

# PCI-9114 Series

## 32-CH 16-Bit Up to 250 kS/s Multi-Function DAQ Cards

### Features

- Supports a 32-bit 5 V PCI bus
- 16-bit A/D resolution
- Up to 100 kS/s sampling rate (PCI-9114DG and PCI-9114HG)
- Up to 250 kS/s sampling rate (PCI-9114A-DG and PCI-9114A-HG)
- 32-CH single-ended or 16-CH differential analog inputs
- Bipolar or unipolar analog input ranges
- On-board 1 k-sample A/D FIFO
- Programmable gains:
  - x1, x2, x4, x8 (PCI-9114DG and PCI-9114A-DG)
  - x1, x10, x100 (PCI-9114HG and PCI-9114A-HG)
- Automatic analog inputs scanning
- 16-CH isolated digital inputs and 16-CH isolated digital outputs
- 2500 VRMS optical isolation for digital inputs and outputs
- 1-CH 16-bit general purpose timer/counter
- +12 V and -12 V power available on the 37-pin D-sub connector
- On-board resettable fuses for power output protection
- Compact, half-size PCB
- **Operating Systems**
  - Windows 98/NT/2000/XP/2003
  - Linux
  - DOS
- **Recommended Software**
  - VB/VC++/BCB/Delphi
  - DAQBench
  - DAQCreator
- **Drivers Support**
  - DAQ-LVIEW PnP for LabVIEW
  - DAQ-MTLB for MATLAB
  - DAQBOY for Windows
  - PCIS-DASK for Windows
  - PCIS-DASK/X for Linux



### Introduction

ADLINK PCI-9114 series are 32-CH, 16-bit, high resolution multi-function DAQ Cards. The PCI-9114 device features flexible configurations on analog input. The devices are divided into 2 kinds: normal gain version and high gain version. Both versions provide 4 programmable input ranges for bipolar and unipolar inputs. The A/D on the PCI-9114DG/HG device features a sampling rate of 100 kS/s with resolution at 16 bits, while PCI-9114A-DG/HG device features a sampling rate of up to 250kS/s with resolution at 16 bits. The device supports automatic analog input scanning, and offers a differential mode for 8-CH analog inputs and maximum noise elimination, as well as single-ended modes for 16-CH analog inputs.

The PCI-9114 also features 1-CH 16-bit general purpose timer/counter, 16-CH TTL isolated digital inputs and 16-CH TTL isolated digital outputs. ADLINK PCI-9114 delivers cost-effective and reliable data acquisition capabilities and is ideal for a broad variety of applications.

### Specifications

#### Analog Input

- Number of channels: 32 single-ended or 16 differential
- Resolution: 16 bits
- Conversion time:
  - 10  $\mu$ s (PCI-9114DG & PCI-9114HG)
  - 4  $\mu$ s (PCI-9114A-DG & PCI-9114A-HG)
- Maximum sampling rate

Device	Sampling rate
PCI-9114DG PCI-9114HG	100 kS/s
PCI-9114A-DG PCI-9114A-HG	250 kS/s

- Input signal ranges (software programmable)

Device	Gain	Input Range
PCI-9114DG PCI-9114A-DG	1	$\pm 10$ V
	2	$\pm 5$ V
	4	$\pm 2.5$ V
	8	1.25 V
PCI-9114HG PCI-9114A-HG	1	$\pm 10$ V
	10	1 V
	100	$\pm 0.1$ V

- Accuracy

Device	Gain	Input Range
PCI-9114DG	1	0.01 % of FSR $\pm$ 1 LSB
PCI-9114A-DG	2, 4	0.02 % of FSR $\pm$ 1 LSB
	8	0.04 % of FSR $\pm$ 1 LSB
PCI-9114HG	1, 10	0.01 % of FSR $\pm$ 1 LSB
PCI-9114A-HG	100	0.02 % of FSR $\pm$ 1 LSB

- Input coupling: DC
- Overvoltage protection: continuous  $\pm 35$  V
- Input impedance: 1 G $\Omega$
- Trigger modes: software, pacer, and external trigger (5 V/TTL compatible)
- FIFO buffer size: 1 k samples
- Data transfers: polling, interrupt

#### Isolated Digital Input

- Number of channels: 16
- Maximum input range: 24 V, non-polarity
- Digital logic levels
  - 0 - 24 V, non-polarity
    - Input high voltage: 5 - 24 V
    - Input low voltage: 0 - 1.5 V
- Input resistance: 2.4 K $\Omega$  @ 0.5 V
- Isolation voltage: 2500 VRMS
- Data transfers: programmed I/O

#### Isolated Digital Output

- Number of channels: 16
- Output type: open emitter Darlington transistors
- Sink current
  - 350 mA for one channel @ 100% duty
  - 260 mA for all channels @ 10% duty
- Power dissipation: Max. 1.47 W per chip (8 DO channels)
- Supply voltage: 5-35 V
- Isolation voltage: 2500 VRMS
- Data transfers: programmed I/O
- **Power Output**
  - Output voltage: +12 V and -12 V
  - Resettable fuse protection: 500 mA

#### General-Purpose Timer/Counter

- Number of channels: 1
- Resolution: 16 bits
- Compatibility: 5 V/TTL
- Base clock available: 2 MHz, external clock to 2MHz

#### General Specifications

- I/O connector
  - 37-pin D-sub female
  - 20-pin ribbon male x 2
- Operating temperature: 0 to 55°C
- Storage temperature: -20 to 80°C
- Relative humidity: 5 to 95 %, noncondensing
- Power requirements

	+5V	+12V
	600 mA typical	100 mA typical

- Dimensions (not including connectors)  
175 mm x 107 mm

### Termination Boards

- **DIN-37D**  
Termination Board with a 37-pin D-sub Connector and DIN-Rail Mounting (Including One 1-meter ACL-10137 Cable)
- **DIN-20P**  
Termination Board with a 20-pin Ribbon Connector and DIN-Rail Mounting (Including One 1-meter ACL-10120 Cable)
- **ACLD-9137**  
General-Purpose Termination Board with a 37-pin D-sub Male Connector
- **ACLD-9188**  
General-Purpose Termination Board with Two 20-pin Ribbon Connectors and One 37-pin D-sub Connector (Including Two 1-meter ACL-10120 Cables)

### Pin Assignment

CN1		
+12Vout	1	20 GND
-12Vout	2	21 (AIL15) AI31
AI15 (AIH15)	3	22 (AIL14) AI30
AI14 (AIH14)	4	23 (AIL13) AI29
AI13 (AIH13)	5	24 (AIL12) AI28
AI12 (AIH12)	6	25 (AIL11) AI27
AI11 (AIH11)	7	26 (AIL10) AI26
AI10 (AIH10)	8	27 (AIL9) AI25
AI9 (AIH9)	9	28 (AIL8) AI24
AI8 (AIH8)	10	29 AGND
	11	30 (AIL7) AI23
AI7 (AIH7)	12	31 (AIL6) AI22
AI6 (AIH6)	13	32 (AIL5) AI21
AI5 (AIH5)	14	33 (AIL4) AI20
AI4 (AIH4)	15	34 (AIL3) AI19
AI3 (AIH3)	16	35 (AIL2) AI18
AI2 (AIH2)	17	36 (AIL1) AI17
AI1 (AIH1)	18	37 (AIL0) AI16
AI0 (AIH0)	19	

CN2			CN3		
DI_0	1	2 DI_8	DO_0	1	2 DO_8
DI_1	3	4 DI_9	DO_1	3	4 DO_9
DI_2	5	6 DI_10	DO_2	5	6 DO_10
DI_3	7	8 DI_11	DO_3	7	8 DO_11
DI_4	9	10 DI_12	DO_4	9	10 DO_12
DI_5	11	12 DI_13	DO_5	11	12 DO_13
DI_6	13	14 DI_14	DO_6	13	14 DO_14
DI_7	15	16 DI_15	DO_7	15	16 DO_15
EICOM1	17	18 EICOM3	EOGND	17	18 EOGND
EICOM2	19	20 EICOM4	VDD	19	20 VDD

### Ordering Information

- **PCI-9114DG**  
32-CH 16-bit 100 kS/s Normal Gain Multi-Function DAQ Card
- **PCI-9114HG**  
32-CH 16-bit 100 kS/s High Gain Multi-Function DAQ Card
- **PCI-9114A-DG**  
32-CH 16-bit 250 kS/s Normal Gain Multi-Function DAQ Card
- **PCI-9114A-HG**  
32-CH 16-bit 250 kS/s High Gain Multi-Function DAQ Card

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