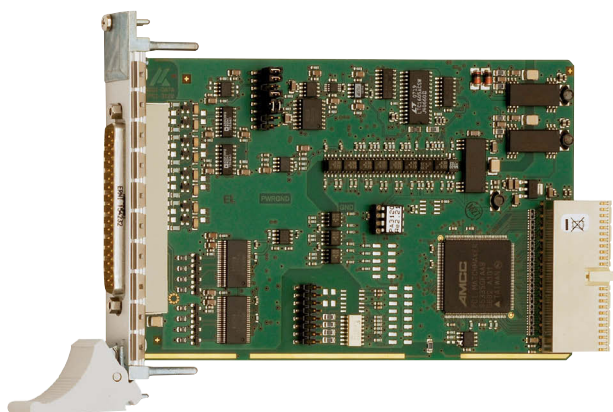


# Analog input board, optically isolated, 16 SE or 8 diff. inputs, 12-bit



CompactPCI™ 32-bit

## Also for PCI-Express

See APCle-3021, page 134

## Also for **PCI**

See APCI-3001, page 190



LabVIEW™



LabWindows/CVI™



**DASYLab10**  
Data Acquisition System Laboratory

## Features

- Can be inserted in PXI systems, with restricted functionality
- 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
- Throughput: 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

- Single channel, several channels, several channels through scan list
- Autom. 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 sequence) is started through signal switching from 0 V to 24 V at the digital input 0.
- Interrupt: end of single channel, end of multichannel, end of scan list

## Digital

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

## Timer

- 24-bit
- Timer 2 as cyclic time counter

## Safety features

- Optical isolation 500 V min.
- Creeping distance IEC 61010-1
- Overvoltage protection  $\pm 40$  V (analog inputs)

## CPCI-3001

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

12-bit resolution

Optical isolation 500 V

100 kHz throughput

Automatic analog acquisition

Trigger functions

MTBF: 75867 hours at 45 °C

Graphical display of the measured data

- Protection against high-frequency EMI
- Input filters: 159 kHz
- Noise neutralisation of the PC supply

## Applications

- Industrial process control
- Industrial Measurement and monitoring
- Multichannel data acquisition
- Control of chemical processes
- Factory automation
- Acquisition of sensors
- Laboratory equipment
- Current measurement
- Instrumentation

## Software

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

## Standard drivers for:

- Linux
- 32-bit drivers for Windows 8 / 7 / Vista / XP / 2000
- Signed 64-bit drivers for Windows 8 / 7 / XP
- Real-time use with Linux and Windows on request

## Drivers and samples for the following compilers and software packages:

- Microsoft VC++ • Microsoft C
- Borland C++ • Borland C
- Visual Basic • Delphi • Turbo Pascal
- LabVIEW • DASYLab • DIAdem

## On request:

Further operating systems, compilers and samples.

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

## Specifications

### Analog inputs

Number of inputs:	16 single-ended/8 differential inputs 8 single-ended/4 differential inputs or 4 single-ended inputs
Resolution:	12-bit
Optical isolation:	500 V through opto-couplers from PC to 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
Throughput:	100 kHz
Gain:	Software programmable (x1, x2, x5, x10)
Common mode rejection:	DC at 10 Hz, 90 dB minimum
Relative precision (INL):	$\pm 1$ LSB (ADC)
Diff. Non-linearity (DNL):	$\pm 0.5$ LSB (ADC)
Input impedance (PGA):	$10^{12} \Omega/10$ nF Single-ended, $10^{12} \Omega/20$ nF Differential against GND
Bandwidth (-3 dB):	Limited to 159 kHz with low-pass filter
Trigger:	Through software, timer, ext. event (24 V input)
Data transfer:	Data to the PC through FIFO memory, I/O commands, Interrupt at EOC (End Of Conversion) and EOS (End of Scan), DMA transfer at EOC
Interrupts:	End of conversion, End of timer, End of scan

### Timer

Time base Timer 2:	24-bit; 50 $\mu$ s; smallest programmable value: 100 $\mu$ s
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### Digital I/O

Number of I/O channels:	4 digital inputs, 4 digital outputs, 24 V
Optical isolation:	500 V through opto-couplers from PC to 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:	10 mA typ.
Output type:	Open collector

### EMC – Electromagnetic compatibility

The product complies with the European EMC directive. The tests were carried out by a certified EMC laboratory in accordance with the norm from the EN 61326 series (IEC 61326). The limit values as set out by the European EMC directive for an industrial environment are complied with. The respective EMC test report is available on request.

### Physical and environmental conditions

Dimensions:	160 x 100 mm
System bus:	CompactPCI 32-bit
Space required:	1 PCI slot for analog inputs, 1 slot opening for digital I/O
Operating voltage:	+5 V, $\pm 5\%$ , 3.3 V from CompactPCI system
Current consumption:	550 mA typ.
Front connector:	37-pin D-Sub male connector
Additional connector:	16-pin male connector for ribbon cable for connecting the digital inputs and outputs
Temperature range:	0 to 60 °C (with forced cooling)
MTBF:	75867 Hours at 45 °C

### CPCI-3001

Analog input board, optically isolated, 16 SE or 8 diff. inputs, 12-bit. Incl. technical description, software drivers and monitoring program.

**CPCI-3001-16** 16 SE / 8 diff. inputs, 8 digital I/O

**CPCI-3001-8** 8 SE / 4 diff. inputs, 8 digital I/O

**CPCI-3001-4** 4 SE inputs, 8 digital I/O

**Options:** Please specify the number of channels when ordering

**URS-3001-6U:** 6U bracket for mounting in 6U housing

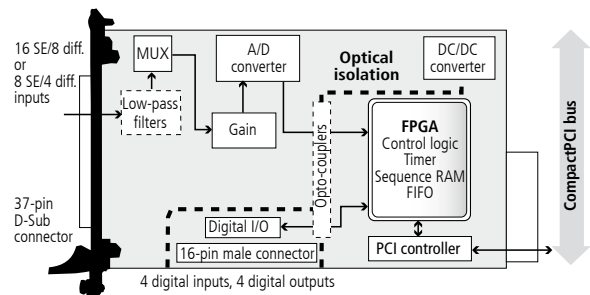
**Option SF:** Precision filter for 1 single-ended channel

**Option DF:** Precision filter for 1 diff. channel (30Hz)

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

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

### Simplified block diagram



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

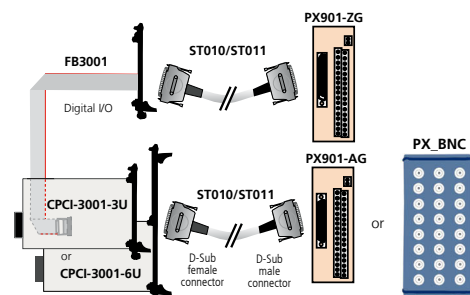
DIFF	SE		SE	DIFF
(+) An. input 0	(+) An. input 0	20	(+) An. input 8	(+) An. input 4
(+) An. input 1	(+) An. input 1	21	(+) An. input 9	(+) An. input 5
(+) An. input 2	(+) An. input 2	22	(+) An. input 10	(+) An. input 6
(+) An. input 3	(+) An. input 3	23	(+) An. input 11	(+) An. input 7
(-) An. input 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

### 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

#### Accessories

**PX901-A:** Screw terminal panel with transorb diodes for connecting the analog inputs

**PX901-AG:** Same as PX901-A with housing for DIN rail

**PX901-ZG:** Screw terminal panel for connecting the dig. I/O, for DIN rail

**PX\_BNC:** BNC connection box for connecting the analog I/O

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

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

**FB3001:** Ribbon cable with 37-pin D-Sub male connector on 3U bracket for the digital I/O