

Multifunction data acquisition board, isolated, 16-bit



PA 3110

16 single-ended/8 diff. inputs, 16-bit

4/8 analog outputs, 12-bit

Optical isolation 500 V

Automatic analog acquisition

Simultaneous actualisation of the outputs

Reset to definite output level

100 kHz data transfer rate

Onboard FIFO, DMA access



LabWindows/CVI™



Features

Analog inputs

- 16 single-ended/8 differential or 8 single-ended/4 differential inputs
- Resolution: 16-bit
- Conversion time: 10 μ s
- Overvoltage protection ± 20 V
- Input range: 0-10 V, ± 10 V software programmable, 0-20 mA optional
- Low-pass filter and current inputs as option
- Gain: 1, 2, 5, 10, freely programmable through software for each channel
- 16-bit DMA access for analog data acquisition
- 3 timers:
timer 0 and timer 1 only for the analog acquisition,
timer 2 for the analog acquisition or as watchdog

Analog acquisition

- Acquisition of one single channel, several channels or several channels through scan list
- Automatic analog acquisition through cyclic timer control
- Acquisition through scan list: up to 16 entries with gain, channel, unipolar/bipolar
- Acquisition triggered through software, timer, external event
- Trigger functions:
 - software trigger or
 - external trigger: the analog acquisition (single or scan) is started through a signal switching from 0 to 24 V on digital input 0.
- Interrupt: end of single channel, end of multichannel, end of scan list

Analog outputs

- 4 or 8 analog outputs
- Resolution: 12-bit
- Reset to definite level
- Watchdog (Timer 2): the analog outputs are reset to "0" after watchdog overflow
- Setting time: typ. 6 μ s (0-10 V)
- Simultaneous actualisation of the outputs
- Output voltage range: 0-10 V, ± 10 V
- Output current typ. ± 5 mA
- Driver for high capacitive loads (500 pF)
- Each output has its own ground line

Safety features

- Optical isolation 500 V
- Noise neutralization of the PC voltage supply

- Creeping distance IEC 61010-1 (VDE411-1)

EMC tested acc. to 89/336/EEC

- IEC 61326: electrical equipment for measurement, control and laboratory use

Applications

- Industrial process control
- Industrial measurement
- Automatic test equipment
- Temperature monitoring and control
- Control of chemical processes
- Factory automation
- Acquisition of sensor data
- Laboratory equipment
- Current measurement

Software drivers

A CD-ROM with the following software and programming examples is supplied with the board.

Standard drivers for:

Windows 2000/NT/98/95, Windows 3.11, MS-DOS
Real-time drivers for 2000/NT/98/95

Drivers for the following application software:

LabVIEW 5.01

Samples for the following compilers:

Microsoft VC++ 5.0
Microsoft C 6.0
Borland C++ 5.01
Borland C 3.1
Visual Basic 5.0
Visual Basic 1.0
Delphi 4
Turbo Pascal 7.0

On request:

Diadem 6/7
LabWindows/CVI 5.01

Current driver list on the web: www.addi-data.com

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Specifications

Analog inputs

Number of inputs:	16 single-ended/8 differential or 8 single-ended/4 differential
Optical isolation:	500 V
Resolution:	16-bit
Input range:	0-10 V, ± 10 V adjustable for each channel through software; 0-20 mA optional
Conversion time:	10 μ s
Gain:	Programmable gain (x1, x2, x5, x10)
Overvoltage protection:	± 12 V at power-on
Common mode rejection:	DC at 60 Hz, 90 dB minimum
Relative precision (INL):	± 4 LSB
Diff. Non-linearity (DNL):	± 15 -bit
Input impedance (PGA):	$10^{12} \Omega$ / 10 nF single-ended, $10^{12} \Omega$ / 20 nF differential against GND
Conversion start:	through software or programmable timer
Interrupts:	IRQ 3, 5, 9 for XT, IRQ 10, 11, 12, 14, 15 for AT
DMA:	5, 6, 7
Timer configuration	
Timer 0:	0.7 μ s; smallest programmable value: 10 μ s
Timer 1:	70 μ s; smallest programmable value: 140 μ s
Timer 2:	70 μ s; smallest programmable value: 140 μ s

Analog outputs

Number of outputs:	4 or 8 analog outputs
Resolution:	12-bit
Output range:	0-10 V, ± 10 V
Setting time at 2 k Ω , 1000 pF:	from 6 to 10 μ s depending on voltage spikes and temperature range
Overvoltage protection:	± 12 V
Max. output current/load:	± 5 mA/500 pF, 2 k Ω
Short-circuit current:	± 25 mA
Integral non-linearity (INL):	$\pm 1/2$ LSB max. at 25 $^{\circ}$ C, ± 1 LSB through temperature range
Diff. non-linearity (DNL):	$\pm 1/2$ LSB max. at 25 $^{\circ}$ C, ± 1 LSB through temperature range

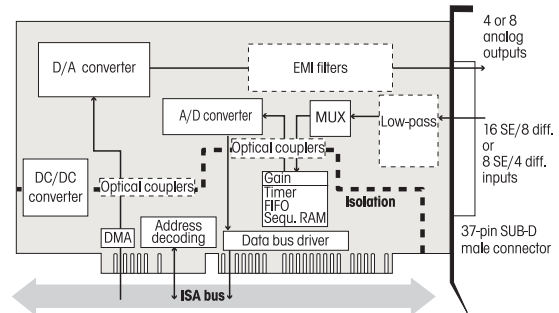
Noise immunity

Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 2 kV/4 kV Netz - Conducted radio interferences: 10 V
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Physical and environmental conditions

Dimensions:	230 x 114 mm
System bus:	ISA
Place required:	1 AT slot
Operating voltage:	+5 V, ± 5 %
Current consumption:	PA 3110-16-8: 1180 mA typ. ± 10 % typ.
Front connector:	37-pin SUB-D male connector
Temperature range:	0 to 60 $^{\circ}$ C (with forced cooling)

Simplified block diagram

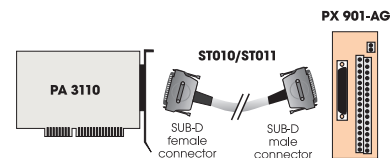


Pin assignment – 37-pin SUB-D male connector

DIFF	SE		SE	DIFF
An. output 7		19	37	An. output 7 GND
An. output 6		18	36	An. output 6 GND
An. output 5		17	35	An. output 5 GND
An. output 4		16	34	An. output 4 GND
An. output 3		15	33	An. output 3 GND
An. output 2		14	32	An. output 2 GND
An. output 1		13	31	An. output 1 GND
An. output 0		12	30	An. output 0 GND
Analog input GND		11	29	Analog input GND
Analog input GND		10	28	Analog input GND
Analog input GND		9	27	(+) An. inp. 4
(-) An. inp. 4	(+) An. inp. 12	8	26	(-) An. inp. 1
(-) An. inp. 5	(+) An. inp. 13	7	25	(-) An. inp. 2
(-) An. inp. 6	(+) An. inp. 14	6	24	(-) An. inp. 3
(-) An. inp. 7	(+) An. inp. 15	5	23	(-) An. inp. 4
(+) An. inp. 7	(+) An. inp. 11	4	22	(+) An. inp. 2
(+) An. inp. 6	(+) An. inp. 10	3	21	(+) An. inp. 1
(+) An. inp. 5	(+) An. inp. 9	2	20	(+) An. inp. 0
(+) An. inp. 4	(+) An. inp. 8	1		

1: The analog inputs have a common ground line
2: The analog outputs have separate ground lines

ADDI-DATA connection



Terminal board PX 901-AG
with cable ST010



ORDERING INFORMATION

ADDIALOG PA 3110

Isolated multifunction data acquisition board. Incl. technical description and software drivers.

Versions

PA 3110-16-4	16 SE/8 diff. inputs, 4 analog outputs
PA 3110-16-8	16 SE/8 diff. inputs, 8 analog outputs
PA 3110-8-4	8 SE/4 diff. inputs, 4 analog outputs
PA 3110-8-8	8 SE/4 diff. inputs, 8 analog outputs

Options

Please specify the number of channels to be supplied with the required option

Option SF:	Filter for 1 single-ended input
Option DF:	Precision filter for 1 differential input
Option PC:	Current input 0(4)-20 mA and precision 250 Ω ; Tol. 0.01 %; TK 5; $1/4 \Omega$;

Option PC-SE: for 1 single-ended input
Option PC-Diff: for 1 differential input

Connection

PX 901-A:	Screw terminal board with transorb diodes, for connecting the analog inputs
PX 901-AG:	Screw terminal board for DIN rail
ST010:	Standard round cable, shielded, twisted pairs, 2 m
ST011:	Standard round cable, shielded, twisted pairs, 5 m

www.addi-data.com

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