cPCI/PCI-9112

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

CompactPCI

cPCI-9112

PCI-9112

Introduction

ADLINK's cPCI/PCI-9112 are 16-CH, 12-bit, 110 kS/s multi-function DAQ cards. The cPCI/PCI-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-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-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.

Features

- **Supports a 3.3 V or 5 V PCI bus (PCI-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**

Operating Systems

- Windows 7/Vista/XP/2000/2003 Server
- Linux

Recommended Software

- AD-Logger
- VB.NET/VC.NET/VB/VC++/BCB/Delphi
- DAQBench

Driver Support

- 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 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

Calibration

- PCI-9112 : Calibrate Analog Output on 5V
- PCI-9112A : Calibrate Analog Output on 10V

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	600 mA typical	20 mA typical
PCI-9112A	460 mA typical	110 mA typical

- Dimensions (not including connectors)
  - 160 mm x 100 mm (cPCI-9112)
  - 175 mm x 107 mm (PCI-9112)

Terminal Boards & Cables

For PCI-9112:

- 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-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
- ACL-10137-1MM
  37-pin D-sub male/male cable, 1 M
- ACL-10137-1MF
  37-pin D-sub male/female cable, 1 M
- ACL-10120-1
  20-pin flat cable, 1 M
- ACL-10237-1
  37-pin D-sub male/male flat cable, 1 M

For cPCI-9112:

- DIN-100S-01
  Terminal Board with One 100-pin SCSI-II Connector and DIN-Rail Mounting
- ACL-102100-1
  100-pin SCSI-II cable (mating with AMP-787082-9), 1 M

* For more information on mating cables, please refer to P2-61/62.

Ordering Information

- **PCI-9112**
  16-CH 12-Bit 110 kS/s Multi-Function DAQ Card (AO Calibrated on 5V)
- **PCI-9112A**
  16-CH 12-Bit 110kS/s Multi Function DAQ Card (AO Calibrated on 10V)
- **cPCI-9112**
  16-CH 12-Bit 110 kS/s Multi-Function DAQ Card

Pin Assignment

PCI-9112/PCI-9112A

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

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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)