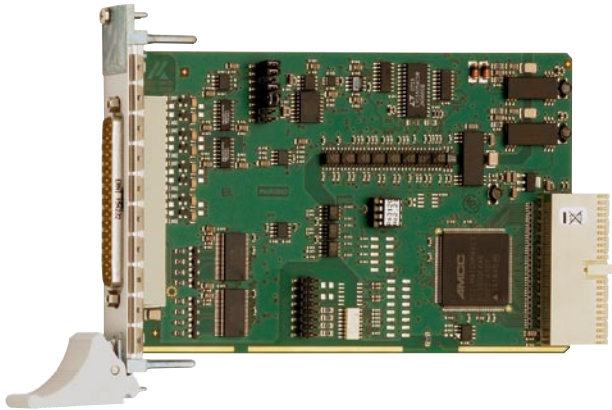


# Analog input board, optically isolated, 16 SE or 8 diff. inputs, 12-bit



CompactPCI™ 32-bit

## Also for PCI-Express

See APCLe-3021, page 96

## Also for PCI

See APCI-3001, page 148



Signed 64-bit drivers  
for Windows 7/XP



LabVIEW™



LabWindows/CVI™



DASYLab 10  
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, ±10 V, 0-5 V, ±5 V, 0-2 V, ±2 V, 0-1 V, ±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 als cyclic time counter

## Safety features

- Optical isolation 500 V min.
- Creeping distance IEC 61010-1
- Overvoltage protection ± 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 (real-time)
- 32-bit drivers for Windows 7/Vista/XP/2000 (real-time)
- Signed 64-bit drivers for Windows 7/XP

### 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](http://www.addi-data.com), download menu

## 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, ±10 V, 0-5 V, ± 5 V, 0-2 V, ± 2 V, 0-1 V, ± 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):	± 1 LSB (ADC)
Diff. Non-linearity (DNL):	± 0.5 LSB (ADC)
Input impedance (PGA):	10 <sup>12</sup> Ω/10 nF Single-ended, 10 <sup>12</sup> Ω/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 µs; smallest progr. value: 100 µs

### 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

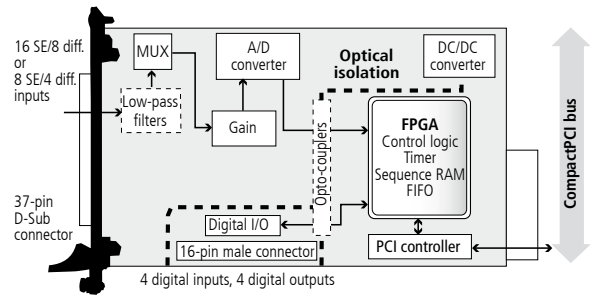
### EMC – Electromagnetic compatibility

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.

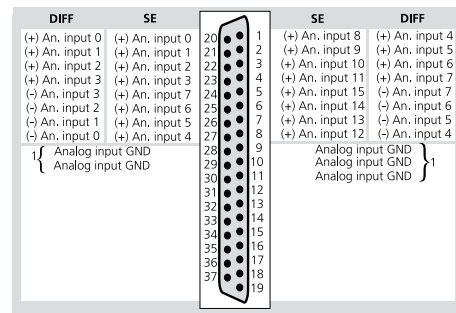
### Physical and environmental conditions

Dimensions:	3U/4TE
System bus:	PCI 32-bit acc. to CompactPCI specification 2.1
Space required:	1 PCI slot for analog inputs, 1 slot opening for digital I/O
Operating voltage:	+ 5 V, ± 5 % , 3.3 V from CPCI 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

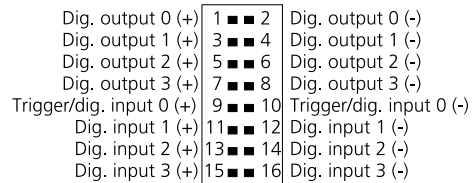
### Simplified block diagram



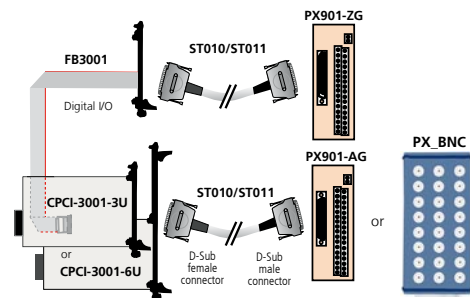
### Pin assignment – 37-pin D-Sub male connector



### 16-pin male connector



### ADDI-DATA connection



## Ordering information

### 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

**CPCI-3001-8** 8 SE/4 diff. inputs

**CPCI-3001-4** 4 SE inputs

**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

### 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

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

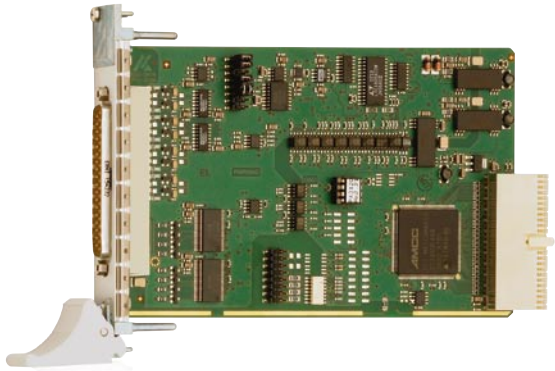
**PX901-ZG:** Screw terminal panel for connecting the dig. I/O, for DIN rail

**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

# COMPACT PCI BOARDS



**CompactPCI™**

## Faster through FPGA

A FPGA component has a programmable logic on which you can save your own algorithms in order to adapt the functionality of the PC board to your requirements. This adaptation makes your PC board unique and improves the performance of your applications. The onboard algorithms reduce the cycle time of signal acquisition and regulation tasks. Most ADDI-DATA CompactPCI boards are equipped with a FPGA component. Use the full potential of your PC board hardware and software resources and thus accelerate your processes.

## HIGH PROTECTION

- Optical isolation from 500 V to 1000 V
- Separation of analog and digital signals
- Protection against short-circuits, overtemperature, overvoltage
- Filters for the inputs and outputs
- Industry-standard D-Sub connectors



**READY FOR  
HARSH INDUSTRIAL  
ENVIRONMENT**

## Reliable and available in the long term!

The CompactPCI bus is used particularly in applications with vibrations and shocks. To assure the reliability and longevity of a CompactPCI system it is important to use interference-free CompactPCI boards which are available in the long term – like the CompactPCI boards by ADDI-DATA.

## High interference resistance

The key to the high interference resistance of the ADDI-DATA CompactPCI boards is the well thought-out concept of design and protective circuits. Therefore our boards are predestined for tasks in harsh industrial environments. They are resistant to vibrations, accelerations or dirt and provide reliable and accurate data.

## 3 U version

ADDI-DATA CompactPCI boards are available in 3 U version. 6 U brackets enable an installation in a 6 U rack. The 3 U version has been chosen because it is much more stable than longer boards. Thus the CompactPCI boards are more resistant to shocks and vibrations.

## Complete real-time system



- Combination of the PAC-system MSX-Box-CPCI and CompactPCI boards
- Compact and flexible
- Stand-alone system (own CPU)
- Long-term availability

Information about the MSX-Box-CPCI on page 32



New!

New!

	Digital		Counter	Analog			Serial interfaces (base board)	Motion control
	CPCI-1500	CPCI-1564	CPCI-1710	CPCI-3009	CPCI-3120	CPCI-3001	CPCI-7500	CPCI-8004
32-bit CompactPCI bus	5 V	3,3 V / 5 V	5 V	3,3 V / 5 V	3,3 V / 5 V	3,3 V / 5 V	5 V	3,3 V / 5 V
FPGA		✓	✓	✓	✓	✓		
Filters and protective circuits	✓	✓	✓	✓	✓	✓	✓	✓
Optical isolation 1000 V	✓	✓	✓	✓	✓	✓	optional	✓
<b>Digital, 24 V</b>								
Input channels, 24 V	16	32	12 (depending on function)	4	4	4		24
Output channels, 24 V	16	32	4	4	4	4		12
Output current per output	500 mA (typ.)	500 mA (typ.)	500 mA (typ.)					
Watchdog / Timer / Counter	2 x 12-bit timer, incl. 1 which can be used as a watchdog	Timer (12-Bit)/ Watchdog (8-Bit)		16-bit 3/3/2	1 x 24-bit timer which can be used as a watchdog	1 x 24-bit timer which can be used as a watchdog		
<b>Counter</b>								
Function modules			4	1				
Functions Incremental counter, SSI synchronous serial interface, counter/timer, pulse acquisition, frequency, pulse width, Period duration, velocity measurement, PWM, BiSS master, digital inputs and outputs, ...			reprogrammable	reprogrammable				4 incremental counters or SSI
Input frequency			up to 5 MHz	up to 5 MHz				
Signals			TTL, RS422, 24 V	TTL, RS422, 24 V				
<b>Analog</b>								
Analog inputs, 16-bit				16 SE / 8 diff.	16 SE / 8 diff.	16 SE / 8 diff.		
Throughput (kHz)				100	100	100		
Voltage range				0-10 V ± 10 V	0-10 V ± 10 V	0-10 V ± 10 V		
Gain 1, 2, 5, 10				✓	✓	✓		
FIFO (value)								
Trigger (software or 24 V)				✓	✓	✓		
Sequence RAM				✓	✓	✓		
Analog outputs				4, 12-bit	8 or 4, 14-bit			4, 16-bit
0-10 V ± 10 V				✓	✓			
Settling time				15 µs	30 µs			
Serial interfaces (base board)							4-port	
Configuration of the operation mode through MX modules							RS232, RS422, RS485, RS485, 20 mA CL	
Motion Control								1 to 4 servo or stepper motors
Software	Current driver list on the web: <a href="http://www.addi-data.com">www.addi-data.com</a>							
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