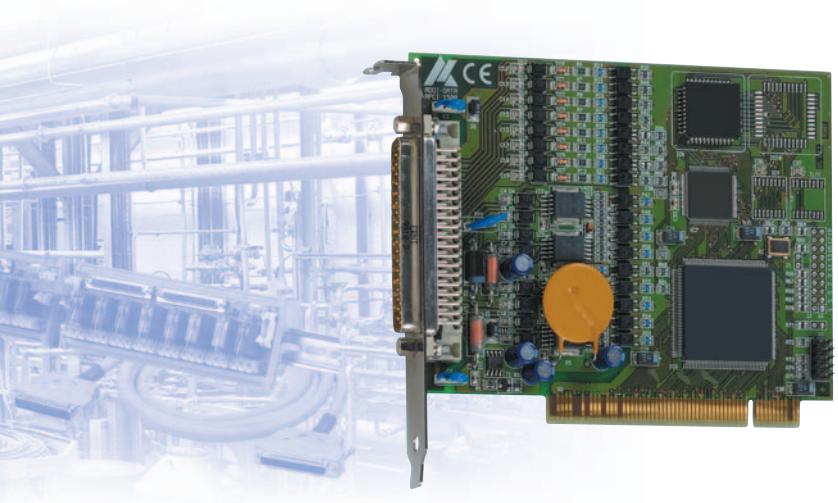
Digital input/output board, 32 isolated I/O channels, 24 V



APCI-1500

16 digital inputs, 24 V, including 14 interruptible inputs

16 digital outputs, 24 V, 500 mA/channel

Optical isolation 1000 V

Input and output filters

Watchdog, timer

After power-on the outputs are reset to "0"

Compatible version for the *CompactPCI*™ Bus

LabVIEW™

DASY*Lab*™

LabWindows/CVI™

Features

- PCI Interface to the 32-bit data bus
- 3 timers programmable by software
- Connector compatible to digital I/O board PA 1500 for the ISA bus as well as connector and software compatible to CPCI-1500 for the CompactPCI bus
- Monitoring program for testing and setting the board functions

Inputs

- 16 isolated digital inputs, 24 V, incl. 14 interruptible
- Protection against pole reversal
- All inputs are filtered

Outputs

- 16 isolated digital outputs, 10 to 36 V
- Output current per channel 500 mA
- Timer-programmable watchdog for resetting 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
- At power-on, the outputs are reset to"0"
- Short-circuit current for 16 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
- Output capacitors against electromagnetic emissions
- External 24 V voltage supply screened through protection circuitry
- Shut-down logic when the external supply voltage drops below 5 V

Safety features

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

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

Standard drivers for:
Linux kernel version 2.4.2, Windows XP/2000/NT/98.
Real-time driver for Windows XP/2000/NT/98.
Monitoring program ADDIMON

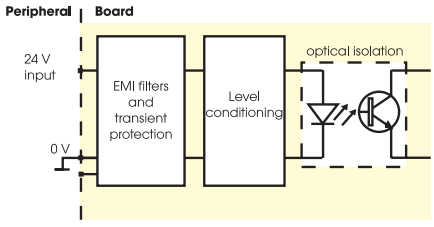
Drivers for the following application software:
LabVIEW 5.01 • LabWindows/CVI • Diadem 6/7

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 4.0
Turbo Pascal 7.0

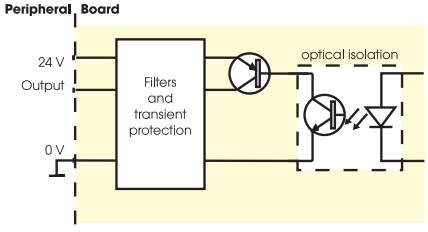
On request:
Dasylab 6/7 • Embedded NT • RTX-driver

ADDIPACK functions on request :
Digital Input with or without IRQ • Digital Output

Protection circuitry for the input channels



Protection circuitry for the output channels



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Fax: +49(0)7223/9493-92

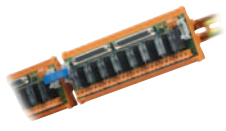
Digital input/output board, 32 isolated I/O channels, 24 V

APCI-1500

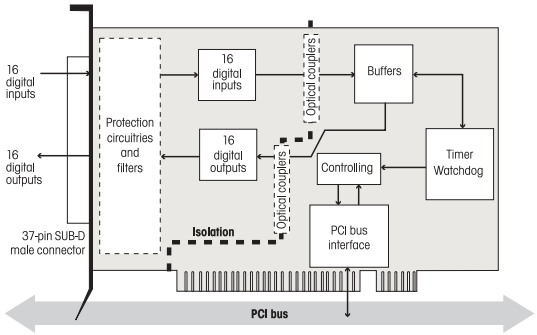
Specifications

Digital inputs	
Number of inputs:	16 (common ground acc. to IEC 1131-2)
Interruptible inputs:	14, IRQ line selected through BIOS
Optical isolation:	through optical couplers, 1000 V from the PC to the peripheral
Compare logic:	AND and OR mode; OR priority
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.
Signal delay:	70 µs (at 24 V inputs)
Maximum input frequency:	5 kHz (at 24 V)
Digital outputs	
Number of outputs:	16, 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 16 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
Overtemperature (Shut-down):	170 °C (output driver)
Temperature Hysterese:	20 °C (output driver)
Safety	
Shut-down logic:	When the ext. 24 V voltage drops below 5 V, the outputs are switched off.
Diagnostic:	Status bit or interrupt to the PC
Timer:	3
Watchdog:	Timer-programmable, 17 µs to 36 s
Noise immunity	
Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 4 kV - Conducted radio interferences: 10 V
Physical and environmental conditions	
Dimensions:	131 x 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:	400 mA typ.
Front connector:	37-pin SUB-D male connector
Temperature range:	0 to 60 °C (with forced cooling)

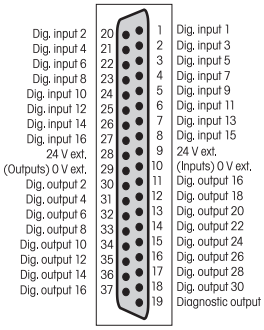
Relay output board PX 8500-G,
Screw terminal boards PX 9000 + PX 901-DG with cable ST010



Simplified block diagram

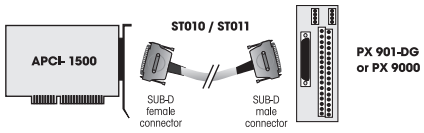


Pin assignment – 37-pin SUB-D male connector

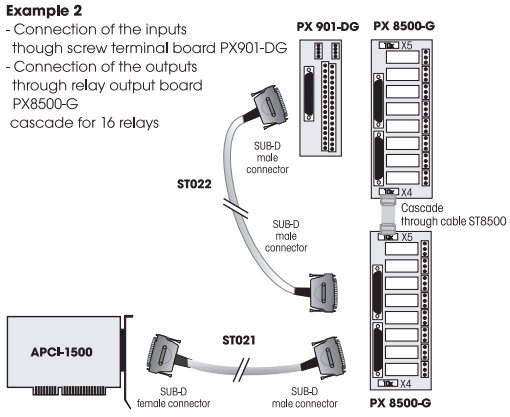


ADDI-DATA connection

Example 1
Connection of the inputs and outputs through screw terminals boards



Example 2
- Connection of the inputs though screw terminal board PX901-DG
- Connection of the outputs through relay output board PX8500-G cascade for 16 relays



ORDERING INFORMATION

ADDINUM APCI-1500

APCI-1500: Digital input/output board, 32 isolated I/O channels, 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 for DIN rail, cascadable
ST010: Standard cable, shielded, twisted pairs, 2 m
ST011: Standard cable, shielded, twisted pairs, 5 m
ST010-S: Same as ST010, for high currents (24V supply separately)
ST021: Round cable between APCI-1500 and PX 8500-G, shielded, twisted pairs, 2 m
ST022: Cable between PX 8500-G and PX 901-DG, shielded, 2 m
ST8500: Ribbon cable for cascading two PX 8500

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