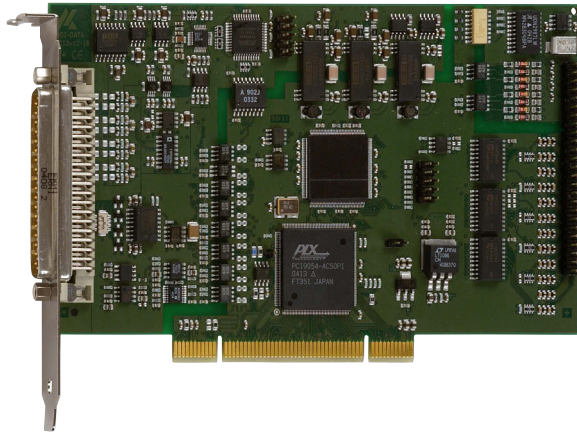


Multifunction board, optically isolated, 16/8 SE or 8/4 diff. inputs, 4 analog outputs, 16-bit



APCI-3116

PCI 3.3 V or 5 V

Optical isolation 1000 V

16/8 SE or 8/4 diff. inputs

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

Features

- PCI 3.3 V or 5 V

Analog inputs

- 16/8 SE or 8/4 diff. inputs, optically isolated
- Resolution: 16-bit
- Throughput: 200 kHz
- Input voltage: 0-10 V, ± 10 V, 0-5 V, ± 5 V, 0-2 V, ± 2 V, 1-1 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 μ s 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



PCI 32-bit



Windows
64/32-bit drivers



LabVIEW™



LabWindows/CVI™



Customer-tailored

modifications

designed

to suit your needs.

Hardware and software,

firmware, PLDs, ...

Contact us!

Specifications

Analog inputs

Number of inputs:	16/8 SE or 8/4 differential inputs
Resolution:	16-bit
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 μ s
Setup time:	typ 15 μ s (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

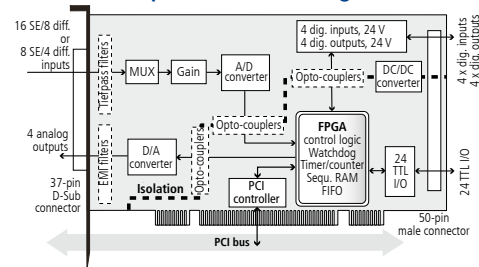
EMC – Electromagnetic compatibility

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



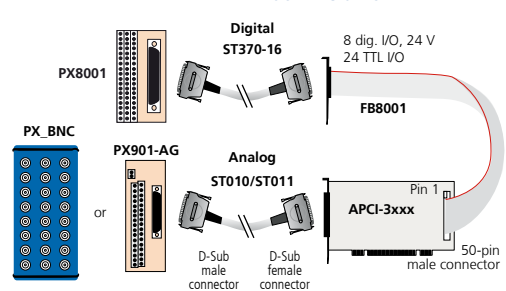
Pin assignment – 37-pin D-Sub male connector

DIFF	SE	SE	DIFF
Channel 0 (+)	Channel 0	Channel 8	Channel 4 (+)
Channel 1 (+)	Channel 1	Channel 9	Channel 5 (+)
Channel 2 (+)	Channel 2	Channel 10	Channel 6 (+)
Channel 3 (+)	Channel 3	Channel 11	Channel 7 (+)
Channel 3 (-)	Channel 7	Channel 15	Channel 7 (-)
Channel 2 (-)	Channel 6	Channel 14	Channel 6 (-)
Channel 1 (-)	Channel 5	Channel 13	Channel 5 (-)
Channel 0 (-)	Channel 4	Channel 12	Channel 4 (-)
	Signal GND	Signal GND	
	Signal GND	Signal GND	
	Signal GND	Signal GND	
An, output 0 GND		An, output 0	
An, output 1 GND		An, output 1	
An, output 2 GND		An, output 2	
An, output 3 GND		An, output 3	
	Signal GND	Signal GND	
	Signal GND	Signal GND	
	Signal GND	Signal GND	
	Signal GND	Signal GND	

Pin assignment – 50-pin male connector

Assignment	Pin	Assignment	Pin	Assignment	Pin
Output 3	1	Input 3+	31	TTL 22	32
Input 3-	2	Output 2	32	TTL 13	33
Input 2+	3	Input 2-	33	TTL 5	34
Output 1	4	Input 1 +	34	TTL 20	35
Input 1-	5	Output 0	35	TTL 11	36
Input 0+	6	Input 0-	36	TTL 3	37
GND 0	7	+24 V	37	TTL 18	38
Not connected	8	Not connected	38	TTL 9	39
GND	9	GND	39	TTL 1	40
TTL 15	10	TTL 23	40	TTL 16	41
TTL 7	11	TTL 14	41		42
	12		42		43
	13		43		44
	14		44		45
	15		45		46
	16		46		47
	17		47		48
	18		48		49
	19		49		50

ADDI-DATA connection



Ordering information

APCI-3116

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

Versions

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