

Pulse counting board for 3 or 6 incremental encoders



PA 1700-2

3/6 incremental encoders, 32/16-bit

TTL or differential signals

Frequency measurement

Pulse width measurement

Up to 10 MHz frequency measurement

Automatic direction recognition

24 TTL I/O



LabVIEW™



LabWindows/CVI™

The PA 1700-2 is a fast pulse counting board designed especially for the use in industrial environment. The board is intended for the direct connection of 3 or 6 incremental encoders. It is equipped with inputs for axis control (reference signal, strobe input, error signal). The input channels are protected with transil diodes and EMI filter.

The board can be programmed with single, double, quadruple resolution or in direct mode. In direct mode and when measuring pulse width, frequencies up to 100 MHz can be processed directly.

The board automatically recognises the direction of the incremental encoders.

3 timers allow the generation of interrupts.

Features

- Acquisition of incremental encoders
- Frequency measurement
- Pulse width measurement
- Connection of 3 or 6 incremental encoders
- Possible configurations:
 - 3 channels, 32-bit counting depth, diff. or TTL on the front connector or
 - 6 channels, 16-bit counter depth, diff. or TTL divided in 3 channels on the front connector and 3 on the connector for ribbon cable
- Automatic recognition of direction
- Mode with single, double or quadruple resolution
- Frequency measurement 10 MHz in direct mode, 2.5 MHz in quadruple mode
- 3 "reference" inputs for reference logic
- 3 "error" inputs for error signals, external strobe inputs
- Software or hardware reset
- 3 x 16-bit timer (82C54):
 - Generation of interrupts
 - Strobe of the counters with timer-defined intervals
 - Programmable reference frequency for frequency and pulse width measure
- Interrupt with timer or through external strobe of the counters
- 3 x 8 TTL I/O
- Addressing through DIP switches to any address in the I/O space
- AT board with 16-bit access

Safety

- All inputs are protected against overvoltage through transorb diodes
- All inputs with EMI or RC filters
- Detection of line interruption in differential mode

EMC tested acc. to 89/336/EEC

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

Applications

- Industrial automation
- Event counting
- Frequency measurement
- Period measurement
- Pulse width measurement
- Pulse generation
- ...

Software drivers

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

Standard drivers for:

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

Drivers for the following application software:

LabVIEW 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 1.0; 4.0; 5.0
Delphi 1; Delphi 4

On request:

LabWindows/CVI 5.01

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

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Specifications

Functions

Acquisition of incremental encoders, frequency measurement, pulse width measurement

3 counter channels: with 32 or 16-bit counting depth, programmable
 - counter inputs (A, B): differential or TTL
 - reference inputs: differential or TTL
 - Error inputs: TTL
 - Strobe inputs: TTL
 - 5V/500 mA for sensor supply, short-circuit protection, internal fuse
 - 1 timer output

3 additional channels: 16-bit counting depth
 Counter inputs (A, B): TTL

TTL input and outputs: 24 TTL I/O
 Timer: Timer 82C54

Differential inputs: (complies to EIA standards RS422A)

Common mode range: ± 7 V
 Input sensitivity: ± 200 mV
 Input hysteresis: 50 mV (typ.)
 Input impedance: 12 k Ω (min.)
 Terminal resistor: 100 Ω (typ.)

TTL inputs (Counter)

Pull-up resistor: 10 k Ω
 Series resistor: 100 Ω
 Counter frequency: 10 MHz in direct mode,
 2.5 MHz in single, double, quadruple mode

Operating modes: Single, double, quadruple resolution
 direct mode, frequency or pulse width measurement

Interrupt lines: IRQ 3-7, IRQ 9-12, IRQ 15
 Addressing: through DIP switches to any address in the I/O range

Safety

Overvoltage protection
 Input filter: EMI and RC filter
 Line break recognition: In differential mode

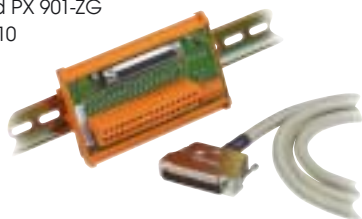
Noise immunity

Test level:
 - ESD: 4 kV
 - Fields: 10 V/m
 - Burst: 4 kV
 - Conducted radio interferences: 10 V

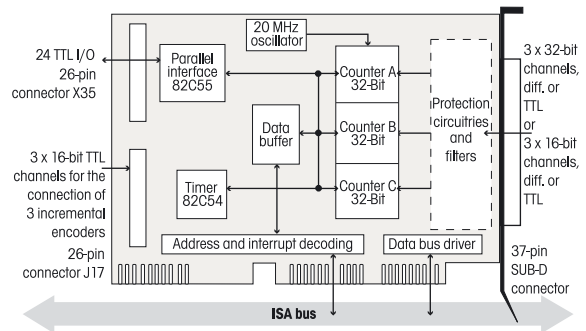
Physical and environmental conditions

Dimensions: 161 x 99 mm
 System bus: ISA
 Place required: short board, 1 AT slot
 Operating voltage: + 5 V, ± 5 % from PC
 Current consumption: 150 mA typ. ± 10 mA
 Front connector: 37-pin SUB-D male connector
 Additional connectors: 2 x 26-pin male connector for ribbon cable
 Temperature range: 0 to 60 °C (with forced cooling)

Terminal board PX 901-ZG
 with cable ST010



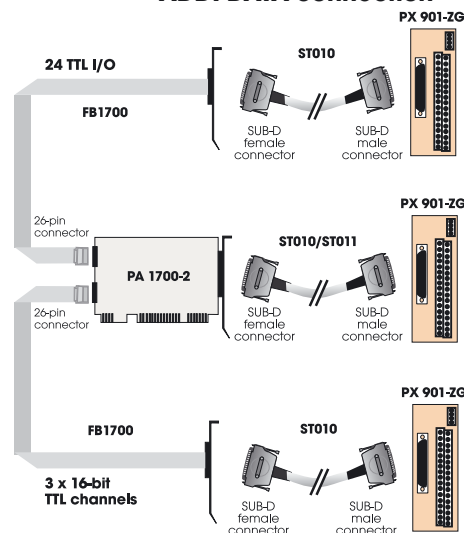
Simplified block diagram



Pin assignment – 37-pin SUB-D male connector

Level	Signal		Signal	Level
	GND	19	Timer2 out	TTL
Diff.	+B1	18	-B1	Diff./TTL
Diff.	+A1	17	-A1	Diff./TTL
Diff.	+B2	16	-B2	Diff./TTL
Diff.	+A2	15	-A2	Diff./TTL
TTL	Ext. strobe 1/1	14	Ext. strobe 1/2	TTL
TTL	Ext. strobe 2/1	13	Ext. strobe 2/2	TTL
Diff.	+B3	12	-B3	Diff./TTL
Diff.	+A3	11	-A3	Diff./TTL
Diff./TTL	+Index2	10	-Index2	Diff./TTL
Diff./TTL	+Index1	9	-Index1	Diff./TTL
TTL	Ext. Strobe 3/1	8	Ext. strobe 3/2	TTL
TTL	Ref1	7	Ref2	TTL
Diff./TTL	+Index3	6	-Index3	Diff./TTL
Diff./TTL	-AS2	5	Ref3	TTL
Diff./TTL	+AS2	4	+AS3	Diff./TTL
Diff./TTL	+AS1	3	-AS3	Diff./TTL
Diff./TTL	-AS1	2	+ 5 V vomn PC	
	GND	1		

ADDI-DATA connection



ORDERING INFORMATION

ADDICOUNT PA 1700-2

PA 1700-2: Pulse acquisition for 3 or 6 incremental encoders. Incl. technical description and software drivers.

Connection

PX 901-ZG: Screw terminal board with housing for DIN rail

ST010: Standard round cable, shielded, twisted pairs, 2 m
ST011: Standard round cable, shielded, twisted pairs, 5 m
FB1700: Ribbon cable, 26-pin connector to 37-pin SUB-D male connector with bracket

www.addi-data.com

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