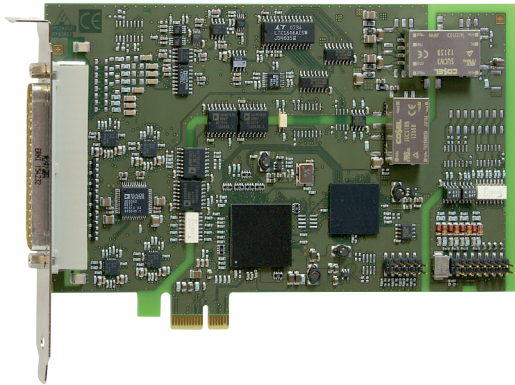


Multifunction board, optically isolated, 16 SE / 8 differential inputs, 8 analog outputs, 16-bit

New!*

PCI
EXPRESS®



APLe-3126

PCI Express interface

16 SE / 8 diff. inputs, 16-bit, 200 kHz

8 analog outputs, 16-bit

Optical isolation of inputs and outputs, 500 V

PCI Express DMA, programmable gain

Trigger functions

8 digital I/O, 24 V, optically isolated, 24 TTL I/O,
timer, watchdog

Features

Analog inputs

- 16 single-ended / 8 differential inputs
- 16-bit resolution
- Optical isolation: 500 V
- Throughput rate: 200 kHz
- Input range: 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 Express DMA for analog data acquisition
- Overvoltage protection
- Input filters: 159 kHz

Analog acquisition

- Single channel, multi-channel, multi-channel through scan list
- Automatic 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 multi-channel, end of scan list

Analog outputs

- 8 analog outputs, optically isolated (500 V)
- Voltage outputs
- 16-bit resolution (15-bit for 0-10 V)
- Output range: ± 10 V, 0-10 V (through software)
- Output voltage after reset: 0 V
- Each output has its own ground line (without optical isolation).
- Output current: ± 5 mA max.
- EMI filters

Digital

- 4 digital inputs including 1 interruptible input
- 4 digital outputs, 24 V, optically isolated

TTL I/O

- 24 digital TTL inputs/outputs
- Port 0: outputs / Port 1: inputs / Port 2: I/O
- All I/O are led to 5 V through pull-up resistors
- Easy programming through I/O read and write commands

Timer/Watchdog

- 2 timers of which 1 can be used as a watchdog

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
- Multi-channel data acquisition
- Control of chemical processes
- Factory automation
- Acquisition of sensor data, current measurement
- Laboratory equipment, instrumentation

Software

Drivers and samples

A CD containing standard drivers as well as programming samples (source code or compiled) for different programming environments is supplied with the board. This software can also be downloaded for free from our website (www.addi-data.com/downloads). Software for other operating systems and programming environments is available on request.

ADDIPACK functions

- Analog input • Analog output • Digital input
- Digital output • Watchdog • Timer



Also for **PCI**
see APCI-3120, page 192

Also for **CompactPCI™**
see CPCI-3120, page 250

Also for **CompactPCI™ Serial**
see CPCI-3121, page 236


Windows
64/32-bit drivers



Specifications*

Analog inputs

Number of channels:	16 single-ended / 8 differential inputs
Resolution:	16-bit
Optical isolation:	500 V (through opto-couplers, from PC to peripherals)
Input range:	0-10 V, ± 10 V, 0-5 V, ± 5 V, 0-2 V, ± 2 V, 0-1 V, ± 1 V, 0(4)-20 mA (optional), software-programmable for each channel
Throughput rate:	200 kHz
Gain:	x1, x2, x5, x10 (software-programmable)
Integral nonlinearity (INL):	± 2 LSB max. (A/D converter)
Diff. nonlinearity (DNL):	± 1 LSB max. (A/D converter)
Bandwidth (-3 dB):	159 kHz (limited with low-pass filter)
Trigger:	Through software, timer, external 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, at timer overrun, End of scan

Analog outputs

Number of channels:	8
Resolution:	16-bit (bipolar), 15-bit (unipolar)
Optical isolation:	500 V (through opto-couplers)
Output range:	0-10 V (15-bit), ± 10 V (16-bit), switchable via software (0-20 mA optional)
Overvoltage protection:	± 15 V
Max. output current/load:	± 5 mA / 2 kΩ min. (per output)
Short-circuit current:	± 35 mA max. (temporary)
Output voltage after reset:	0 V

Digital I/O

Number of channels:	4 inputs, 4 outputs (high-side), 24 V
Optical isolation:	1000 V (through opto-couplers)
Input current (at 24 V):	10.5 mA typ.
Input voltage:	0-30 V
Supply voltage:	8-32 V
Output current:	65 mA (per output)

TTL I/O

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

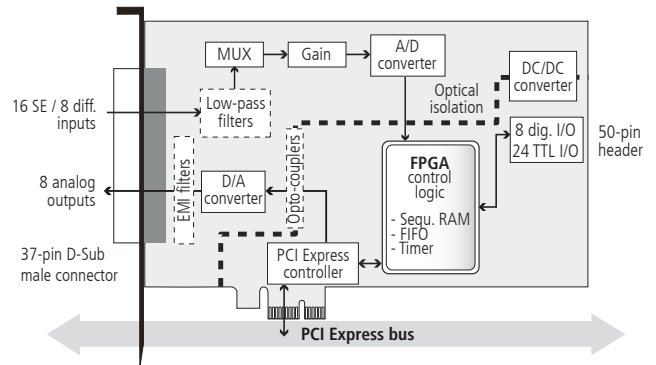
EMC – Electromagnetic compatibility

The product complies with the European EMC directive. The tests were carried out by a certified EMC laboratory in accordance with the standard DIN EN IEC 61326-1. 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:	168 x 99 mm
System bus:	1-/4-/8-/16-lane acc. to PCI Express base specification, Revision 1.0a (PCI Express 1.0a)
Space required:	2 PCI Express slots (analog I/O, digital/TTL I/O)
Operating voltage:	+3.3 V, +12 V from the PC
Front connector:	37-pin D-Sub male connector
Temperature range:	0 to 60 °C (with forced cooling)

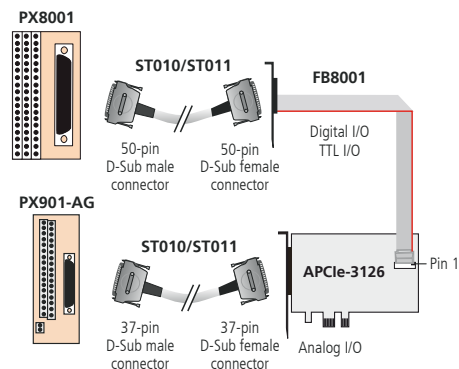
Simplified block diagram



Pin assignment – 37-pin D-Sub male connector

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

ADDI-DATA connection



Ordering information

APCLe-3126

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

Version

Voltage

APCLe-3126-16-8: Version with 16 SE / 8 diff. inputs, 8 analog outputs

Options

Please indicate the number of channels!

Option SF:	Precision filter for 1 single-ended channel
Option DF:	Precision filter for 1 differential 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 for the connection of analog I/O
PX901-AG:	Same as PX901-A, with housing for DIN rail
PX8001:	3-row screw terminal panel, 50-pin, for DIN-rail mounting
ST010:	Standard round cable, shielded, twisted pairs, 2 m
ST011:	Standard round cable, shielded, twisted pairs, 5 m
FB8001:	Ribbon cable for digital I/O and TTL I/O

*Preliminary product information