

A-821PG

16-channel 12-bit 45KS/s multi-function board



A-821PGH



A-821PGL

Functional Description

The A-821PGH/L (H for high gain; L for low gain) are 12-bit multi-function analog and digital I/O boards for the PC/ AT compatible computer. The A-821PGH/A-821PGL offers 16-channel single-ended or 8-channel differential analog input, one channel analog output with 12-bit resolution, 16-channel digital input, 16-channel digital output. It has a maximum sampling rate of 45K samples/s.

Applications

- Laboratory automation
- Sensor interface
- Production test

Specifications

Analog Input

- Number of channels: 16 single-ended or 8 differential
- Resolution: 12-bit
- ADC conversion rate: 45KS/s max
- Input impedance: 10,000 M Ω || 6pF
- Over voltage protection: $\pm 35V$
- Accuracy: 0.01% of reading ± 1 bit
- Zero drift: $\pm 25ppm/^\circ C$ of F.S. max

PGL Input Range

Gain	Bipolar(V)	Sampling Rate(Max.)
1	$\pm 5V$	45KS/s
2	$\pm 2.5V$	45KS/s
4	$\pm 1.25V$	45KS/s
8	$\pm 0.625V$	45KS/s

Features

- 12-bit A/D converter
- 45KS/s sampling rate(Max.)
- 16 single-ended or 8 differential analog inputs
- A/D Trigger modes: Software Trigger, Pacer Trigger
- A/D data transfer modes: polling, interrupt
- Software programmable gain: 1, 10, 100, 1000 (A-821PGH); 1, 2, 4, 8 (A-821PGL)
- Bipolar analog input
- One 12-bit analog output channel
- Interrupt handling
- 16 digital inputs & 16 digital outputs

PGH Input Range

Gain	Bipolar(V)	Sampling Rate(Max.)
1	$\pm 5V$	45KS/s
10	$\pm 0.5V$	45KS/s
100	$\pm 0.05V$	10KS/s
1000	$\pm 0.005V$	1KS/s

Analog Output

- Number of channels: 1 independent
- Type: 12-bit double-buffered (AD-7948)
- Linearity: $\pm 1/2$ -bit
- Output range: 0~5V, 0~10V
- Output Driving: ± 5 mA
- Settling time: 0.6 μ s to 0.01% for full scale step

Digital I/O

- 16 TTL-level input
- Input low $V_{IL} = 0.8V$ max; $I_{IL} = -0.4$ mA max
- Input high $V_{IH} = 2.0V$ min; $I_{IH} = 20$ μ A max
- 16 TTL-level output
- Output low $V_{OL} = 0.5V$ max; @ $I_{OL} = 8$ mA max
- Output high $V_{OH} = 2.7V$ min; @ $I_{OH} = 0.4$ mA max

Counter/Timer

- Number of channels: 1
- Resolution: 16-bit
- Compatibility: 5V/TTL
- Internal clock: 2MHz
- External clock: up to 10 MHz
- A/D pacer: cascaded 32-bit counter
- Programmable internal timer: 0.0047Hz~0.5MNz

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Differential Input

Single-ended Input

Single-ended & Differential Input

The A82X series provides 16-channel single-ended or 8-channel differential analog input. Single-ended inputs are all referenced to a common ground point. They are typically used when the input signal are greater than 1 volt, the lead wires from the signal source to the analog input hardware are short (less than 5 meter), and all input signals share a common ground reference. If above criteria do not meet, you should use differential inputs.

The common-mode noise can be canceled, when the input is configured in differential mode.

General Specifications

- I/O connector: one 37-pin D-Sub female
two 20-pin ribbon male
- Power requirements:

Device	+5V	+12V	-12V
A-821PG	320 mA	60 mA	30 mA

- Operating temperature: 0 ~ 60°C
- Operating humidity: 0 ~ 90% non-condensing
- Storage temperature: -20 ~ 70°C
- Dimensions: 170 mm x 122 mm

Ordering Information

Standard

- A-821PGH:** 16-channel, 12-bit 45KS/s high gain multi-function board
- A-821PGH/S:** A-821PGH with DB-8225
- A-821PGL:** 16-channel, 12-bit 45KS/s low gain multi-function board
- A-821PGL/S:** A-821PGL with DB-8225
- A-821PGL/DNA:** A-821PGHL without D/A

Optional

- DB-8225:** Screw terminal board with CJC
- DB-889D:** 16-channel multiplexer and signal conditioning board
- DN-37:** 2x37-pin connector DIN-rail mounting terminal board
- DB-37:** 37-pin D-sub directly connector terminal board
- DN-20:** 2x20-pin header DIN-rail terminal board
- DB-16P:** 16-channel isolated D/I board
- DB-16R:** 16-channel relay board
- ADP-20/PCI:** 20-pin extender

Pin Assignment

CN1		
N.C.	37	19 +5V OUT
N.C.	36	18 N.C.
N.C.	35	17 N.C.
N.C.	34	16 N.C.
N.C.	33	15 N.C.
N.C.	32	14 A.GND
N.C.	31	13 +12V
D/A OUT	30	12 N.C.
A.GND	29	11 N.C.
A.GND	28	10 A.GND
AI15	27	09 A.GND
AI14	26	08 AI 7
AI13	25	07 AI 6
AI12	24	06 AI 5
AI11	23	05 AI 4
AI10	22	04 AI 3
AI 9	21	03 AI 2
AI 8	20	02 AI 1
		01 AI 0

CN2		
DI 0	1	2 DI 1
DI 2	3	4 DI 3
DI 4	5	6 DI 5
DI 6	7	8 DI 7
DI 8	9	10 DI 9
DI 10	11	12 DI 11
DI 12	13	14 DI 13
DI 14	15	16 DI 15
D.GND	17	18 D.GND
+5V	19	20 +12V

CN3		
DO 0	1	2 DO 1
DO 2	3	4 DO 3
DO 4	5	6 DO 5
DO 6	7	8 DO 7
DO 8	9	10 DO 9
DO 10	11	12 DO 11
DO 12	13	14 DO 13
DO 14	15	16 DO 15
D.GND	17	18 D.GND
+5V	19	20 +12V