# Analog input board, isolated, 12-bit













LabWindows/CVI™



# **Features**

#### Analog

- Inputs: 16/8/4 differential or 16/8/4 single-ended
- 12-bit resolution
- Data transfer rate: 142 kHz
- Input range: 0-10 V, ± 10 V, programmable through software, 0-20 mA optional (Option D2C)
- Sequence RAM (Sequence scan)
- Gain: 1, 2, 5, 10, 20, 50, 100, 200, 500, 1000 freely programmable through software for each channel
- Conversion through software or external trigger
- DMA access: channels 5, 6 and 7 (2-channel DMA) toggle DMA
- 16-bit access for the analog value, 8-bit for all other accesses
- Addressing through DIP switches
- Software-programmable interrupt: IRQ 3, 5 for XT, IRQ 9, 10, 11, 12, 14, 15 for AT
- 3 timers: timer 0 and timer 1 only for the analog acquisition, timer 2 as cyclic time-counter

#### Analog acquisition

- Acquisition of one single channel, several channels or several channels 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 scan) is started through a signal switching from 0 to 24 V at digital input 0.
- Interrupt: end of single channel, end of multichannel, end of scan list

### Digital

• 4 dig. inputs, 4 dig. outputs, 24 V, isolated

# Safety features

- Optical isolation 500 V
- Protection against overvoltage and high-frequency EMI
- 37-pin SUB-D connector, for shielded and twistedpair cables
- Noise neutralization of the PC voltage supply
- Creeping distance IEC 61010-1 (VDE411-1)

# PA 3000

16/8/4 differential inputs

Voltage or current inputs

142 kHz data transfer rate

**Optical isolation 500 V** 

Automatic analog acquisition

# **DMA access**

# **Trigger function**

8 digital I/O 24 V, 3 timers

#### EMC tested acc. to 89/336/EEC

 IEC 61326: electrical equipment for measurement, control and laboratory use

# **Applications**

- Process control
- Industrial measurement
- Acquisition of sensor data
- Signal analysis
- Current measurement
- ...

# Software drivers

A CD-ROM with the following software and programming examples is supplied with the board.

#### Standard drivers for:

Windows 2000/NT/98/95, Windows 3.11, MS-DOS Real-time drivers for 2000/NT/98/95

#### **Drivers for the following application software:** LabVIEW 5.01 • LabWindows/CVI 5.01

#### Samples for the following compilers:

Microsoft VC++ 5.0 Microsoft C 6.0 Borland C++ 5.01 Borland C 3.1 Visual Basic 5.0 Visual Basic 1.0 Delphi 4 Turbo Pascal 7.0

#### On request:

DiaDem 6/7 • Embedded NT

Current driver list on the web: www.addi-data.com



# Analog input board, isolated, 12 Bit



PA 3000

# **Specifications**

Analog inputs	
Number of inputs:	16/8/4 differential
Resolution:	12-bit
Max. data transfer rate:	for 1 input: 142 kHz (7 μs)
	limited through software
Data transfer:	Data to the PC (16-bit only)
	- through I/O commands
	- Interrupt at End of Conversion (EOC)
	- DMA transfer at End of Conversion
Input range:	0-10 V, $\pm$ 10 V software programmable
	for each channel; 0-20 mA optional
Input Impedance (PGA):	$10^{\infty} \Omega//20$ nF against GND
Gain:	1, 2, 5, 10, 20, 50, 100, 200, 500, 1000
Overveltage protection:	70 V p p gt power op
Common mode rejection:	80 dB to 10 Hz at Cain=1
Precision:	+ 1 I SB
Offset error	+051SB
Gain error:	± 0.5 LSB
Trigger:	through software, external event or
00	Timer O and 1
Interrupt:	IRQ 3, 5 for XT, IRQ 9, 10, 11, 12, 14, 15 for AT
DMA:	5, 6, 7 (1 or 2-channel access)
Timer-Zeitbasen:	
Timer 0:	0.7 $\mu$ s; smallest programmable value: 7 $\mu$ s
Timer 1:	70 $\mu$ s; smallest programmable value: 140 $\mu$ s
Timer 2:	70 µs; smallest programmable value: 140 µs
Diaital I/O	
Ontical isolation:	1000 V through optical couplers
Number of inputs:	A digital inputs 24 V isolated
Input current at 24 V	3 mA tvn
Input range:	0-30 V
	- logical "0": 0-5 V
	- logical "1": 10-30 V
Number of outputs:	4 digital outputs, 24 V, isolated
Output range:	5-30 V
Max. switching current:	5 mA typ.
Noise immunity	
Test level:	- ESD: 4 kV
	- Fields: 10 V/m
	- Burst: 4 kV
	- Conducted radio interferences: 10 V
Physical and environme	ntal conditions
Dimensions:	190 x 99 mm
System bus:	ISA
Place required:	1 slot (AT) for analog inputs,
	1 slot opening for connecting the digital I/O
	with ribbon cable FB 3000
Operating voltage:	+5 V, ±5 %
Current consumption:	590 to 630 mA typ. ± 10 %
5 1 1	depending on the board version
Front Connector:	37-pin SUB-D male connector
Additional connector :	to-pin male connector for ribbon cable
Tomporaturo rapao:	O to 60 °C (with forged cooling)
remperature runge.	

# Simplified block diagram



# Pin assignment - 37-pin SUB-D male connector

		$\sim$		
Reserve	19	• •	37	An, input 15 (+)
An. input 15 (-)	18	•	36	An input 14 (+)
An. input 14 (-)	17	•	35	An. input 13 (+)
An. input 13 (-)	16	•	34	An. input 12 (+)
An. input 12 (-)	15	•	33	An, input 11 (+)
An. input 11 (-)	14	•	32	An. input 10 (+)
An. input 10 (-)	13	• •	31	An. input 9 (+)
An, input 9 (-)	12	• •	30	An. input 8 (+)
An. input 8 (-)	11	• •	29	An GND *
An GND *	10	••	28	An GND *
An GND *	9	••	27	An. input 7 (+)
An. input 7 (-)	8	••	26	An. input 6 (+)
An. input 6 (-)	7	••	25	An. input 5 (+)
An, input 5 (-)	6	••	24	An. input 4 (+)
An. input 4 (-)	5	••	23	An. input 3 (+)
An. input 3 (-)	4	••	22	An. input 2 (+)
An. input 2 (-)	3	••	21	An. input 1 (+)
An. input 1 (-)	2	••	20	An. input 0 (+)
An input 0 (-)	1	<b>ر</b> •ا		
* Common ground for all analog inputs				

# Pin assignment - 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 (-)
Dig. inp. 0 / trigger (+)	9 🔳 🖬 10	Dig. outp. 0 / trigger (-)
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**

# ADDIALOG PA 3000

Analog input board isolated. Incl. technical description and software drivers.

PA 3000-16: 16 differential or SE inputs, 8 digital I/O PA 3000-8: 8 differential or SE inputs, 8 digital I/O PA 3000-4: 4 differential or SE inputs, 8 digital I/O

#### Optionen

<b>Please</b>	specify the number of the channels to be equipped
D2C:	Current input 0(4)-20 mA for 1 differential input
D2F:	Precision filter for 1 differential input

# Connection

PX 901-A:	Screw terminal board with transorb diodes,
	for connecting the analog inputs
PX 901-AG:	Same as PX 901-A with housing for DIN rail
PX 901-ZG:	Screw terminal board for connecting the dig. I/O
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

#### www.addi-data.com Sales: +49(0)7223/9493-120 Fax: +49(0)7223/9493-92