

# PCI-9111 Series

## 16-CH 12/16-Bit 100 kS/s Low-Cost Multi-Function DAQ Cards



### Introduction

ADLINK's PCI-9111 series are 16-CH, 100 kS/s low-cost multi-function DAQ cards that feature flexible analog input configurations. An RC filter is implemented on each A/D input channel to allow attenuation or filtering of the input signals. The PCI-9111 series provide analog inputs with 5 programmable input ranges for bipolar inputs. The PCI-9111 series also support automatic analog input scanning. The PCI-9111DG provides 12-bit A/D resolution while the PCI-9111HR provides 16-bit A/D resolution.

The PCI-9111 series also feature 1-CH 12-bit analog output, 16-CH TTL digital inputs and 16-CH TTL digital outputs. ADLINK's PCI-9111 series delivers cost-effective and reliable data acquisition capabilities, and is ideal for a broad variety of applications.

### Features

- Supports a 32-bit 5 V PCI bus
- 12-bit A/D resolution (PCI-9111DG)
- 16-bit A/D resolution (PCI-9111HR)
- 16-CH single-ended analog inputs
- Up to 100 kS/s sampling rate
- Onboard 1 k-sample A/D FIFO
- Programmable gains of x1, x2, x4, x8, x16
- Bipolar analog input ranges
- Onboard low-pass filtering capability for analog inputs
- Automatic analog inputs scanning
- One 12-bit multiplying analog outputs
- 16-CH TTL digital inputs and 16-CH TTL digital outputs
- 4-CH TTL extended digital inputs and 4-CH TTL extended digital outputs
- Compact, half-size PCB
- Operating Systems
  - Windows Vista/XP/2000/2003
  - Linux
- Recommended Software
  - AD-Logger
  - VB.NET/VC.NET/VB/VC++/BCB/Delphi
  - DAQBench
- Driver Support
  - DAQPilot for Windows
  - DAQPilot for LabVIEW™
  - DAQ-MTLB for MATLAB®
  - PCIS-DASK for Windows
  - PCIS-DASK/X for Linux

### Specifications

#### Analog Input

- Number of channels: 16 single-ended
- Resolution
  - 12 bits (PCI-9111DG)
  - 16 bits (PCI-9111HR)
- Conversion time: 8  $\mu$ s
- Maximum sampling rate: 100 kS/s
- Input signal ranges (software programmable)

Gain	Input Range
	Bipolar
1	$\pm 10$ V
2	$\pm 5$ V
4	$\pm 2.5$ V
8	$\pm 1.25$ V
16	$\pm 0.625$ V

#### Accuracy

Gain	Accuracy
1, 2	0.01 % of FSR $\pm$ 1 LSB
4, 8	0.02 % of FSR $\pm$ 1 LSB
16	0.04 % of FSR $\pm$ 1 LSB

- Input coupling: DC
- Overvoltage protection: continuous  $\pm 35$  V
- Input impedance: 10 M $\Omega$
- Trigger modes: software, pacer, and external trigger (5 V/TTL compatible)
- FIFO buffer size: 1 k samples
- Data transfers: polling, interrupt

#### Analog Output

- Number of channels: 1 voltage output (NO s)
- Resolution: 12 bits
- Output ranges (jumper selectable)

Output Range	
Bipolar	$\pm 10$ V
Unipolar	0 to 10 V

- Output driving capacity:  $\pm 5$  mA max
- Settling time: 30  $\mu$ s
- Data transfers: programmed I/O

#### Digital I/O

- Number of channels: 16 inputs and 16 outputs
- Compatibility: 5 V/TTL
- Data transfers: programmed I/O

#### General Specifications

- I/O connector
  - 37-pin D-sub female
  - 20-pin ribbon male x 2
- Operating temperature: 0°C to 60 °C
- Storage temperature: -20°C to 80 °C
- Relative humidity: 5% to 95%, non-condensing
- Power requirements

Device	+5 V
PCI-9111DG	570 mA typical
PCI-9111HR	570 mA typical

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

### Terminal Boards

- DIN-37D-01\*  
Terminal Board with One 37-pin D-sub Connector and DIN-Rail Mounting
- DIN-20P-01\*  
Terminal Board with One 20-pin Ribbon Connector and DIN-Rail Mounting
- ACLD-9137-01  
General-Purpose Terminal Board with One 37-pin D-sub Male Connector
- ACLD-9188-01\*  
General-Purpose Terminal Board with Two 20-pin Ribbon Connectors and One 37-pin D-sub Connector
- ACLD-9182A-01\*  
Terminal Board with 16-CH Isolated Digital Inputs
- ACLD-9185-01\*  
Terminal Board with 16-CH Relay Outputs

\* Cables are not included. For information on mating cables, refer to Section 12, Accessories.

### Ordering Information

- PCI-9111DG  
16-CH 12-Bit 100 kS/s Low-Cost Multi-Function DAQ Card
- PCI-9111HR  
16-CH 16-Bit 100 kS/s Low-Cost Multi-Function DAQ Card

### Pin Assignment

CN3			CN1				
A10	1	20	A18	D10	1	2	D11
A11	2	21	A19	D12	3	4	D13
A12	3	22	A110	D14	5	6	D15
A13	4	23	A111	D16	7	8	D17
A14	5	24	A112	D18	9	10	D19
A15	6	25	A113	D110	11	12	D111
A16	7	26	A114	D112	13	14	D113
A17	8	27	A115	D114	15	16	D115
A.GND	9	28	A.GND	GND	17	18	GND
A.GND	10	29	A.GND	+5Vout	19	20	+12Vout
N/C	11	30	DA Out				
PreTrg	12	31	ED10				
+12Vout	13	32	ED11	DO0	1	2	DO1
D.GND	14	33	ED12	DO2	3	4	DO3
D.GND	15	34	ED13	DO4	5	6	DO5
ExtTrg	16	35	EDO0	DO6	7	8	DO7
EDO1	17	36	EDO2	DO8	9	10	DO9
EDO3	18	37	N/C	DO10	11	12	DO11
+5Vout	19			DO12	13	14	DO13
				DO14	15	16	DO15
				GND	17	18	GND
				+5Vout	19	20	+12Vout