

PCI-9221/9222/9223

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



Specifications

Model Name	PCI-9221	PCI-9222	PCI-9223
Analog Input			
Resolution	16 Bit		
Number of channels	16 SE/ 8 DIFF	16 SE/ 8 DIFF	32 SE/ 16 DIFF
Maximum sampling rate (single channel)	250 kS/s	250 kS/s	500 kS/s
Programmable gain	1, 5, 10, 25	1, 2, 4, 5, 8, 10, 20, 40	1, 2, 4, 5, 8, 10, 20, 40
Input range	±5 V, ±1 V, ±500 mV, ±200 mV	±10 V, ±5 V, ±2.5 V, ±2 V, ±1.25 V, ±1 V, ±500 mV, ±250 mV	±10 V, ±5 V, ±2.5 V, ±2 V, ±1.25 V, ±1 V, ±500 mV, ±250 mV
Offset error	±0.7 mV typical, after calibration		
Gain error	±0.015% of FSR, after calibration		
FIFO buffer size	1 k samples		
Trigger sources	Software, external digital	Software, external digital, SSI	
Trigger mode	Post trigger	Post trigger, retrigger, gate trigger	
Input coupling	DC		
Overvoltage protection	±10 V	Continuous ±30 V	
Input impedance	High impedance > 1 GΩ		
Data Transfer	Polling, scatter-gather DMA		
Analog Output			
Number of channels	2 voltage outputs		
Resolution	16-Bit		
Maximum update rate	1.25 kS/s (static)	1 MHz (simultaneous update)	
FIFO	-	512	
Output range	±5 V	±10 V	
Output driving capacity	±5 mA		
Slew rate	0.014 V/μs	20 V/μs	
Setting time (0.1% of full scale)	1396 μs	2.6 μs	
Offset error	±1 mV		
Gain error	±0.02% FSR	±0.01% FSR	
Rising time	390 μs	0.67 μs	
Falling time	395 μs	0.705 μs	
Function I/O			
Mode	Digital I/O ⁽¹⁾ , General Timer/Counter ⁽¹⁾ , Pulse Generation ⁽¹⁾	Digital I/O, General Timer/Counter, Pulse Generation	
Digital I/O	8 DI/4 DO (5 V TTL level)	16 DO (3.3 V TTL Level) / 16 DI (3.3 V or 5 V TTL Level)	
General Timer/Counter	Two 32-Bit, Base clock: 40 MHz, external to 10 MHz	Four 32-Bit, Base clock: 80 MHz, external to 10 MHz	
Pulse generation	Two PWM outputs (Modulation frequency: 0.005 Hz to 5 MHz; Duty cycle: 1%-99%)	Four PWM outputs (Modulation frequency: 0.01 Hz to 5 MHz; Duty cycle: 1%-99%)	
Encoder Input			
Number of channels	2 ⁽²⁾		
Encoder type	CW/CCW encoder, x 1 AB phase encoder, x 2 AB phase encoder, x 4 AB phase encoder		
General Specifications			
PCI Bus	5 V and 3.3 V universal PCI bus		
Auto-calibration	Yes		
I/O Connector	One 37-pin D-Sub connector	Two 68-pin SCSI-VHDCI female	
Operation temperature	0°C to 45°C (32°F to 113°F)	0°C to 55°C (32°F to 131°F)	
Storage temperature	-20°C to 80°C (-4°F to 176°F)	-20°C to 70°C (-4°F to 158°F)	
Humidity	5 to 95% non-condensing		
Power requirements	+5 V 1A typical, +12 V 100mA typical, -12 V 100mA typical	+5 V 1.2A typical, +12 V 760 mA typical, -12 V 50 mA typical	
Dimensions	120 mm x 87 mm (4.68" x 3.39")	175 mm x 107 mm (6.82" x 4.17") (not including connectors)	

Note:
 (1) The function I/O and encoder inputs share the same I/O pins of the PCI-9221. Only one of these modes can be selected.
 (2) Dedicated

Features

- Supports a 32-Bit 3.3 V or 5 V PCI bus
- Programmable gains for analog input: 1, 2, 4, 5, 8, 10, 20, 40 (PCI-9222/9223) 1, 5, 10, 25 (PCI-9221)
- 2-CH 16-Bit simultaneous analog outputs, up to 1 MS/s analog output update rate (PCI-9222/9223)
- Not recommended to be used in the system with greater than 2GB memory (PCI-9221)
- Programmable function I/O, supporting modes:
 - TTL DI and TTL DO
 - 2 MHz High-Speed DIO (PCI-9222/9223 only)
 - General-purpose timer/counter
 - PWM outputs
 - Encoder inputs
- Dedicated 2-CH 4 MHz encoder inputs, supporting AB phase, and CW/CCW (PCI-9222/9223)
- Dedicated DMA channels for A/D, D/A, and high-speed DIO (PCI-9222/9223)
- External digital trigger for A/D, D/A, and high-speed DIO (PCI-9222/9223)
- Multiple card synchronization through SSI (System Synchronization Interface) bus (PCI-9222/9223)
- 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

Terminal Boards & Cables

- DIN-68S-01 (for PCI-9222/9223)
- DIN-37D-01 (for PCI-9221)
- ACL-10568-1 (for PCI-9222/9223)
- ACL-10137-1MM (for PCI-9221)
- ACL-SSI-2/3/4 (for PCI-9222/9223)

* For more information on mating terminal board and cables, please refer to P3-48/49.

Ordering Information

- PCI-9221**
2-CH 16-Bit 250 kS/s Multi-Function DAQ Card with Encoder Input
- 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

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