



# Isolated multifunction data acquisition board, 16-bit

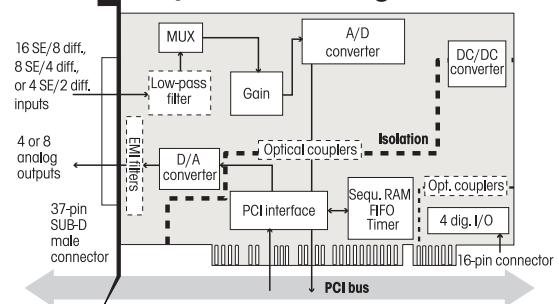


APCI-3120

## Specifications

Analog inputs	
Number of inputs:	16 single-ended/8 differential inputs or 8 single-ended/4 differential inputs
Resolution:	16-bit resolution
Optical isolation:	500 V through optical couplers from the PC to the peripheral
Input ranges:	per software programmable for each channel 0-10 V, $\pm 10$ V, 0-5 V, $\pm 5$ V, 0-2 V, $\pm 2$ V, 0-1 V, $\pm 1$ V, 0-20 mA optional
Data transfer rate:	100 kHz
Gain:	software programmable (1, 2, 5, 10)
Common mode rejection:	DC at 10 Hz, 90 dB minimum
Relative precision (INL):	$\pm 4$ LSB
Diff. non-linearity (DNL):	16-bit
Input impedance (PDA):	$10^{12} \Omega / 10$ nF single-ended, $10^{12} \Omega / 20$ nF differential against GND
Band width (-3 dB):	limited to 159 kHz 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 outputs:	4 or 8
Resolution:	14-bit resolution
Optical isolation:	500 V through optical couplers
Output range:	0-10 V, $\pm 10$ V switchable through software
Setup time at 2 k $\Omega$ , 1000 pF:	30 $\mu$ s
Overvoltage protection:	$\pm 12$ V
Max. output current/Load:	$\pm 5$ mA/500 pF, 2 k $\Omega$
Short-circuit current:	$\pm 25$ mA
Output voltage after reset:	0 V
Digital I/O	
Number of I/O channels:	4 digital inputs, 4 digital outputs, 24 V
Optical isolation:	1000 V through optical couplers
Inputs current at 24 V:	3 mA typ.
Input range:	0-30 V
Output range:	5-30 V
Max. switching current:	5 mA typ.
Noise immunity	
Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 2 kV/4 kV Netz - Conducted radio interferences: 10 V
Physical and environmental conditions	
Dimensions:	175 x 99 mm
System bus:	PCI 32-bit 5 V acc. to specification 2.1 (PCISIG)
Place required:	1 PCI slot for analog I/O, 1 slot opening for digital I/O with FB3000
Operating voltage:	+5 V, $\pm 5$ % from PC
Current consumption:	from 997 to 1030 mA typ. dep. on board version
Front connector:	37-pin SUB-D male connector
Additional connector:	16-pin male connector for connecting the dig. I/O
Temperature range:	0 to 60 $^{\circ}$ C (with forced cooling)

## Simplified block diagram



## Pin assignment – 37-pin SUB-D Male connector

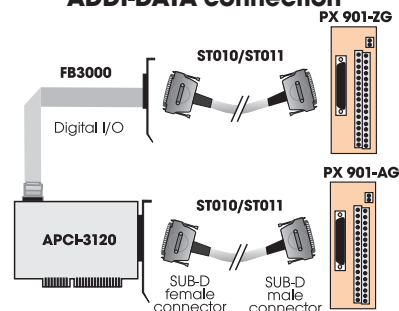
DIFF	SE	Pin	SE	DIFF
(-) An. input 0	(+) An. input 0	20	(+) An. input 8	(+) An. input 4
(+) An. input 1	(+) An. input 1	21	(+) An. input 9	(+) An. input 5
(+) An. input 2	(+) An. input 2	22	(+) An. input 10	(+) An. input 6
(+) An. input 3	(+) An. input 3	23	(+) An. input 11	(+) An. input 7
(-) An. input 3	(+) An. input 7	24	(+) An. input 15	(-) An. input 7
(-) An. input 2	(+) An. input 6	25	(+) An. input 14	(-) An. input 6
(-) An. input 1	(+) An. input 5	26	(+) An. input 13	(-) An. input 5
(-) An. input 0	(+) An. input 4	27	(+) An. input 12	(-) An. input 4
Analog input GND		28	Analog input GND	
Analog input GND		29	Analog input GND	
An. output 0 GND		30	An. output 0	
An. output 1 GND		31	An. output 1	
An. output 2 GND		32	An. output 2	
An. output 3 GND		33	An. output 3	
An. output 4 GND		34	An. output 4	
An. output 5 GND		35	An. output 5	
An. output 6 GND		36	An. output 6	
An. output 7 GND		37	An. output 7	

- 1: The analog inputs have a common ground line
- 2: The analog outputs have separate ground lines

## Pin assignment – 16-pin male connector

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

## ADDI-DATA connection



## ORDERING INFORMATION

### ADDIALOG APCI-3120

Isolated multifunction data acquisition, 16-bit. Incl. technical description and software drivers and monitoring program.

#### Versions

**APCI-3120-16-8:** 16 SE/8 diff. inputs, 8 analog outputs

**APCI-3120-16-4:** 16 SE/8 diff. inputs., 4 analog outputs

**APCI-3120-8-8:** 8 SE/4 diff. inputs, 8 analog outputs

**APCI-3120-8-4:** 8 SE/4 diff. inputs, 4 analog outputs

#### Options:

Please specify the number of channels to be supplied with the required option.

**Option SF:** 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

#### Connection

**PX 901-A:** Screw terminal board with transorb diodes, for connecting the analog I/O

**PX 901-AG:** Same as PX 901-A with housing for DIN rail

**PX 901-ZG:** Screw terminal board for connecting the digital I/O, for DIN rail

**ST010:** Standard round cable, shielded, twisted pairs, 2 m

**ST011:** Standard round cable, shielded, twisted pairs, 5 m

**FB3000:** Ribbon cable for digital I/O