

A-823PG/822PG

16-channel 12-bit 125KS/s multi-function boards



A-823PG



A-822PG

Functional Description

The A-823PGH/L and A-822PGH/L (H for high gain; L for low gain) are 12-bit multifunction analog and digital I/O boards for the PC/AT compatible computer. The A-823PG/A-822PG offers 16-channel single-ended or 8-channel differential analog inputs, plus two channels of analog output with 12-bit resolution. In addition, The A-823PG/A-822PG has 16-channel digital input, 16-channel digital output, and one channel timer/counter. Its sampling rate can reach 125K samples/second. The DMA operation is jumper-selectable for levels 1 or 3. Interrupts are jumper-selectable between 3 and 15. The A-823PG provides unipolar and bipolar D/A output, while the A-822PG provides only unipolar D/A output.

Applications

- Signal analysis
- Industrial automation
- Laboratory automation
- FFT & frequency analysis
- Transient analysis
- Production test
- Process control

Specifications

Analog Input

- Number of channels: 16 single-ended or 8 differential
- Resolution: 12-bit
- Conversion time: $8 \mu\text{s}$
- Maximum ADC conversion rate: 125KS/s
- Input impedance: $10,000 \text{ M}\Omega$ || 6 pF
- Over voltage protection: $\pm 35\text{V}$
- A/D converter: $\pm 1\text{LSB}$ max INL

Features

- 12-bit A/D converter
- 125 KS/s sampling rates(Max.)
- 16 single-ended or 8 differential analog inputs
- A/D Trigger modes: Software Trigger, Pacer Trigger, External Trigger and Event Trigger
- A/D data transfer modes: polling, interrupt, DMA
- Software programmable gain:
PGH: 0.5, 1, 5, 10, 50, 100, 500, 1000
PGL: 0.5, 1, 2, 4, 8
- Bipolar and unipolar analog input
- Two 12-bit D/A Voltage output channels
- 16 digital inputs & 16 digital outputs
- 1-channel general purpose programmable 16-bit counter/timer

- On chip sample & hold
- Accuracy: 0.01% of reading ± 1 bit
- Zero drift: $\pm 25\text{ppm}/^\circ\text{C}$ of FS max

PGH Input Range

Gain	Bipolar(V)	Unipolar(V)	Sampling Rate(Max.)
0.5	± 10	X	125KS/s
1	± 5	0~10	125KS/s
5	± 1	X	80KS/s
10	± 0.5	0~1	80KS/s
50	± 0.1	X	10KS/s
100	± 0.05	0~0.1	10KS/s
500	± 0.01	X	1KS/s
1000	± 0.005	0~0.01	1KS/s

PGL Input Range

Gain	Bipolar(V)	Unipolar(V)	Sampling Rate(Max.)
0.5	± 10	X	125KS/s
1	± 5	0~10	125KS/s
2	± 2.5	0~5	125KS/s
4	± 1.25	0~2.5	125KS/s
8	± 0.625	0~1.25	125KS/s

Digital I/O

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

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Analog Output

- Number of channels: 2 independent
- Type: 12-bit double buffered
- Linearity: 0.006% FS
- Output range:
 - Unipolar: 0~5V, 0~10V, 0~Ext Ref (A-822PG/823PG)
 - Bipolar: $\pm 5V$, $\pm 10V$, $\pm \text{Ext Ref}$ (A-823PG)
- External reference: +10V or -10V max
- Output Driving: ± 5 mA
- Settling time: 0.6 μ s to 0.01% for full scale step

Counter/Timer

- Number of channels: 1
- Resolution: 16-bit
- Compatibility: 5V/TTL
- Internal clock: 2MHz
- External clock: up to 10 MHz
- A/D Pacer: 16-bit counter (A-823PG)
cascaded 32-bit counter (A-822PG)
- Programmable internal timer:
 - 61Hz~1MHz (A-823PG)
 - 0.0047Hz~0.5MHz (A-822PG)

General Specifications

- I/O connector: one 37-pin D-Sub female
two 20-pin ribbon male
- Power requirements: +5V @ 960 mA max
- Operating temperature: 0 ~ 60°C
- Operating humidity: 0 ~ 90% non-condensing
- Storage temperature: -20 ~ 70°C
- Dimensions: 170 mm x 122 mm

Pin Assignment

CN1			
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

CN2			
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

CN3			
Ext Counter	37	○	19 +5V OUT
N.C.	36	○	18 N.C.
COUT1	35	○	17 Ext Trig
CGATE1	34	○	16 COUT0
CGATE0	33	○	15 D.GND
D/A OUT1	32	○	14 A.GND
D/A Ref 0	31	○	13 +12V OUT
D/A OUT0	30	○	12 D/A Ref 1
A.GND	29	○	11 int Ref Out
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

Ordering Information

Standard

- A-823PGH:** 16-channel 12-bit 125KS/s high gain multi-function board with 2x12-bit bipolar/unipolar analog output
- A-823PGH/S:** A-823PGH with DB-8225
- A-823PGL:** 16-channel 12-bit 125KS/s low gain multi-function board with 2x12-bit bipolar/unipolar analog output
- A-823PGL/S:** A-823PGL with DB-8225
- A-822PGH:** 16-channel 12-bit 125KS/s high gain multi-function board with 2x12-bit unipolar analog output
- A-822PGH/S:** A-822PGH with DB-8225
- A-822PGL:** 16-channel 12-bit 125KS/s low gain multi-function board with 2x12-bit unipolar analog output
- A-822PGL/S:** A-822PGL with DB-8225

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