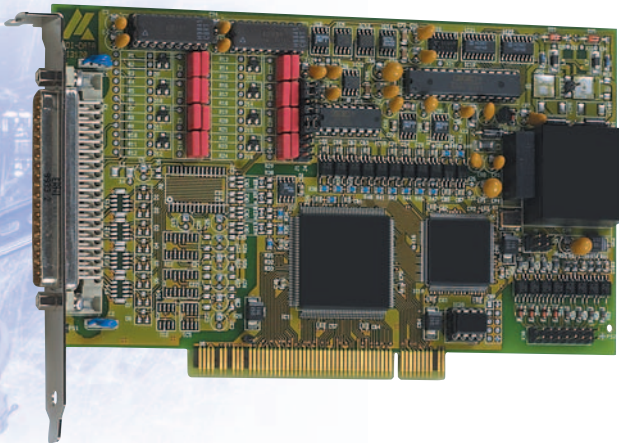


# Analog input board, isolated, 12-bit



Compatible version  
for the *CompactPCI™*-bus



LabWindows/CVI™



DASYLab™

## Features

- PCI interface to the 32-bit data bus
- Monitoring program for testing and setting the board functions

### Analog inputs

- 16 single-ended / 8 differential inputs or 8 single-ended / 4 differential inputs or 4 single-ended inputs
- 12-bit resolution
- Data transfer rate: 100 kHz
- Input voltage: 0-10 V,  $\pm 10$  V, 0-5 V,  $\pm 5$  V, 0-2 V,  $\pm 2$  V, 0-1 V,  $\pm 1$  V, 0-20 mA (Option) freely programmable through software for each channel
- Gain PGA x1, x2, x5, x10 freely programmable through software for each channel
- PCI-DMA for analog data acquisition

### 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.

### Digital

- 4 digital inputs, 24 V, isolated
- 4 digital outputs, 24 V, isolated

### Timer

- 24-bit, can be used as a cyclic time counter

### Safety features

- Optical isolation 500 V min.
- Creeping distance IEC 61010-1 (VDE411-1)
- Overvoltage protection  $\pm 12$  V
- Protection against high-frequency EMI
- Input filter: 160 kHz
- Noise neutralization of the PC supply

## APCI-3001

**16/8/4 single-ended or  
8/4 differential inputs**

**12-bit resolution**

**Optical isolation 500 V**

**100 kHz data transfer rate**

**Automatic analog acquisition**

**8 digital I/O, 24 V, isolated, timer**

**Trigger functions**

**Graphical display of the measured data**

### EMC tested acc. to 89/336/EEC

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

### Applications

- Industrial process control
- Industrial measurement and monitoring
- Multichannel data acquisition
- Control of chemical processes
- Factory automation
- Acquisition of sensor data
- Labor instrumentation
- Current measurement
- Instrumentation

### Software drivers

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

#### Standard drivers for:

Linux kernel version 2.4.2, Windows 2000/NT/98  
Real-time drivers for Windows 2000/NT/98  
Monitoring program ADDIMON

#### Drivers for the following application software:

LabVIEW 5.01

#### Samples for the following compilers:

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

#### On request:

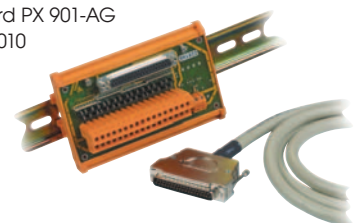
LabWindows/CVI • Diadem 6/7  
DasyLab 6/7 • Embedded NT

#### ADDIPACK functions on request:

Reduced write/read functions on input signals

Current driver list on the web: [www.addi-data.com](http://www.addi-data.com)

Terminal board PX 901-AG  
with cable ST010



# Analog input board, isolated, 12-bit

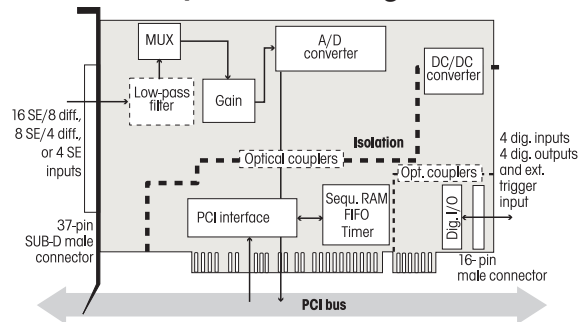


APCI-3001

## Specifications

Analog inputs	
Number of inputs:	16 single-ended/8 differential inputs or 8 single-ended/4 differential inputs or 4 single-ended inputs
Resolution:	12-bit
Optical isolation:	500 V through optical couplers from the PC to the peripheral
Input ranges:	Software programmable for each channel 0-10 V, $\pm 10$ V, 0-5 V, $\pm 5$ V, 0-2 V, $\pm 2$ V, 0-1 V, $\pm 1$ V 0-20 mA optional
Data transfer rate:	100 kHz
Gain:	Software programmable (x1, x2, x5, x10)
Common mode rejection:	DC at 10 Hz, 90 dB minimum
Integral non-linearity (INL):	$\pm 1$ LSB
Diff. non linearity (DNL):	$\pm \frac{1}{2}$ LSB
Input impedance (PGA):	$10^{12} \Omega // 10$ nF single-ended, $10^{12} \Omega // 20$ nF differential against GND
Band width (-3 dB):	limited to 159 kHz with low-pass filter
Trigger:	through software, timer, external event (24 V input)
Data transfer:	Data to the PC through FIFO memory, I/O-command, interrupt at EOC (End Of Conversion) and EOS (End of Scan), DMA transfer at EOC
Interrupts:	End of conversion, timer overrun, End of scan
Timer	
Time base timer 2:	50 $\mu$ s; lowest programmable value: 100 $\mu$ s
Digital I/O	
Number of the I/O channels:	4 digital inputs, 4 digital outputs, 24 V
Optical isolation:	500 V through optical couplers from the PC to the peripheral
Input range:	0-30 V - logical "0": 0-5 V - logical "1": 10-30 V
Input current at 24 V:	3 mA typ.
Output range:	5-30 V
Max. switching current:	5 mA typ.
Output type:	Open collector
Noise immunity	
Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 4 kV - Conducted radio interferences: 10 V
Physical and environmental conditions	
Dimensions:	175 x 99 mm
System bus:	PCI 32-bit 5V acc. to specification 2.1 (PCISig)
Place required:	1 PCI slot for the analog inputs, 1 slot opening for digital I/O
Operating voltage:	+5 V, $\pm 5$ % from PC
Current consumption:	670 mA typ.
Front connector:	37-pin SUB-D male connector
Additional connector:	16-pin male connector for ribbon cable for connecting the digital I/O
Temperature range:	0 to 60 °C (with forced cooling)

## Simplified block diagram



## Pin assignment – 37-pin SUB-D male connector

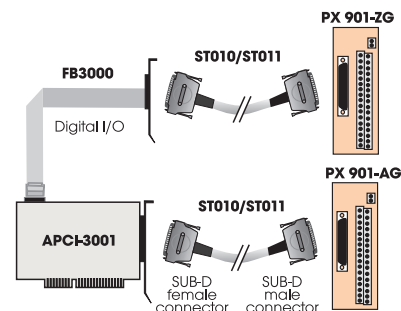
DIFF	SE	Pin	SE	DIFF
(-) An. input 0	(+) An. input 0	20	(+) An. input 8	(-) An. input 4
(+) An. input 1	(+) An. input 1	21	(+) An. input 9	(-) An. input 5
(+) An. input 2	(+) An. input 2	22	(+) An. input 10	(-) An. input 6
(+) An. input 3	(+) An. input 3	23	(+) An. input 11	(-) An. input 7
(-) An. input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

1: The analog inputs have a common ground line

## Pin assignment – 16-pin male connector

Dig. output 0 (+)	1	Dig. output 0 (-)
Dig. output 1 (+)	3	Dig. output 1 (-)
Dig. output 2 (+)	5	Dig. output 2 (-)
Dig. output 3 (+)	7	Dig. output 3 (-)
Trigger/dig. input 0 (+)	9	Trigger/dig. input 0 (-)
Dig. input 1 (+)	11	Dig. input 1 (-)
Dig. input 2 (+)	13	Dig. input 2 (-)
Dig. input 3 (+)	15	Dig. input 3 (-)

## ADDI-DATA connection



## ORDERING INFORMATION

### ADDIALOG APCI-3001

Analog input board, isolated, 12-bit. Incl. technical description, software drivers and monitoring program

#### Versions

**APCI-3001-16:** 16 SE/8 diff. inputs, 8 dig. I/O

**APCI-3001-8:** 8 SE/4 diff. inputs, 8 dig. I/O

**APCI-3001-4:** 4 SE inputs, 8 dig. I/O

**Options:** Please specify the number of channels to be supplied with the required option.

**Option SF:** Filter for 1 single-ended channel

**Option DF:** Precision filter for 1 differential channel

**Option DC:** Current input for 1 diff. channel, 0(4)-20 mA

**Option SC:** Current input for 1 single-ended channel 0(4)-20 mA

#### Connection

**PX 901-A:** Screw terminal board with transorb diodes for connecting the analog inputs

**PX 901-AG:** Same as PX 901-A with housing for DIN rail

**PX 901-ZG:** Screw terminal board for connecting the digital I/O for DIN rail

**ST010:** Standard round cable, shielded, twisted pairs, 2 m

**ST011:** Standard round cable, shielded, twisted pairs, 5 m

**FB3000:** Ribbon cable for digital I/O

[www.addi-data.com](http://www.addi-data.com)

Sales: +49(0)7223/9493-120

Fax: +49(0)7223/9493-92