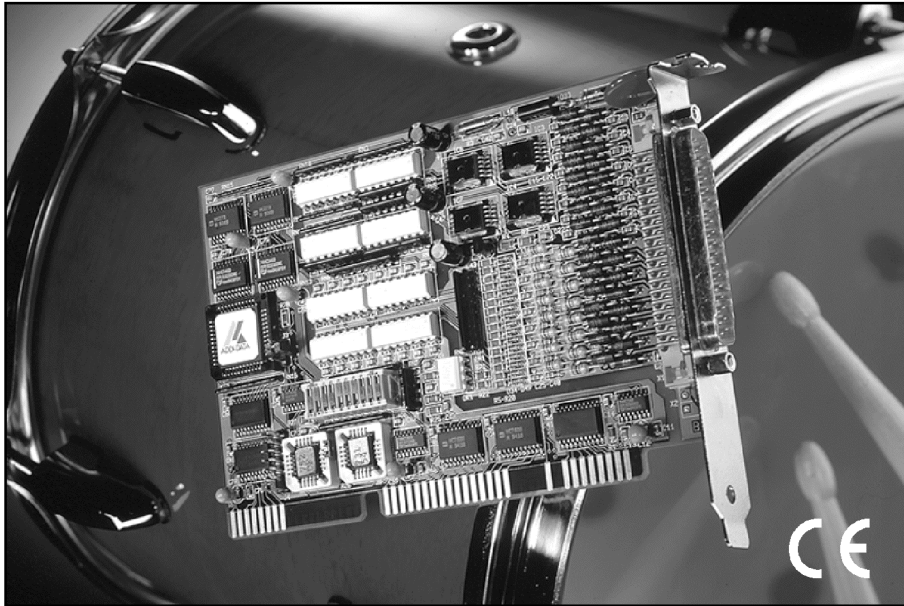


# Digital I/O Board, 32 Isolated I/O Channels, 24 V ADDINUM PA 1500



**16 input channels 24 V,  
incl. 14 interruptible**

**16 output channels,  
24 V, 500 mA**

**Optical isolation 1000 V**

**Input and outputs filters**

**Watchdog**

**3 timers/counters**



Windows NT™

## Features

- 16 opto-isolated input channels, 24 V, including 14 interruptible
- 3 software-programmable counters/ timers
- 16 opto-isolated output channels, 10 to 36 V, output current 500 mA
- Timer-programmable watchdog for the reset of the outputs to 0
- Diagnostic report through status register in case of short-circuit, overtemperature, voltage drop or watchdog
- Interrupt triggered through watchdog, timer, error
- Separate grounds for the inputs and the outputs

### Safety features

- Optical isolation 1000 V
- Protection against fast transients (Burst), overvoltage, electrostatic discharge and EMI

### Input channels

- Voltage reversal protection, input filters

### Output channels

- Short-circuit current for 16 outputs ~ 3 A typ.
- Short-circuit current per output ~ 1,5 A typ.
- Self-resetting fuse
- Overtemperature and overvoltage protection
- 24 V power outputs with protection diodes and filters
- Special output capacitors minimise electromagnetic emissions
- External voltage supply filtered through a protection circuitry
- Shutdown logic when the ext. supply voltage drops under 5 V

### EMC tested according to 89/336/EEC (CE certification)

- EN 50082-2, EN 55011, EN 55022

## Applications

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

## Software

### Windows NT 4.0 (and 3.51): API as a 32-bit DLL + SYS driver.

Example for Visual Basic 4.0 (32-bit version).  
Delphi 2.0 Interface, Microsoft C Lib, Borland C Lib

### Windows 95: API as a 32-bit DLL + VXD driver

Example for Visual Basic 4.0 (32-bit version).  
Delphi 2.0 Interface, Microsoft C Lib, Borland C Lib

### Windows 3.11: API as a 16-bit DLL.

Example for Visual Basic 3.0 for Windows 3.11

### DOS: API in ANSI C for Borland and Microsoft C, Turbo Pascal 6.0 and 7.0, Visual Basic.

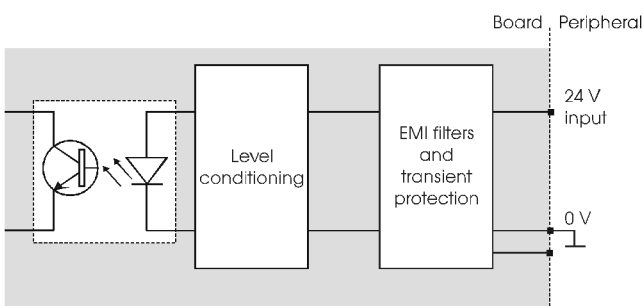
Source code supplied (ANSI-C)

Examples for Borland C, Microsoft C, Turbo Pascal, Visual Basic DOS

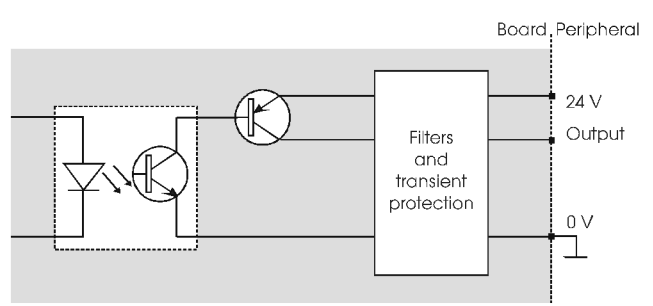
### Current driver list

See on the internet: <http://www.addi-data.com>

Protection circuitry for the input channels



Protection circuitry for the output channels

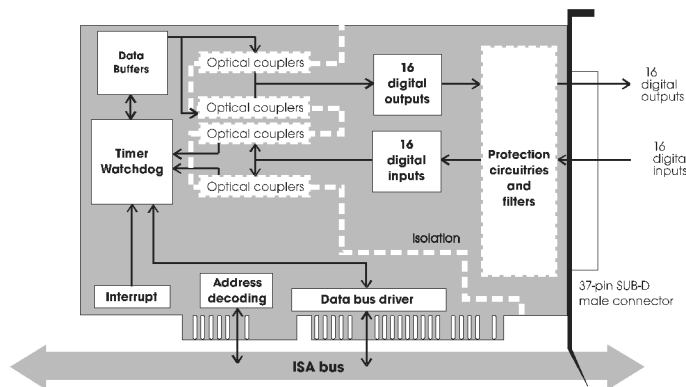


# Digital I/O Board, 32 Isolated I/O Channels, 24 V

## ADDINUM PA 1500



**Simplified block diagram**



**37-pin SUB-D male connector**

Reserve	19	37	Dig. output 16
Dig. output 15	18	36	Dig. output 14
Dig. output 13	17	35	Dig. output 12
Dig. output 11	16	34	Dig. output 10
Dig. output 9	15	33	Dig. output 8
Dig. output 7	14	32	Dig. output 6
Dig. output 5	13	31	Dig. output 4
Dig. output 3	12	30	Dig. output 2
Dig. output 1	11	29	0 V ext. (Outputs)
(inputs) 0 V ext.	10	28	24 V ext.
24 V ext.	9	27	Dig. input 16
Dig. input 15	8	26	Dig. input 14
Dig. input 13	7	25	Dig. input 12
Dig. input 11	6	24	Dig. input 10
Dig. input 9	5	23	Dig. input 8
Dig. input 7	4	22	Dig. input 6
Dig. input 5	3	21	Dig. input 4
Dig. input 3	2	20	Dig. input 2

### Specifications

#### Digital input

Number of input channels :	16 (type common ground according to IEC 1131-2)
Isolation:	Through optical couplers, 1000 V
Interruptible inputs:	14
Interrupt lines:	IRQ 3, 5 for XT, IRQ 10, 11, 12, 14, 15 for AT
Interrupt comparison logic:	AND and OR mode; OR priority
Nominal voltage:	24 V
Input current at 24 V:	6 mA typ.
Logic input level:	
U <sub>H</sub> max.:	30 V / current 9 mA typ.
U <sub>H</sub> min.:	17 V / current 2 mA typ.
U <sub>L</sub> max.:	14 V / current 0,6 mA typ.
U <sub>L</sub> min.:	0 V / current 0 mA typ.
Signal delay:	70 µs (at 24 V)
Maximum input frequency:	5 kHz (at 24 V)

#### Digital output

Output channels :	16 outputs, optically isolated to 1000 V
Output type:	High-Side (load at ground) according to IEC 1131-2
Nominal voltage:	24 V
Supply voltage:	10 to 36 V, min. 5 V
Max. current for 16 outputs :	3 A typ.
Output current/Output:	500 mA typ.
Short-circuit current/	
Output Shut-Down at 24 V,	
R <sub>load</sub> < 0,1R:	1,5 A
R <sub>DS ON</sub> resistance:	0,4 R max.
Switch-on time:	I out=0.5 A, load = resistor: 120 µs
Switch-off time:	I out=0.5 A, load = resistor: 40 µs
Overtemperature (Shut-Down):	170°C
Temperature hysteresis:	20°C

#### Safety

Shut-down logic:	When 24 V ext. supply voltage drops below 5 V: the outputs are switched off. Diagnostic: status bit or interrupt to the PC 3
Counters or timers:	
Watchdog:	timer-programmable, 5 µs to 9 s

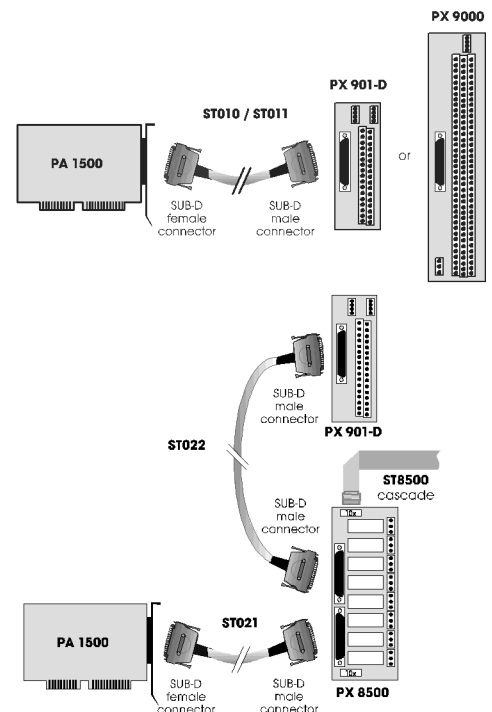
#### Noise immunity

Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 4 kV - Conducted radio interferences: 10 V
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#### Physical and environmental conditions

Dimensions approx.:	156 x 99 mm
System bus:	ISA
Space required:	Short board, 1 AT or XT slot
Operating voltage / Current:	+5 V, ± 5 % from the PC / 150 mA ± 10 mA
Front connector:	37-pin SUB-D male connector
Temperature range:	0 to 60°C (with forced cooling)

### Connection



### Ordering information

#### ADDINUM PA 1500

Digital I/O Board, 32 Isolated I/O Channels, 24 V  
Incl. technical manual and software drivers

#### Connection:

<b>PX901-D:</b>	Screw terminal board
<b>PX901-DG:</b>	Screw terminal board for DIN-rail
<b>PX9000:</b>	3-row screw terminal board for DIN-rail
<b>PX8500:</b>	Relay board for DIN-rail, cascadable, see page 94-95
<b>ST010:</b>	Standard round cable, shielded, twisted pairs, 2 m
<b>ST011:</b>	Standard round cable, shielded, twisted pairs, 5 m
<b>ST010-S:</b>	Same as ST010, for high currents
<b>ST021:</b>	Cable between board PA 1500 and PX 8500, shielded, twisted pairs, 2 m
<b>ST022:</b>	Between PX 8500 and PX 901