



PCI-9222/9223

16/32-CH 16-Bit 250/500 kS/s Multi-Function DAQ Cards with Encoder Input

Features

- Supports a 32-bit 5 V PCI bus
- Programmable gains for analog input: 1, 2, 4, 5, 8, 10, 20, and 40
- 2-CH 16-bit simultaneous analog outputs, supporting up to 1 MS/s update rate
- Programmable function I/O, supporting modes:
 - 16-CH TTL DI and 16-CH TTL DO
 - 2 MHz 32-CH high-speed DIO
 - 4-CH 32-bit 80 MHz general-purpose timer/counter
 - 4-CH PWM outputs
- 2-CH 4 MHz encoder inputs, supporting AB phase, and CW/CCW
- Dedicated DMA channels for A/D, D/A, and high-speed DIO
- External digital trigger for A/D, D/A, and high-speed DIO
- Multiple card synchronization through SSI (System Synchronization Interface) bus (System Synchronization Interface) bus
- Auto-calibration

Operating Systems

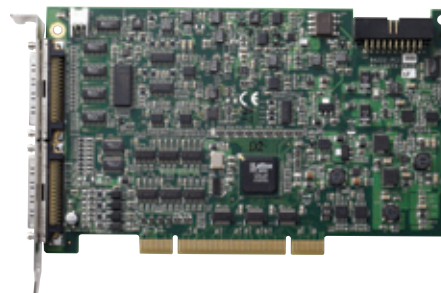
- Windows Vista/XP/2000/2003
- Linux

Recommended Software

- VB.NET/VC.NET/VB/VC++/BCB/Delphi
- DAQBench

Driver Support

- DAQPilot for Windows
- DAQ-LVIEW PnP for LabVIEW™
- DAQ-MTLB for MATLAB®
- PCIS-DASK for Windows
- PCIS-DASK/X for Linux



Introduction

The ADLINK PCI-9222/9223 is a 16-bit, 16/32-CH, 250/500 kS/s high performance DAQ card with 8 different input ranges. It also features 2-CH 16-bit analog outputs capable of a 1 MS/s update rate, 2-CH encoder inputs, and programmable function I/O. The software-programmable function I/O supports a variety of applications, including TTL digital I/O, high-speed DIO, general-purpose timer/counter, pulse generation, and PWM output. Analog input, analog output, and function I/O can function at full speed simultaneously, and multiple cards can be synchronized through the SSI (System Synchronization Interface) bus if users need more channels than a single board can provide. Ideal for mixed-signal tests, laboratory research, and factory automation, PCI-9222/9223 is the best single-board solution on the market providing the best integration capability of multiple tasks with high performance and an affordable price.

Termination Board

DIN-68S-01

Termination board with one 68-pin SCSI-II connector and DIN-Rail Mounting (Cables are not included. For more information on mating cables, refer to section 12.)

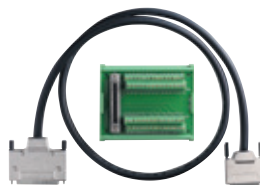


SSI Bus Cables

(for multiple cards synchronization)

- ACL-SSI-2
SSI Bus cable for two devices
- ACL-SSI-3
SSI Bus cable for three devices
- ACL-SSI-4
SSI Bus cable for four devices

SSI bus cable for multiple cards synchronization



Termination board DIN-68S-01 &
68-Pin SCSI-VHDCI cable ACL-10568-1

Ordering Information

- **PCI-9222**
16-CH 16-bit 250 kS/s Multi-Function DAQ Card with Encoder Input
- **PCI-9223**
32-CH 16-bit 500 kS/s Multi-Function DAQ Card with Encoder Input

Pin Assignment

CN1		
AI0(AIH0)	34 68	AI16(AIL0)
AI1(AIH1)	33 67	AI17(AIL1)
AI2(AIH2)	32 66	AI18(AIL2)
AI3(AIH3)	31 65	AI19(AIL3)
AI4(AIH4)	30 64	AI20(AIL4)
AI5(AIH5)	29 63	AI21(AIL5)
AI6(AIH6)	28 62	AI22(AIL6)
AI7(AIH7)	27 61	AI23(AIL7)
AGND	26 60	AISENSE
AI8(AIH8)	25 59	AI24(AIL8)
AI9(AIH9)	24 58	AI25(AIL9)
AI10(AIH10)	23 57	AI26(AIL10)
AI11(AIH11)	22 56	AI27(AIL11)
AI12(AIH12)	21 55	AI28(AIL12)
AI13(AIH13)	20 54	AI29(AIL13)
AI14(AIH14)	19 53	AI30(AIL14)
AI15(AIH15)	18 52	AI31(AIL15)
AGND	17 51	AGND
AO0	16 50	AGND
AO1	15 49	AGND
NC	14 48	NC
NC	13 47	NC
NC	12 46	NC
NC	11 45	NC
NC	10 44	NC
NC	9 43	NC
NC	8 42	NC
NC	7 41	NC
NC	6 40	NC
NC	5 39	NC
NC	4 38	NC
NC	3 37	NC
NC	2 36	NC
NC	1 35	NC

*AI 16~31 only available for PCI-9223

CN2		
GPIO/GPTC_CLK0	34 68	GP18/GPTC_CLK2
GP11/GPTC_UD0	33 67	GP19/GPTC_UD2
GP12/GPTC_GATE0	32 66	GP110/GPTC_GATE2
GP13/GPTC_AUX0	31 65	GP111/GPTC_AUX2
GP14/GPTC_CLK1	30 64	GP112/GPTC_CLK3
GP15/GPTC_UD1	29 63	GP113/GPTC_UD3
GP16/GPTC_GATE1	28 62	GP114/GPTC_GATE3
GP17/GPTC_AUX1	27 61	GP115/GPTC_AUX3
DGND	26 60	DGND
GP00/GPTC_OUT0	25 59	GP08
GP01/GPTC_OUT1	24 58	GP09
GP02/GPTC_OUT2	23 57	GP010
GP03/GPTC_OUT3	22 56	GP011
GP04	21 55	GP012
GP05	20 54	GP013
GP06	19 53	GP014
GP07	18 52	GP015
DGND	17 51	DGND
DGND	16 50	DGND
DGND	15 49	DGND
+5Vout	14 48	DGND
NC	13 47	NC
NC	12 46	NC
NC	11 45	NC
NC	10 44	NC
E24V	9 43	NC
EGND	8 42	NC
IEA0+	7 41	IEA1+
IEA0-	6 40	IEA1-
IEB0+	5 39	IEB1+
IEB0-	4 38	IEB1-
IEZ0+	3 37	IEZ1+
IEZ0-	2 36	IEZ1-
IORG0	1 35	IORG1

Specifications

Model Number	PCI-9222 NEW	PCI-9223 NEW
Analog Input		
Resolution	16 bits	
Number of channels	16 SE/ 8 DIFF	32 SE/ 16 DIFF
Maximum Sampling rate (single channel)	250 kS/s	500 kS/s
Programmable gain	1, 2, 4, 5, 8, 10, 20, 40	
Input range	±10 V, ±5 V, ±2.5 V, ±2 V, ±1.25 V, ±1 V, ±500 mV, ±250 mV	
Offset error	±2.6 mV typical, before calibration, ±0.5 mV typical, after calibration	
Gain error	±0.2% of FSR, before calibration, ±0.015% of FSR, after calibration	
-3 dB small signal bandwidth (gain=1)	1.8 MHz	
System noise (gain=1)	0.5 mV _{RMS}	
CMRR (gain=1)	99.5 dB	
SFDR	95 dB	88 dB
(Spurious-free dynamic range, gain=1)		
SINAD (Signal-to-noise and distortion ratio, gain=1)	86 dB	84 dB
THD (Total harmonic distortion, gain=1)	-94 dB	-90 dB
SNR (Signal-to-noise ratio, gain=1)	87 dB	86 dB
ENOB (gain=1)	13.9 bits	13.5 bits
FIFO buffer size	1 k samples	
Trigger sources	Software, external digital, SSI	
Trigger mode	Post trigger, retrigger, gate trigger	
External conversion source	Yes (up to 250 kS/s)	Yes (up to 500 kS/s)
Input coupling	DC	
Overvoltage protection	Continuous ±30 V	
Input impedance	High impedance > 1 GΩ	
Data Transfer	Programmed I/O, Interrupt, Bus Mastering DMA	
Analog Output		
Number of channels	2 voltage outputs	
Resolution	16-bit	
Maximum update rate	1 MHz (simultaneous update)	
FIFO	1 k sample	
Output Range	±10 V	
Output driving capacity	±5 mA	
Slew rate	20 V/μs	
Setting time (Full scale)	3 μs to ±0.5 LSB accuracy	
Offset error	±0.1 mV	
Gain error	±0.1 mV	
Rising time	0.67 μs	
Falling time	0.705 μs	
Function I/O		
Mode	Digital I/O, General Timer/Counter, Pulse Generation	
Digital I/O	16 DO (3.3 V TTL Level) / 16 DI (3.3 V or 5 V TTL Level)	
General Timer/Counter	Four 32-bit, Base clock: 80 MHz, external to 10 MHz	
Pulse Generation	Four PWM outputs (supporting single pulse generation and pulse train generation)	
Encoder Input		
Number of channels	2	
Encoder type	CW/CCW encoder, x 1 AB phase encoder, x 2 AB phase encoder, x 4 AB phase encoder	
General specs.		
PCI Bus	5 V & 3.3 V universal PCI bus	
Auto-calibration	Yes	
I/O Connector	Two 68-pin SCSI-VHDCI female	
Operation temperature	0 to 55°C	
Storage temperature	-20 to 70°C	
Relative humidity	5 to 95% non-condensing	
Power requirements	+5 V 1.2 A typical +12 V 760 mA typical -12 V 50 mA typical	
Dimensions	175 mm x 107 mm (not including connectors)	

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Software Solutions

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PXI/ CompactPCI Platforms

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Modular Instrument

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PXI/ CompactPCI Modules

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Bus Interface

6

GPIO Interface

7

PCI/PCI Express[®] DAQ Cards

8

PCI/PCI Express[®] DIO Cards

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PC/104-Plus Modules

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ISA DAS/ DIO Cards

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System Product

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Wiring Termination Boards

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Motion, HSL, Vision, COM & GEME

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Remote I/O Modules

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Industrial Computers