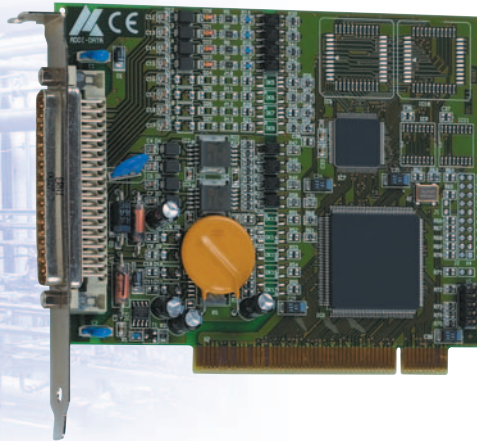


# Digital input/output board, 16 isolated I/O channels, 24 V



## APCI-1516

**8 digital inputs, 24 V**

**8 digital outputs, 24 V, 500 mA/channel**

**Optical isolation 1000 V**

**Input and output filters**

**Watchdog**

**Graphical display of the measured data**



LabWindows/CVI™

### Features

- PCI Interface to the 32-bit data bus
- Monitoring program for testing and setting the board functions

### Inputs

- 8 isolated inputs, 24 V
- Protection against pole reversal
- All inputs are filtered

### Outputs

- 8 isolated outputs, 10 to 36 V
- Output current per channel 500 mA
- Total current: 3 A typ. (protected by PTC resistor)
- Watchdog for resetting the outputs to "0"
- At power on, the outputs are reset to "0"
- Short-circuit current for 8 outputs ~ 3 A typ.
- Short-circuit current per output ~ 1.5 A typ.
- Self-resetting fuse (electronic fuse)
- Overtemperature and overvoltage protection
- 24 V power outputs with protection diodes and filters
- Special output capacitors minimise EMI emissions
- External 24 V supply screened through a protection circuitry
- Shut-down logic when the external supply voltage drops unter 5 V

### Safety features

- Optical isolation 1000 V
- Creeping distance IEC 61010-1 (VDE411-1)
- Separate grounds for inputs and outputs
- Protection against fast transients (burst) overvoltage, electrostatic discharge and high-frequency EMI

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

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

### Applications

- Industrial I/O control
- PLC connection
- Signal switching
- Interface to eletromechanical relays
- Automatic test equipment
- ON/OFF monitoring of motors, lights ...
- Watchdog timer
- Machine interfacing
- ...

### Software drivers

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

#### Standard drivers for:

Linux kernel version 2.4.2, Windows XP/2000/NT/98.

Real-time driver for Windows XP/2000/NT/98.

The board is supplied with the universal software ADDIPACK (see Page 5).

#### Drivers for the following application software:

LabVIEW 5.01

LabWindows/CVI

#### Samples for the following compilers:

Microsoft VC++ 5.0

Borland C++ 5.01

Visual Basic 5.0

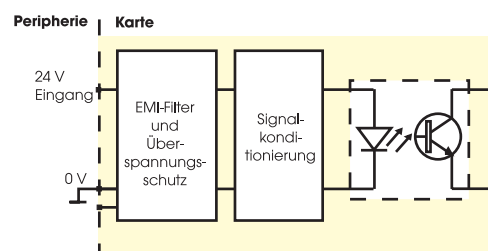
Delphi 4.0

#### ADDIPACK functions supported:

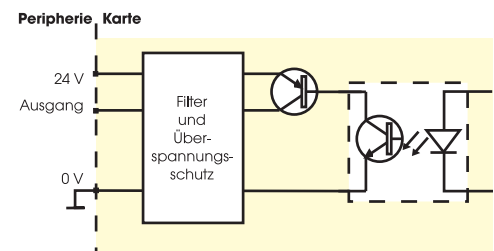
Digital input • Digital output • Watchdog

Current driver list on the web: [www.addi-data.com](http://www.addi-data.com)

### Protection circuitry for the input channels



### Protection circuitry for the output channels



# Digital input/output board, 16 isolated I/O channels, 24 V



APCI-1516

## Specifications

### Digital inputs

Number of inputs:	8 (common ground acc. to IEC 1131-2)
Nominal voltage:	24 V
Input current at 24 V:	6 mA typ.
Logical input level:	
U nominal:	24 V
UH max:	30 V/Current 9 mA typ.
UH min.:	19 V/Current 2 mA typ.
UL max.:	17 V/Current 0.6 mA typ.
UL min.:	0 V/Current 0 mA typ.
Optical isolation:	through optical couplers, 1000 V from the PC to the peripheral
Signal delay:	70 µs (at 24 V)
Maximum input frequency:	5 kHz (at 24 V)

### Digital outputs

Number of outputs:	8, optically isolated to 1000 V through optical couplers
Output type:	High-Side (Load at ground) acc. to IEC 1131-2
Nominal voltage:	24 V
Supply voltage:	10 to 36 V, min. 5 V (through front connector)
Max. current for 8 outputs:	3 A typ.
Output current/output:	500 mA typ.
Short-circuit current/output	
Shut-down at 24 V, $R_{load} < 0,1\Omega$ :	1,5 A
RDS ON resistance:	0,4 Ω max.
Switch-on time:	I out=0.5 A, Load = resistance: 100 µs
Switch-off time:	I out=0.5 A, Load = resistance: 60 µs
Over temperature (Shut-down):	170 °C (output driver)
Temperature Hysterese:	20 °C (output driver)

### Safety

Shut-down logic:	When the ext. 24 V supply drops below 5 V: the outputs are switched off.
Diagnostic (Pin 19)	Interruptible diagnostic at output overload, overtemperature or when the external 24 V voltage supply drops below 5 V
Watchdog:	Timer programmable 20 ms to 5 s in steps of 20 ms

### 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

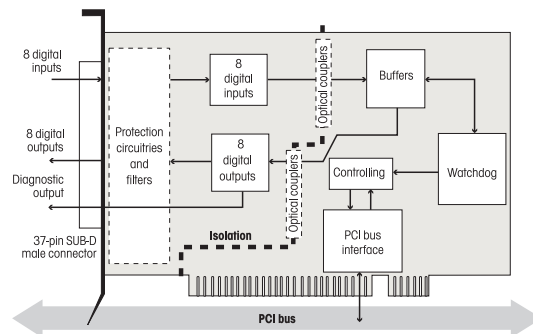
Dimensions:	131x 99 mm
System bus:	PCI 32-bit 5 V acc. to specification 2.1 (PCISIG)
Space required:	short board, 1 PCI slot
Operating voltage:	+5 V, ± 5 % from PC
Current consumption:	210 mA ± 10 % typ.
Front connector:	37-pin SUB-D male connector
Temperature range:	0 to 60 °C (with forced cooling)

Relay output board PX 8500-G,

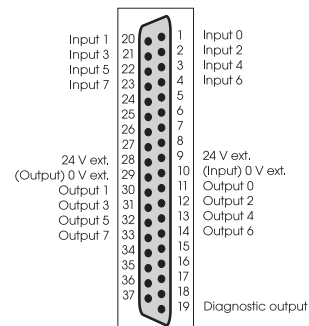
Screw terminal boards PX 9000 + PX 901-DG with cable ST010



## Simplified block diagram



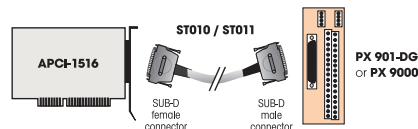
## Pin assignment – 37-pin SUB-D male connector



## ADDI-DATA connection

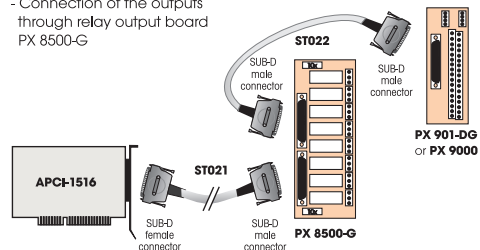
### Example 1

Connection of the inputs and outputs through screw terminals boards



### Example 2

- Connection of the inputs through screw terminal board PX 901-DG  
- Connection of the outputs through relay output board PX 8500-G



## ADDINUM APCI-1516

**APCI-1516:** Digital input/output board, 16 I/O channels isolated, 24 V. Incl. technical description, software drivers and monitoring program

### Connection

- PX 901-D:** Screw terminal board, LED status display
- PX 901-DG:** Screw terminal board, LED status display, for DIN-rail
- PX 9000:** 3-row screw terminal board for DIN-rail, LED status display
- PX 8500-G:** Relay output board with 8 relays for DIN-rail, cascadable to 32 relays, 220 V, 10 A

- ST010:** Standard cable, shielded, twisted pairs, 2 m
- ST011:** Standard cable, shielded, twisted pairs, 5 m
- ST010-S:** Same as ST010, for high currents
- ST021:** Round cable between APCI-1516 and PX 8500-G, shielded, twisted pairs, 2 m
- ST022:** Round cable between PX 8500-G and PX 901 or PX 9000, shielded, 2 m

## ORDERING INFORMATION

[www.addi-data.com](http://www.addi-data.com)

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