

ACL-8112 Series

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

Features

- 12-bit A/D resolution
 - Up to 100 kS/s sampling rate
 - 16-CH single-ended or 8-CH differential inputs
 - Bipolar or unipolar analog input ranges
 - Programmable gains
 - x0.5, x1, x2, x4, x8 (ACL-8112DG)
 - x0.5, x1, x5, x10, x50, x100, x500 (ACL-8112HG)
 - x1, x2, x4, x8, x16 (ACL-8112PG)
 - Automatic analog input scanning
 - 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-sized PCB
- **Operating Systems**
 - Windows 2000/NT/XP/9x
 - DOS
 - **Recommended Software**
 - VB/VC++/BCB/Delphi
 - Turbo C/Borland C
 - **Drivers Support**
 - ACLS-LVIEW
 - ACLS-DLL1/DLL2
 - DOS library



Introduction

ADLINK ACL-8112 is a high performance, high speed multi-function data acquisition card for IBM PC or compatible computers. The ACL-8112 series is designed to combine all data acquisition functions, such as A/D, D/A, DIO and timer/counter into a single board. The high-end specifications of the card makes it ideal for a wide range of applications requiring high speed. The ACL-8112HG provides special high-gain programmable instrument amplifier for low level input applications, such as measurement of thermo-coupling signals. The ACL-8112 devices all provide high speed sampling rate up to 100 kS/s at all gains. The ACL-8112PG features 16 single-ended inputs and bipolar inputs, while the ACL-8112DG and ACL-8112HG feature 16 single-ended or 8 differential inputs. All ACL-8112 devices also feature 2 12-bit double-buffered analog outputs, 16 digital inputs and 16 digital outputs, and one general purpose timer/counter.

Specifications

Analog Input

- Number of channels: 16 single-ended or 8 differential
- Resolution: 12 bits
- Conversion time: 10 μ s
- Maximum sampling rate: 100 kS/s
- Input signal ranges (software programmable)

Device	Gain	Input Range	
		Bipolar	Unipolar
ACL-8112DG	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
ACL-8112HG	0.5	± 10 V	--
	1	± 5 V	0 to 10 V
	5	± 1 V	0 to 1 V
	10	± 500 mV	0 to 0.1 V
	50	± 100 mV	0 to 0.01 V
	100	± 50 mV	--
	500	± 10 mV	--
	1000	± 5 mV	--
ACL-8112PG	1	± 10 V	--
	2	± 5 V	--
	4	± 2.5 V	--
	8	± 1.25 V	--
	16	± 0.625 V	--

Accuracy

Device	Gain	Accuracy
ACL-8112DG	1	0.01% of FSR ± 1 LSB
	2, 4	0.02% of FSR ± 1 LSB
	8, 16	0.04% of FSR ± 1 LSB
ACL-8112HG	0.5, 1	0.01% of FSR ± 1 LSB
	5, 10	0.02% of FSR ± 1 LSB
	50, 100	0.04% of FSR ± 1 LSB
	500, 1000	0.04% of FSR ± 1 LSB
ACL-8112PG	1	0.01% of FSR ± 1 LSB
	2, 4	0.02% of FSR ± 1 LSB
	8, 16	0.04% of FSR ± 1 LSB

- Input coupling: DC
- Overvoltage protection: continuous ± 35 V
- Input impedance: 1 G Ω
- Trigger modes: software, pacer, and external trigger (5 V/TTL compatible)
- Data transfers: polling, interrupt, DMA

Analog Output

- Number of channels: 2 voltage outputs
- Resolution: 12 bits
- Output ranges

Output ranges	
Bipolar	± 10 V, ± 5 V, \pm EXTREF
Unipolar	0 to 10 V, 0 to 5 V, 0 to EXTREF

- Output driving capacity: 0.8 mA max
- Settling time: 30 μ 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-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
 - 20-pin ribbon male x 2
- Operating temperature: 0 to 55 $^{\circ}$ C
- Storage temperature: -20 to 80 $^{\circ}$ C
- Relative humidity: 5 to 95%, noncondensing
- Power requirements

Device	+5 V	+12 V
ACL-8112DG	430 mA typical	150 mA typical
ACL-8112HG	450 mA typical	150 mA typical
ACL-8112PG	430 mA typical	150 mA typical

- Dimensions (not including connectors)
 - 163 mm x 115 mm (ACL-8112DG and ACL-8112HG)
 - 163 mm x 123 mm (ACL-8112PG)

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-20D**
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-9138**
General-Purpose Termination Board with a 37-pin D-sub Connector (Including One 1-meter ACL-10237 Cable)
- **ACLD-9178**
General-Purpose Termination Board with Two 20-pin Ribbon Connectors (Including Two 1-meter ACL-10120 Cables)
- **ACLD-8125**
Termination Board with a 37-pin D-sub Connector and One Cold Junction Temperature Sensor (Including One 1-meter ACL-10137 Cable)
- **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)
- **ACLD-9182A**
Termination Board with 16-CH Isolated Digital Inputs (Including One 1-meter ACL-10120 Cable)
- **ACLD-9185**
Termination Board with 16-CH Relay Outputs (Including One 1-meter ACL-10120 Cable)

Pin Assignment

CN1: 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

CN2: 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

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
+12Vout	11	30	AO1
ExtRet2	12	31	ExtRef1
+12Vout	13	32	AO2
AGND	14	33	GATE0
DGND	15	34	GATE
COU0	16	35	N/C
ExtTrg	17	36	N/C
N/C	18	37	EXTCLK
+5Vout	19		

Ordering Information

- **ACL-8112HG**
16-CH 12-Bit 100 kS/s High Gain Multi-Function DAQ Card
- **ACL-8112DG**
16-CH 12-Bit 100 kS/s Normal Gain Multi-Function DAQ Card
- **ACL-8112PG**
16-CH 12-Bit 100 kS/s Multi-Function DAQ Card

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