channel Load Cell Transducer Input

- Excitation voltage: 2.5 V/10 Vdc
- Internal A/D resolution: 24-bit
- Update speed when Auto-zero Disabled
 - Up to 30 KSPS (single channel)
 - Up to 1,638 SPS (multi-channel)
- Update speed when Auto-zero Enabled
 - Up to 819 SPS (single channel or multi-channel)
- Transducer sensitivity: 1.0 mV/V to 4.0 mV/V
- Number of channels: 1.6
- Accuracy: 1/200000 of full scale (with remote sense & auto zero enabled)
- Onboard 256 samples A/D FIFO

PWM Output & Encoder Input

- Number of axis: 3
- Pulse output options: OUT/DIR and CW/CCW (26LS31, differential line driver, driving current: up to 20 mA)
- Maximum output frequency: 500 kHz
- Encoder Input: 24-bit up/down counter for incremental encoder feedback

General Purpose Analog Input

- Resolution: 24-bit
- Programmable range: ± 1.25 V, ± 2.5 V, ± 5 V, ± 10 V
- Number of channels: 4
- Sampling rate: 30 kS/s (non-multiplexing)
- Onboard 256 samples A/D FIFO

Isolated Digital Input

- Number of channels: 8
- Maximum input range (non-polarity): 0 V to 24 V
- Input resistance: 2.7 K Ω

Isolated Digital Output

- Number of channels: 8
- Output type: Power MOSFET
- Sink current: Up to 300 mA/channel

Analog Output

- Resolution: 16-bit
- Output range: ± 10 V
- Number of channels: 2
- Update rate: Up to 5 kS/s
- Onboard 1 K samples D/A FIFO
- Driving capability: 5 mA

Hardware Timer Interrupt

- Base clock: 40 MHz
- Resolution: 32-bit
- Interrupt Frequency: $40\text{MHz} / 2^N$; $N = 1 \sim 2^{32}$

General Specifications

- 5V power output current:
 - ISO5VDD: max. 160 mA
 - ISOPWR: max. 16 mA
- I/O connector: Two 68-pin SCSI-VHDCI female
- Operation Temperature: 0 to 45°C
- Power requirements: 5 V @ 2 A
- Dimensions (not including connectors): 156 mm x 116 mm (6.14" x 4.57")

Ordering Information

- **PCI-9524**
24-Bit Precision Load Cell Input Card

TE-520I

125 MS/s Arbitrary Waveform Generator



Features

- Single channel 125 MS/s PXI-based waveform generator
- Sine waves to 50MHz, Square to 30MHz
- SINE OUT to 125MHz, 1Vp-p
- 14-bit vertical resolution
- 2M waveform memory
- Ultra fast waveform downloads using DMA
- Low phase noise carrier
- Internal trigger generation
- Extensive modulation capabilities AM, FM, Arbitrary FM, FSK, Ramped FSK and Sweep
- Waveform sequencing with up to 4096 segments and sequences

OS Information

- Windows 2000/XP, Windows 7 x64/x86

Software Recommendations

- ARBDetector

Ordering Information

- **TE-520I**
125 MS/s Arbitrary Waveform Generator

Introduction

The TE-520I is a 125 MS/s, full performance, arbitrary waveform generator on a 3U PXI form factor. The single channel AWG generates waveforms up to 2 MS in length. The clock in/clock out connector provides a synchronized platform for up to six plug-in arbitrary generators, as well as for other plug-in instruments. Built in sequencing technology links up to 4096 memory segments and repeats each segment up to 32 k times.

Specifications

Waveforms

- Standard Waveforms
 - Waveforms: Sine, Triangle, Square, Pulse, Ramp, Sine(X)/X, Gaussian, Exponential, Repetitive Noise, DC
 - Frequency range:
 - Sine: 100 μ Hz to 50 MHz
 - Square, Pulse: 100 μ Hz to 30 MHz
 - All others: 100 μ Hz to 15 MHz
- Arbitrary Waveforms
 - Sample rate: 100 MS/s to 125 MS/s
 - Vertical resolution: 14 Bits
 - Waveform memory: 2M points standard
 - Min. segment size: 16 points
 - Resolution: 4 points
 - No. of segment: 1 to 4k
 - Download rate: 5M points per second
- Sequenced Arbitrary Waveforms
 - Operation: Permits division of the memory bank into smaller segments. Segments may be linked, and repeated in user-selectable fashion to generate extremely long waveforms
 - Sequencer steps: 1 to 4k
 - Min. Seg. Duration: 1 μ s
 - Segment loops: 1 to 1M

Sample Clock Modulation

- FM
 - Description: Sample clock can be frequency modulated by internal waveforms that are resident in internal memory (fixed waveforms)
 - Modulation Source: Internal sine square, triangle and ramp
 - Modulation Freq. Range: 2 mHz to 100 kHz
 - Resolution: 10 digits
 - Accuracy: 0.1%
 - Peak Freq. Deviation: DC 50 MHz
 - Advance: Automatic, triggered, gated or software command
 - Marker
 - Output and level same as SYNC output.
 - Position: Fixed at carrier frequency

Operating Modes

- Normal: Continuous waveform is generated
- Triggered: Each input cycle generates a single output cycle
- Gated: External signal enables generator.
First output cycle synchronous with the active slope of the triggering signal. Last cycle of output waveform always completed
- External Burst: Preset number of up to 128 k cycles stimulated by an internal, or external.
This mode is not available in Sequencer mode

Trigger Sources

- | | |
|--|---|
| <ul style="list-style-type: none"> ■ External <ul style="list-style-type: none"> • Input: Front panel BNC • Level: TTL • Slope Positive or negative, programmable • Frequency: 5 MHz to DC | <ul style="list-style-type: none"> ■ Internal <ul style="list-style-type: none"> • Range: 100 mHz to 2 MHz • Resolution: 7 digits • Accuracy: 0.1% ■ Backplane: TTL Trig0 through TTL Trig7, STAR ■ Software: SCPI command |
|--|---|

Trigger Input

- | | |
|--|--|
| <ul style="list-style-type: none"> ■ Connector: Front panel BNC ■ Threshold Level: TTL ■ Slope: Positive or negative going edge | <ul style="list-style-type: none"> ■ Impedance: 10 kΩ, \pm5% ■ Minimum Pulse Width: 20 ns |
|--|--|

General

- | | |
|--|--|
| <ul style="list-style-type: none"> ■ Power consumption: 10W max ■ Current consumption: <ul style="list-style-type: none"> • +3.3V: 1.4A max • +5V: 30mA max • +12V: 200mA max • -12V: 200mA max | <ul style="list-style-type: none"> ■ Temperature <ul style="list-style-type: none"> • Operating: 0 to 50$^{\circ}$C • Storage: -40 to 70$^{\circ}$C ■ Safety: EN61010-1, 2nd revision |
|--|--|

1

PXI/PXIe

2

Modular Instruments

3

DAQ

4

GPB & Bus Expansion

Switch Introduction

To meet the needs of a wide range of uses in the measurement and automation field, switches come in a variety of types and sizes for versatile applications. It is important to understand the different types of switches available before selecting the most appropriate switch configuration.

General-Purpose (GP) Switches

General purpose switches contain several independent relays which are isolated from each other. GP switches are commonly used to connect one input to one output and are usually built with Form A or Form C relays. The normal usage of GP switches is to turn on or turn off devices, such as motors, fans, heaters, and lights.

Multiplexers (MUX)

In test applications, the quantity of instruments is usually lower due to high cost. Thus, to connect multiple units under test (UUT) with the testing instrument, a multiplexer is always the choice to make the maximum utilization of the instruments. A 1-wire multiplexer routes single-ended signals to one point, and a 2-wire multiplexer selects differential signals. A 4-wire multiplexer is usually used to measure low resistance or RTDs. The instruments which are often used with multiplexer include DMM, digitizer and signal source, such as AWG, to provide both measurement and excitation.

Matrix

Matrix switches provide the most versatile switching capacity among these function topologies. In the matrix, any input can connect to any output individually or in combination. Unlike the multiplexer, the matrix can connect the source or measurement instrument to multiple UUTs at the same time. Matrix' advantage is the save of wiring. When users want to change the configurations of measurement or excitation, users just change the internal connection path, and do not have to manually reconfigure the wiring.

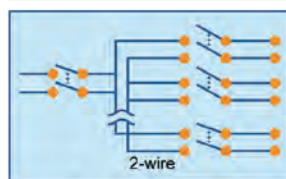
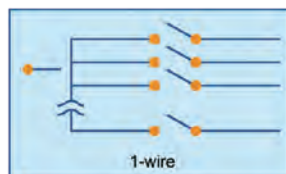


Figure 3 (Multiplexer)

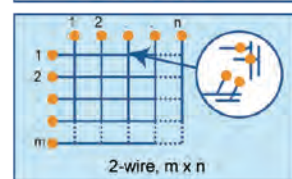
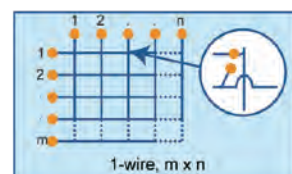


Figure 4 (Matrix)

PXI-7901

16-CH General-Purpose SPDT Relay Module



Features

- PXI specifications Rev. 2.2 compliant
- 16-CH SPDT (1 Form C) non-latching relays
- Switching capacity: 3 A switching, 3 A carrying / 220 VDC, 250 VAC
- 125 operations per second for full settling
- Onboard 1 k-sample scan list for deterministic scanning
- Handshaking signals for external instruments synchronization
- Hardware emergency shutdown with programmable relay safety status
- 8 auxiliary 3.3 V/TTL digital inputs/outputs with 5 V tolerance

OS Information

- Windows 2000/XP

Software Compatibility

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

Software Recommendations

- DAQBench, ADL-SWITCH for Windows

Specifications

Relay Characteristics

- Number of channels: 16
- Relay type: SPDT (1 Form C), non-latching
- Switching capacity
 - Max. switching current: 3 A
 - Max. switching voltage: 220 VDC, 250 VAC
 - Max. switching power: 50 VA, 60 W
 - Max. carrying current: 3 A
- Contact resistance: 150 mΩ max.

Auxiliary Digital I/O

- Numbers of channel: 8 inputs/outputs
- Compatibility: 3.3 V/TTL (5 V tolerant)

Safety Functions

- Emergency shutdown
 - Logic level: 3.3 V/TTL (5 V tolerant)
 - Active: logic low

General Specifications

- I/O Connector: 62-pin D-sub male
- Operating temperature: 0°C to 55°C (32°F to 131°F)
- Storage temperature: -20°C to 70°C (-4°F to 158°F)
- Relative humidity: 5% to 85% non-condensing
- Power requirements: (when all relays are ON)
- Dimensions (not including connectors)
 - 160 mm x 100 mm (6.24" x 3.9")

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

■ PXI-7901

16-CH General-Purpose SPDT Relay Module

* Failure rate indicates the lower limit of switching capacity of a relay contact at a reliability level of 60%

Terminal Boards & Cables

■ TB-6201-01

General-Purpose Switch Terminal Board with one 62-Pin D-Sub Female Connector for PXI-7901

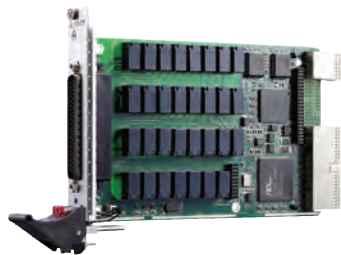
■ ACL-I0262

62-pin D-sub male/female cable, 1 M

(For more information about mating cables, please refer to P3-48.)

PXI-7921

24-CH 2-Wire Multiplexer Module



Features

- PXI specifications Rev. 2.2 compliant
- 24-CH DPDT (2 Form C) non-latching relays
- Switching capacity
 - 2 A switching, 2 A carrying
 - 220 V_{DC}, 125 V_{AC}
- Onboard 1 k-sample scan list for deterministic scanning
- Hardware emergency shutdown with programmable relay safety status

OS Information

- Windows 2000/XP

Software Compatibility

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

Software Recommendations

- DAQBench, ADL-SWITCH for Windows

Specifications

Source Wire	Multiplexer
1-wire	One 48x1
2-wire	One 24x1, Two 12x1, Four 6x1
4-wire	One 12x1

Relay Characteristics

- Number of channels: 24 (2-wire)
- Relay type: DPDT (2 Form C), non-latching
- Switching capacity
 - Max. switching current: 2 A
 - Max. switching voltage: 220 V_{DC}, 125 V_{AC}
 - Max. switching power: 60 W
 - Max. carrying current: 2 A
- Contact resistance: 100 mΩ max.

Safety Functions

- Emergency shutdown
 - Logic level: 3.3 V/TTL (5 V tolerant)
 - Active with logic low

General Specifications

- I/O Connector: 62-pin D-sub male
- Operating temperature: 0°C to 55°C (32°F to 131°F)
- Storage temperature: -20°C to 70°C (-4°F to 158°F)
- Relative humidity: 5% to 85% non-condensing

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

- **PXI-7921**
24-CH 2-Wire Multiplexer Module

* Failure rate indicates the lower limit of switching capacity of a relay contact at a reliability level of 60%

Terminal Boards & Cables

- **TB-6221-01**
Multiplexer Switch Terminal Board with One 62-Pin D-Sub Female Connector for PXI-7921

- **ACL-10262**
62-pin D-sub male/female cable, 1 M

(For more information about mating cables, please refer to P3-48.)

PXI-7931

4x8 2-Wire Matrix Module



Features

- PXI specifications Rev. 2.2 compliant
- Configuration determined by terminal board
- Up to 32 cross-point DPDT (2 Form C) non-latching relays
- Contact rating
 - 2 A switching, 2 A carrying
 - 220 V_{DC}, 125 V_{AC}
- Onboard 1 k-sample scan list for deterministic scanning
- Hardware emergency shutdown with programmable relay safety status
- 8 auxiliary 3.3 V/TTL digital inputs/outputs with 5 V tolerance

OS Information

- Windows 2000/XP

Software Compatibility

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

Software Recommendations

- DAQBench, ADL-SWITCH for Windows

Specifications

Source Wire	Multiplexer
2-wire	One 4x8, Two 4x4, One 2x16, Two 2x8, Four 2x4

Relay Characteristics

- Number of cross points: 32 (2-wire)
- Relay type: DPDT (2 Form C), non-latching
- Switching capacity
 - Max. switching current: 2 A
 - Max. switching voltage: 220 V_{DC}, 125 V_{AC}
 - Max. switching power: 60 W
 - Max. carrying current: 2 A
- Contact resistance: 100 mΩ max.

Auxiliary Digital I/O

- Numbers of channel: 8 inputs/outputs
- Compatibility: 3.3 V/TTL (5 V tolerant)

Safety Functions

- Emergency shutdown
 - Logic level: 3.3 V/TTL (5 V tolerant)
 - Active: logic low

General Specifications

- I/O Connector: 62-pin D-sub male
- Operating temperature: 0°C to 55°C (32°F to 131°F)
- Storage temperature: -20°C to 70°C (-4°F to 158°F)
- Relative humidity: 5% to 85% non-condensing
- Power requirements: (when all relays are ON)
- Dimensions
160 mm x 100 mm (not including connectors)

Certifications

- EMC/EMI: CE, FCC Class A

Ordering Information

- **PXI-7931**
4x8 2-Wire Matrix Module

* Failure rate indicates the lower limit of switching capacity of a relay contact at a reliability level of 60%

Terminal Boards & Cables

- **TB-6231-01**
Multiplexer Switch Terminal Board with One 62-Pin D-Sub Female Connector for PXI-7931

- **ACL-10262**
62-pin D-sub male/female cable, 1 M

(For more information about mating cables, please refer to P3-48.)