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

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

RoHS
2002/95/EC

CompactPCI™ 32-bit

Also for PCI-Express
See APCIe-3021, page 134

Also for PCI
See APCI-3001, page 190

Windows
64/32-bit drivers

LabVIEW™

LabWindows/CVI™

DIAdem®

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, ± 10 V, 0-5 V, ± 5 V, 0-2 V,
  ± 2 V, 0-1 V, ±1 V, 0-20 mA (option) freely programm-
  able 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 ± 40 V (analog inputs)

- 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

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ADDI-DATA®
SPIRIT OF EXCELLENCE

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^{12} Ω//10 nF Single-ended, 10^{12} 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 programmable 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.
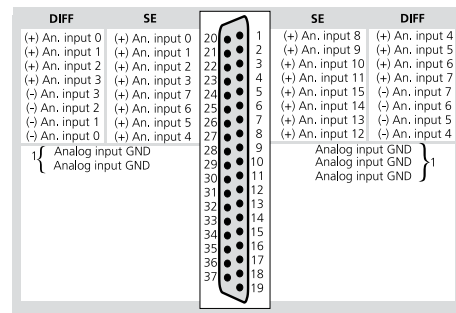
Physical and environmental conditions

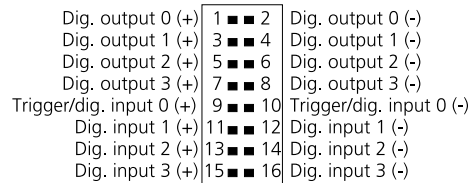|	
Dimensions:	160 x 100 mm
System bus:	CompactPCI 32-bit
Space required:	1 PCI slot for analog inputs, 1 slot opening for digital I/O
Operating voltage:	+5 V, ± 5 % , 3.3 V from CompactPCI system
Current consumption:	550 mA typ.
Front connector:	37-pin D-Sub male connector
Additional connector:	16-pin 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

Simplified block diagram

4 digital inputs, 4 digital outputs
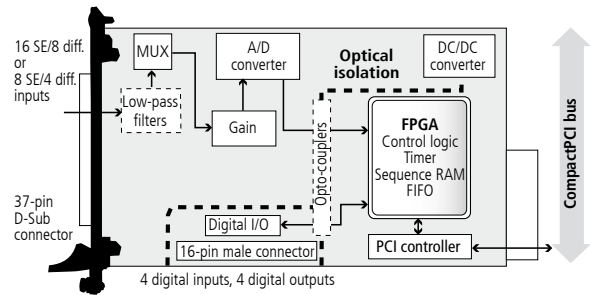
Pin assignment – 37-pin D-Sub male connector

1 : The analog inputs have a common ground line

16-pin male connector

Dig. output 0 (+)	1	2	Dig. output 0 (-)
Dig. output 1 (+)	3	4	Dig. output 1 (-)
Dig. output 2 (+)	5	6	Dig. output 2 (-)
Dig. output 3 (+)	7	8	Dig. output 3 (-)
Trigger/dig. input 0 (+)	9	10	Trigger/dig. input 0 (-)
Dig. input 1 (+)	11	12	Dig. input 1 (-)
Dig. input 2 (+)	13	14	Dig. input 2 (-)
Dig. input 3 (+)	15	16	Dig. input 3 (-)

ADDI-DATA connection
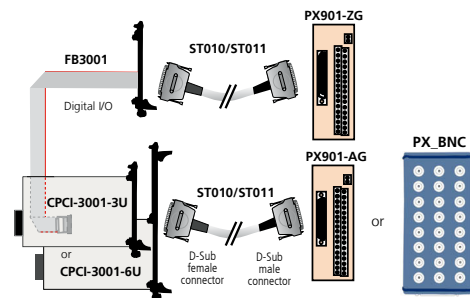
Ordering information

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, 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

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