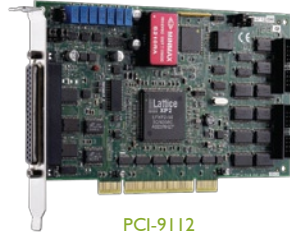


# cPCI/PCI/LPCI-9112

16-CH 12-Bit 110 kS/s Multi-Function DAQ Card / Low-Profile DAQ Card



cPCI-9112



PCI-9112



LPCI-9112

## Features

- Supports a 3.3 V or 5 V PCI bus (PCI/LPCI-9112)
- 3U Eurocard form factor, CompactPCI compliant (PICMG 2.0 R2.1) (cPCI-9112)
- 12-bit A/D resolution
- Up to 110 kS/s sampling rate
- 16-CH single-ended or 8-CH differential inputs
- Bipolar or unipolar analog input ranges
- Programmable gains of x0.5, x1, x2, x4, x8
- Automatic analog inputs scanning
- Bus-mastering DMA for analog inputs
- 2-CH 12-bit multiplying analog outputs
- 16-CH TTL digital inputs and 16-CH TTL digital outputs
- 1-CH 16-bit general-purpose timer/counter
- Compact, half-size PCB (PCI-9112)
- Compact, low-profile PCI size PCB (LPCI-9112)
- Rear I/O available on cPCI-9112R

### Operating Systems

- Windows 7/Vista/XP/2000/2003 Server
- Linux
- Windows CE (call for availability)

### 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

## Introduction

ADLINK's cPCI/PCI/LPCI-9112 are 16-CH, 12-bit, 110 kS/s multi-function DAQ cards. The cPCI/PCI/LPCI-9112 devices features flexible configurations on analog inputs. They provides analog inputs with 4 programmable input ranges for both bipolar and unipolar inputs. The A/D on the cPCI/PCI/LPCI-9112 features a sampling rate up to 110 kS/s with resolution at 12 bits. These devices support 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 cPCI/PCI/LPCI-9112 also feature 2-CH 12-bit analog outputs, 1-CH 16-bit general-purpose timer/counter, 16-CH TTL digital inputs, and 16-CH TTL digital outputs. The LPCI-9112 is the MD1 size, low-profile version of PCI-9112. The low-profile PCI card is especially suitable for the applications which have a space restriction on the size of peripheral cards.

The cPCI-9112R allows I/O connectivity to be routed through the backplane via J2/P2 allowing a rear I/O transition module to be inserted, which is capable of efficient trouble-shooting and maintenance.

## Specifications

### Analog Input

- Number of channels: 16 single-ended or 8 differential
- Resolution: 12 bits
- Conversion time: 8  $\mu$ s
- Maximum sampling rate: 110 kS/s
- Input signal ranges

Gain	Input Range	
	Bipolar	Unipolar
0.5	$\pm 10$ V	-
1	$\pm 5$ V	0 to 10 V
2	$\pm 2.5$ V	0 to 5 V
4	$\pm 1.25$ V	0 to 2.5 V
8	$\pm 0.625$ V	0 to 1.25 V

### Accuracy

Gain	Accuracy
0.5, 1	0.01% of FSR $\pm$ 1 LSB
2, 4	0.02% of FSR $\pm$ 1 LSB
8	0.04% of FSR $\pm$ 1 LSB

- Input coupling: DC
- Overvoltage protection: continuous  $\pm 35$  V
- Input impedance: 1 G $\Omega$
- Trigger modes: software
- Data transfers: programmed I/O, interrupt, bus-mastering DMA

### Analog Output

- Number of channels: 2 voltage outputs
- Resolution: 12 bits
- Output ranges (software programmable)

Output Range	
Unipolar	0 to 10 V, 0 to 5 V, 0 to EXTREF

- Output driving capacity:  $\pm 5$  mA max
- Settling time: 30  $\mu$ s to 0.5 LSB
- 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-Purpose Timer/Counter

- Number of channels: 1
- Resolution: 16 bits
- Compatibility: 5 V/TTL
- Base clock available: 2 MHz, external clock to 10 MHz

### General Specifications

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

	+5 V	+12 V
cPCI-9112(R)	600 mA typical	20 mA typical
PCI-9112	460 mA typical	110 mA typical
LPCI-9112	500 mA typical	110 mA typical

- Dimensions (not including connectors)
  - 160 mm x 100 mm (cPCI-9112/9112R)
  - 175 mm x 107 mm (PCI-9112)
  - 120 mm x 65 mm (LPCI-9112)

## Terminal Boards & Cables

### For PCI-9112:

- **DIN-37D-01\***  
Terminal Board with One 37-pin D-sub Connector and DIN-Rail Mounting Section 12.)
- **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-9138-01\***  
General-Purpose Terminal Board with One 37-pin D-sub 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 Isolated Digital Inputs

### For LPCI-9112:

- **DIN-68S-01\***  
Terminal Board with One 68-pin SCSI-II Connector and DIN-Rail Mounting

### For cPCI-9112:

- **DIN-100S-01**  
Terminal Board with One 100-pin SCSI-II Connector and DIN-Rail Mounting

\* Cables are not included. For information on mating cables, refer to P2-59/60.

## Ordering Information

- **PCI-9112**  
16-CH 12-Bit 110 kS/s Multi-Function DAQ Card
- **LPCI-9112**  
16-CH 12-Bit 110 kS/s Multi-Function Low-Profile DAQ Card
- **cPCI-9112**  
16-CH 12-Bit 110 kS/s Multi-Function DAQ Module
- **cPCI-9112R**  
16-CH 12-Bit 110 kS/s Multi-Function DAQ Module with rear I/O

## Pin Assignment

LPCI-9112	PCI-9112	cPCI-9112, cPCI-9112R
DOUT0 1 35 DIN0	<b>CN3: Analog Input /Output &amp; Counter/Timer</b>	DOUT_0 1 51 GND
DOUT1 2 36 DIN1	A10 (AIH0) 1 20 (AIL0) A18	DOUT_1 2 52 GND
DOUT2 3 37 DIN2	A11 (AIH1) 2 21 (AIL1) A19	DOUT_2 3 53 GND
DOUT3 4 38 DIN3	A12 (AIH2) 3 22 (AIL2) A110	DOUT_3 4 54 GND
DOUT4 5 39 DIN4	A13 (AIH3) 4 23 (AIL3) A111	DOUT_4 5 55 GND
DOUT5 6 40 DIN5	A14 (AIH4) 5 24 (AIL4) A112	DOUT_5 6 56 GND
DOUT6 7 41 DIN6	A15 (AIH5) 6 25 (AIL5) A113	DOUT_6 7 57 GND
DOUT7 8 42 DIN7	A16 (AIH6) 7 26 (AIL6) A114	DOUT_7 8 58 GND
DOUT8 9 43 DIN8	A17 (AIH7) 8 27 (AIL7) A115	DOUT_8 9 59 GND
DOUT9 10 44 DIN9	AGND 9 28 AGND	DOUT_9 10 60 GND
DOUT10 11 45 DIN10	AGND 10 29 AGND	DOUT_10 11 61 GND
DOUT11 12 46 DIN11	AGND 10 29 AGND	DOUT_11 12 62 GND
DOUT12 13 47 DIN12	V.REF 11 30 AO1	DOUT_12 13 63 GND
DOUT13 14 48 DIN13	ExtVref2 12 31 ExtVref1	DOUT_13 14 64 GND
DOUT14 15 49 DIN14	+12Vout 13 32 AO2	DOUT_14 15 65 +5Vout
DOUT15 16 50 DIN15	AGND 14 33 GATE0	DOUT_15 16 66 +5Vout
FCOUT0 17 51 EXTCLK	D.GND 15 34 GATE	DIN_0 17 67 GND
EXTTRG 18 52 GATE0	Cout0 16 35 Cout1	DIN_1 18 68 GND
FCOUT1 19 53 GATE	ExtTrg 17 36 N/C	DIN_2 19 69 GND
+12V 20 54 SGND	N/C 18 37 EXTCLK	DIN_3 20 70 GND
VCC 21 55 SGND	+5Vout 19 20	DIN_4 21 71 GND
AGND 22 56 AGND		DIN_5 22 72 GND
VREF 23 57 EXTVREF1		DIN_6 23 73 GND
EXTVREF2 24 58 DAOUT0	<b>CN1: Digital Input</b>	DIN_7 24 74 GND
AGND 25 59 DAOUT1	DI0 1 2 DI1	DIN_8 25 75 GND
AGND 26 60 AGND	DI2 3 4 DI3	DIN_9 26 76 GND
AIN0 27 61 AIN8	DI4 5 6 DI5	DIN_10 27 77 GND
AIN1 28 62 AIN9	DI6 7 8 DI7	DIN_11 28 78 GND
AIN2 29 63 AIN10	DI8 9 10 DI9	DIN_12 29 79 GND
AIN3 30 64 AIN11	DI10 11 12 DI11	DIN_13 30 80 GND
AIN4 31 65 AIN12	DI12 13 14 DI13	DIN_14 31 81 +5Vout
AIN5 32 66 AIN13	DI14 15 16 DI15	DIN_15 32 82 +5Vout
AIN6 33 67 AIN14	GND 17 18 GND	EXTCLK 33 83 GND
AIN7 34 68 AIN15	+5Vout 19 20 +12Vout	EXTTRG 34 84 GND
		COU0 35 85 COU1
		GATE0 36 86 GATE
		+12Vout 37 87 AGND
		ExtVref2 38 88 AGND
		ExtVref1 39 89 AGND
		REFout 40 90 AGND
		DA2 41 91 AGND
		DA1 42 92 AGND
		A17 (AIH7) 43 93 A115 (AIL7)
		A16 (AIH6) 44 94 A114 (AIL6)
		A15 (AIH5) 45 95 A113 (AIL5)
		A14 (AIH4) 46 96 A112 (AIL4)
		A13 (AIH3) 47 97 A111 (AIL3)
		A12 (AIH2) 48 98 A110 (AIL2)
		A11 (AIH1) 49 99 A19 (AIL1)
		A10 (AIH0) 50 100 A18 (AIL0)



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