PCI-9221
Low-Cost 16-Bit Multi-Function DAQ Card with 2-CH Encoder Input

Features
- Supports a 32-bit 3.3 V or 5 V PCI bus
- 16-CH single-ended or 8-CH differential analog input
- Up to 250 kS/s sampling rate
- Programmable input range: ±5 V, ±1 V, ±0.5 V, ±0.2 V
- 2-CH 16-bit static analog output
- Programmable function I/O, supported modes:
  - 8-CH DI and 4-CH DO
  - 2-CH 32-bit 40 MHz general-purpose timer/counter
  - 2-CH 4 MHz encoder input, supporting AB phase and CW/CCW
  - 2-CH PWM outputs
- Auto-calibration feature

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-9221 is a 16-bit high-resolution and low-cost multi-function DAQ card, with 16-CH single-ended or 8-CH differential input capable of up to 250 kS/s sampling rate. In addition, the PCI-9221 comes with a 2-CH 16-bit static analog output and programmable function I/O. The software-programmable function I/O supports a variety of applications, including TTL digital I/O, general-purpose timer/counter, encoder input, and PWM output. The flexible function I/O makes the PCI-9221 the best single-board solution for combined data acquisition and simple motion control functionalities. Ideal for manufacturing, laboratory research, and factory automation, the PCI-9221 comes with all the functions you need at an affordable price.

Specifications

Analog Input
- Resolution: 16-bit
- Channel number: 16 SE/8 DI
- Conversion time: 4 μs
- Sampling rate(single channel): 250 kS/s
- FIFO: 1 k sample
- Gain: 1, 5, 10, 25
- Input range: ±5 V, ±1 V, ±500 mV, ±200 mV
- Trigger source: Software, External digital
- Trigger mode: Post trigger
- External conversion source: Yes
- Input coupling: DC
- Overvoltage protection: +/-10 V
- Input impedance: High impedance, > 1 GΩ
- Data Transfer: Programmed I/O, Interrupt, Bus-mastering DMA

Analog Output
- Number of channels: 2
- Resolution: 16-bit
- Update rate: 1.25 kS/s (static)
- Output Range: ±5 V
- Output driving capacity: ±5 mA

Multi-function Digital I/O
- Mode: Digital I/O, General Timer/Counter, Pulse Generation, Encoder
- * Only one of these mode can be selected
- Digital I/O: 4 DO/ 8 DI (5 V TTL)
- General Timer/Counter: 2 x 32-bit with base clock 40 MHz, external up to 10 MHz
  Supported modes:
  - Pulse Generation:
    - Single pulse generation
    - Pulse train generation
  - Encoder:
    - CW/CCW encoder
    - x 1 AB phase encoder
    - x 2 AB phase encoder
    - x 4 AB phase encoder
  - PWM Output:
    - Duty cycle: 1-99%
    - Modulation frequency: 20 MHz to 0.005 Hz

General Specifications
- PCI Bus: 5 V & 3.3 V universal PCI bus
- Auto-calibration: Yes
- Connector: 37-pin D-Sub Connector
- Operation temperature: 0 - 45 ˚C
- Storage temperature: -20 - 80 ˚C
- Relative humidity: 5 to 95%, non-condensing
- Dimensions: 120 mm x 87 mm

Termination Boards

TB-9221-01
General-purpose termination board with one 37-pin D-Sub connector. Supports differential to single-ended encoder signal conversion of PCI-9221's function I/O through jumper switching. (Cables are not included.)
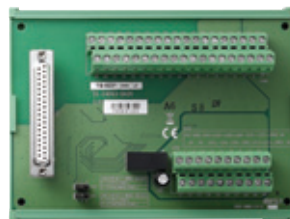
TB-9221-01

DIN-37D-01
Termination board with one 37-pin D-sub connector and DIN-Rail Mounting (Cables are not included. For information on mating cables, refer to Section 12.)

Pin Assignment

GPO2	1	20	GPO3
DGND	2	21	GPO1/GPTC_OUT1
GPO0/GPTC_OUT0	3	22	GPI7/ORG1/GPTC_AUX1
GPI6/EZ1/GPTC_GATE1	4	23	DGND
GPI5/EB1/GPTC_UD1	5	24	GPI4/EA1/GPTC_CLK1
GPI3/ORG0/GPTC_AUX0	6	25	GPI2/EZ0/GPTC_GATE0
DGND	7	26	GPI1/EB0/GPTC_UD0
GPI0/EA0/GPTC_CLK0	8	27	AO1
AOGND	9	28	AO0
AIGND	10	29	AI15(AIL7)
AI7(AIH7)	11	30	AI14(AIL6)
AI6(AIH6)	12	31	AI13(AIL5)
AI5(AIH5)	13	32	AI12(AIL4)
AI4(AIH4)	14	33	AISENSE
AIGND	15	34	AI11(AIL3)
AI3(AIH3)	16	35	AI10(AIL2)
AI2(AIH2)	17	36	AI9(AIL1)
AI1(AIH1)	18	37	AI8(AIL0)
AI0(AIH0)	19		

Cable
- **ACL-10137-1MM**
  37-pin D-Sub male/male cable, 1 M

Ordering Information
- **PCI-9221**
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