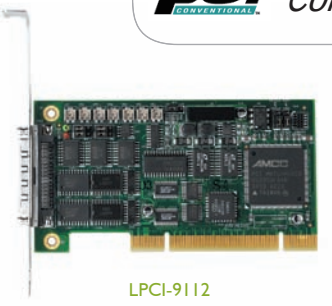
cPCI/PCI/LPCI-9112

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

PCI CONVENTIONAL CompactPCI


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 Vista/XP/2000/2003
- 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 μs
- Maximum sampling rate: 110 kS/s
- Input signal ranges

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

- Accuracy

Gain	Accuracy
0.5, 1	0.01 % of FSR ± 1 LSB
2, 4	0.02 % of FSR ± 1 LSB
8	0.04 % of FSR ± 1 LSB

- Input coupling: DC
- Overvoltage protection: continuous ±35 V
- Input impedance: 1 GΩ
- 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: ±5 mA max
- Settling time: 30 μs 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

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 Section 12, Accessories.**

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

DOUT0	1	35	DIN0
DOUT1	2	36	DIN1
DOUT2	3	37	DIN2
DOUT3	4	38	DIN3
DOUT4	5	39	DIN4
DOUT5	6	40	DIN5
DOUT6	7	41	DIN6
DOUT7	8	42	DIN7
DOUT8	9	43	DIN8
DOUT9	10	44	DIN9
DOUT10	11	45	DIN10
DOUT11	12	46	DIN11
DOUT12	13	47	DIN12
DOUT13	14	48	DIN13
DOUT14	15	49	DIN14
DOUT15	16	50	DIN15
FCOUT0	17	51	EXTCLK
EXTTRG	18	52	GATE0
FCOUT1	19	53	GATE
+12V	20	54	SGND
VCC	21	55	SGND
AGND	22	56	AGND
VREF	23	57	EXTVREF1
EXTVREF2	24	58	DAOUT0
AGND	25	59	DAOUT1
AGND	26	60	AGND
AIN0	27	61	AIN8
AIN1	28	62	AIN9
AIN2	29	63	AIN10
AIN3	30	64	AIN11
AIN4	31	65	AIN12
AIN5	32	66	AIN13
AIN6	33	67	AIN14
AIN7	34	68	AIN15

PCI-9112

CN3: Analog Input /Output & Counter/Timer

AI0 (AIH0)	1	20	(AIL0) AI8
AI1 (AIH1)	2	21	(AIL1) AI9
AI2 (AIH2)	3	22	(AIL2) AI10
AI3 (AIH3)	4	23	(AIL3) AI11
AI4 (AIH4)	5	24	(AIL4) AI12
AI5 (AIH5)	6	25	(AIL5) AI13
AI6 (AIH6)	7	26	(AIL6) AI14
AI7 (AIH7)	8	27	(AIL7) AI15
AGND	9	28	AGND
AGND	10	29	AGND
V.REF	11	30	AO1
ExtVref2	12	31	ExtVref1
+12Vout	13	32	AO2
AGND	14	33	GATE0
D.GND	15	34	GATE
Cout0	16	35	Cout1
ExtTrg	17	36	N/C
N/C	18	37	EXTCLK
+5Vout	19		

CN1: Digital Input

DI0	1	2	DI1
DI2	3	4	DI3
DI4	5	6	DI5
DI6	7	8	DI7
DI8	9	10	DI9
DI10	11	12	DI11
DI12	13	14	DI13
DI14	15	16	DI15
GND	17	18	GND
+5Vout	19	20	+12Vout

CN2: Digital Output

DO0	1	2	DO1
DO2	3	4	DO3
DO4	5	6	DO5
DO6	7	8	DO7
DO8	9	10	DO9
DO10	11	12	DO11
DO12	13	14	DO13
DO14	15	16	DO15
GND	17	18	GND
+5Vout	19	20	+12Vout

cPCI-9112, cPCI-9112R

DOUT_0	1	51	GND
DOUT_1	2	52	GND
DOUT_2	3	53	GND
DOUT_3	4	54	GND
DOUT_4	5	55	GND
DOUT_5	6	56	GND
DOUT_6	7	57	GND
DOUT_7	8	58	GND
DOUT_8	9	59	GND
DOUT_9	10	60	GND
DOUT_10	11	61	GND
DOUT_11	12	62	GND
DOUT_12	13	63	GND
DOUT_13	14	64	GND
DOUT_14	15	65	+5Vout
DOUT_15	16	66	+5Vout
DIN_0	17	67	GND
DIN_1	18	68	GND
DIN_2	19	69	GND
DIN_3	20	70	GND
DIN_4	21	71	GND
DIN_5	22	72	GND
DIN_6	23	73	GND
DIN_7	24	74	GND
DIN_8	25	75	GND
DIN_9	26	76	GND
DIN_10	27	77	GND
DIN_11	28	78	GND
DIN_12	29	79	GND
DIN_13	30	80	GND
DIN_14	31	81	+5Vout
DIN_15	32	82	+5Vout
EXTCLK	33	83	GND
EXTTRG	34	84	GND
COUT0	35	85	COUT1
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
AI7 (AIH7)	43	93	AI15 (AIL7)
AI6 (AIH6)	44	94	AI14 (AIL6)
AI5 (AIH5)	45	95	AI13 (AIL5)
AI4 (AIH4)	46	96	AI12 (AIL4)
AI3 (AIH3)	47	97	AI11 (AIL3)
AI2 (AIH2)	48	98	AI10 (AIL2)
AI1 (AIH1)	49	99	AI9 (AIL1)
AI0 (AIH0)	50	100	AI8 (AIL0)