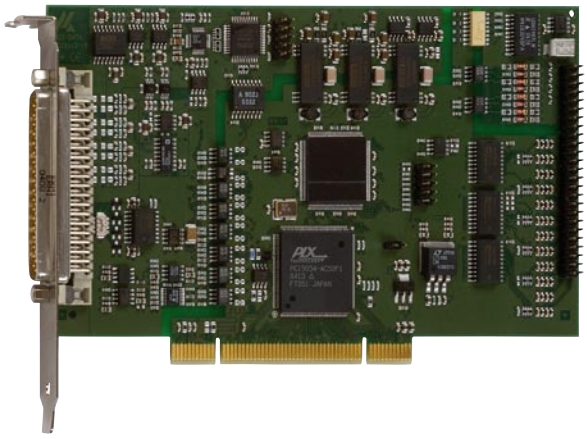
Multifunction board, optically isolated, 16/8 SE or 8/4 diff. inputs, 4 analog outputs, 12-/16-bit



APCI-3110 / APCI-3116

PCI 3.3 V or 5 V

Optical isolation 1000 V

16/8 SE or 8/4 diff. inputs

12-bit or 16-bit resolution, 200 kHz

PCI DMA, programmable gain

4 analog outputs, 12-bit

Timer/counter/watchdog

8 optically isolated dig. I/O, 24 V, 24 TTL I/O

RoHS 2002/95/EC

PCI 32-bit

Signed 64-bit drivers for Windows 7/XP

LabVIEW™

LabWindows/CVI™

Customer-tailored modifications
designed
to suit your needs.
Hardware and software,
firmware, PLDs, ...
Contact us!

Features

- PCI 3.3 V or 5 V

Analog inputs

- 16/8 SE or 8/4 diff. inputs, optically isolated
- Resolution: 12-bit (APCI-3110) or 16-bit (APCI-3116)
- Throughput: 200 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
- Current inputs: 0-20 mA (Option)
  can be combined freely with voltage inputs
- Gain PGA x1, x2, x5, x10 freely programmable through software for each channel

Analog acquisition

- Different input modes:
  1) Simple mode
  2) Scan modes
  3) Sequence modes
  4) Auto Refresh mode
- Onboard FIFO (for 512 analog values)
- PCI-DMA for analog data acquisition

Analog outputs

- 4 analog outputs, optically isolated
- 12-bit resolution
- Setup time 15 µs typ
- Output voltage after reset: 0 V
- Each output has its own ground line (without optical isolation)
- Output voltage range: -10 V up to + 10 V
- Output current: ± 5 mA
- Short-circuit current: ± 20 mA

24 V digital I/O

- 24 V digital I/O enable a high interference distance and a long distance between signal transmitter and data acquisition
- 4 digital inputs, 24 V, optically isolated
- 4 digital outputs, 24 V, optically isolated

TTL I/O

- 24 digital TTL inputs/outputs
- Port0: outputs / Port1: inputs / Port2: I/O
- All I/O are at 5 V through pull-up resistors
- Easy programming through I/O read and write commands

Timer/counter

- 3 / 3, 16-bit

Watchdog

- 2, 16-bit

Safety features

- Optical isolation 1000 V min.
- Creeping distance IEC 61010-1
- Circuit part of the analog acquisition is separated from the circuit part of the digital function
- Overvoltage protection ± 40 V
- Protection against high-frequency EMI
- Input filters
- Noise neutralisation of the PC supply
- Connection of the I/O signals through robust industry-standard D-Sub connector

Applications

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

Software

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:

- .NET
- Microsoft VC++ • Borland C++ • Visual Basic
- Delphi • LabVIEW • LabWindows/CVI

ADDIPACK functions:

Analog input • Analog output • Digital input
Digital output • Watchdog • Timer • Counter

On request:

Further operating systems, compilers and samples.

Driver download: www.addi-data.com, download menu

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Specifications

Analog inputs

Number of inputs:	16/8 SE or 8/4 differential inputs
Resolution:	12-bit (APCI-3110) or 16-bit (APCI-3116)
Optical isolation:	1000 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
Gain:	Software programmable (x1, x2, x5, x10)
Throughput:	200 kHz
Trigger:	through software, timer, external event (24 V input)
Data transfer:	Data to the PC through FIFO memory, Interrupt at EOC (End Of Conversion), DMA transfer at EOC
Interrupts:	End of conversion, at timer overrun, End of scan

Analog outputs

Number of outputs:	4
Optical isolation:	1000 V through opto-couplers
Resolution:	12-bit
Voltage outputs	
Output range:	-10 V to +10 V (-1 LSB)
LSB:	4.8828 mV
Accuracy:	11-bit
Time to Ready:	typ. 4.5 µs
Setup time:	typ 15 µs (at 10 V step)
Max. output current:	± 5 mA
Short-circuit current:	± 20 mA
Output voltage after reset:	0 V

Digital I/O

Number of I/O channels:	4 digital inputs, 24 V 4 digital outputs, 24 V
Logical "0" level:	0-14 V
Logical "1" level:	19-30 V
Optical isolation:	1000 V through opto-couplers from PC to peripheral

TTL I/O

Number of TTL I/O channels:	24
I/O Address range:	128 Byte, addressing : 32-bit
Programming:	Through write/read commands

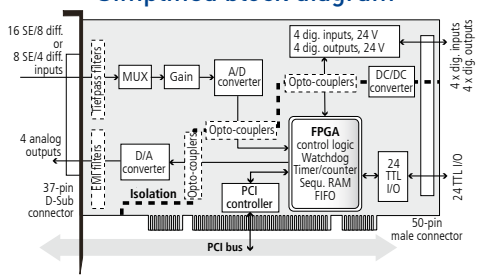
EMC – Electromagnetic compatibility

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.

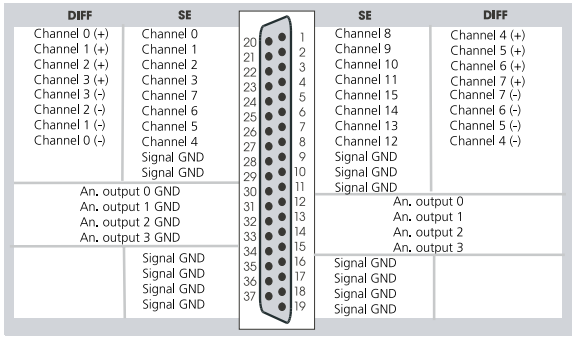
Physical and environmental conditions

Dimensions:	175 x 99 mm
System bus:	PCI 32-bit 3.3/5V acc. to spec. 2.2 (PCISiG)
Space required:	1 PCI slot for analog I/O, 1 slot opening for digital I/O with FB8001
Operating voltage:	+5 V, ±5 % from the PC
Front connector:	37-pin D-Sub male connector
Additional connector :	50-pin male connector for connecting the dig. I/O
Temperature range:	0 to 60 °C (with forced cooling)

Simplified block diagram



Pin assignment – 37-pin D-Sub male connector

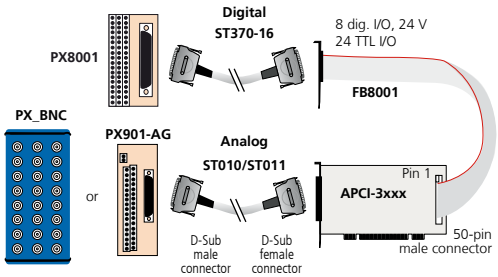


Pin assignment – 50-pin male connector

Assignment	Pin		Assignment
Output 3	1	2	Input 3+
Input 3-	3	4	Output 2
Input 2+	5	6	Input 2-
Output 1	7	8	Input 1 +
Input 1-	9	10	Output 0
Input 0+	11	12	Input 0-
GND 0	13	14	+24 V
Not connected	15 bis 24		Not connected
GND	25	26	GND
TTL 15	27	28	TTL 23
TTL 7	29	30	TTL 14

Assignment	Pin		Assignment
TTL 22	31	32	TTL 6
TTL 13	33	34	TTL 21
TTL 5	35	36	TTL 12
TTL 20	37	38	TTL 4
TTL 11	39	40	TTL 19
TTL 3	41	42	TTL 10
TTL 18	43	44	TTL 2
TTL 9	45	46	TTL 17
TTL 1	47	48	TTL 8
TTL 16	49	50	TTL 0

ADDI-DATA connection



Ordering information

APCI-3110 / APCI-3116

Multifunction board, optically isolated, 16/8 SE or 8/4 diff. inputs, 4 analog outputs, 12-/16-bit.
Incl. technical description and software drivers.

Versions

APCI-3110-16: 16 SE/8 diff. inputs, 4 analog outputs, 12-bit
APCI-3110-8: 8 SE/4 diff. inputs, 4 analog outputs, 12-bit
APCI-3116-16: 16 SE/8 diff. inputs, 4 analog outputs, 16-bit
APCI-3116-8: 8 SE/4 diff. inputs, 4 analog outputs, 16-bit

Options

Please indicate the number of channels
Option SF: Precision filter for 1 single-ended channel
Option DF: Precision filter for 1 diff. channel
Option PC: Current input 0(4)-20 mA for 1 channel
PC-SE: for Single-ended **PC-Diff**: for differential

Accessories

PX901-A: Screw terminal panel with transorb diodes for connecting the analog I/O
PX901-AG: Same as PX901-A with housing 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
PX8001: 3-row screw terminal panel, 50-pin, for DIN-rail mounting
FB8001: Ribbon cable for digital I/O
ST370-16: Standard round cable, shielded, twisted pairs, 2 m

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