

Digital input/output board, 32 isolated I/O channels, 24 V, for PC/104-Plus



Features

- PCI Interface to the 32-bit data bus
- 2 timers programmable by software

Inputs

- 16 isolated digital inputs, 24 V, incl. 2 interruptible
- Protection against pole reversal
- All inputs are filtered

Outputs

- 16 isolated digital outputs, 11 to 36 V
- Output current per channel 150 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 ~ 2 A typ.
- Short-circuit current per output ~ 1.1 A peak
- 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 7 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

PC104-PLUS1500

**16 digital inputs, 24 V,
including 2 interruptible inputs**

16 digital outputs, 24 V, 150 mA/channel

Optical isolation 1000 V

Input and output filters

Watchdog, timer

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

EMC tested acc. to 89/336/EEC

- In preparation

Applications

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

Software drivers

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

Free download of all current drivers on the internet at www.addi-data.com.

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 driver software ADDIPACK for an easy function management.

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 and Delphi 4.0 (except timer function)

ADDIPACK functions supported:

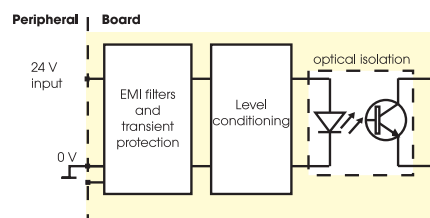
Digital input • Digital output

Interrupt • Watchdog • Timer • counter

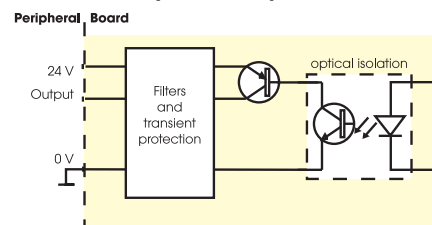
On request: RTX-driver

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

Protection circuitry for the input channels



Protection circuitry for the output channels



Digital input/output board, 32 isolated I/O channels, 24 V, for PC/ 104-Plus

PC104-PLUS1500

Specifications

Digital inputs

Number of inputs:	16 (common ground acc. to IEC 1131-2) incl. 1 used as a counter input (channel 0)
Interruptible inputs:	2 (channel 2 and 3)
Optical isolation:	through optical couplers, 1000 V from the PC to the peripheral
Compare logic:	OR mode
Filter for interruptible inputs:	40 µs
Nominal voltage:	24 V
Input current at 24 V:	Channel 0: 6 mA typ. Channel 1-15: 3,9 mA typ.
Logical input level:	U nominal: 24 V
UH max:	30 V/Current 6 mA typ.
UH min.:	19 V/Current 2 mA typ.
UL max.:	14 V/Current 0.7 mA typ.
UL min.:	0 V/Current 0 mA typ.
Signal delay:	70 µs (at 24 V inputs)
Maximum input frequency:	Channel 0: 100 KHz (at 24 V) Channel 1-15: 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:	11 to 36 V
Max. current for 8 outputs:	1,5 A typ.
Output current/output:	150 mA typ.
Short-circuit current/output	
Shut-down at 24 V, $R_{load} < 0,1 \Omega$:	1,1 A
RDS ON resistance:	0,2 Ω max. at 25°C
Switch-on time:	50 µs
Switch-off time:	75 µs
Overtemperature (Shut-down):	135 °C (output driver)
Temperature Hysteresis:	10 °C (output driver)

Safety

Shut-down logic:	When the ext. 24 V voltage drops below 7 V, the outputs are switched off.
Diagnostic:	Status bit or interrupt to the PC
Timer 1/Watchdog:	1, 12-bit, time base µs, ms, s
Timer 2:	1, 12-bit, time base µs, ms, s
Zähler:	1, 16-bit, signal channel 0, limit frequency 100 KHz

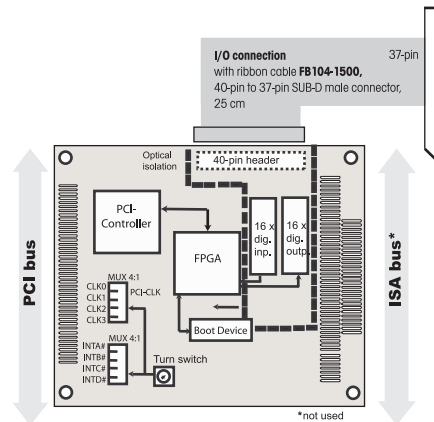
Noise immunity

Test level:	- ESD: 4/8 kV - Fields: 10 V/m - Burst: 4 kV - Conducted radio interferences: 10 V
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Physical and environmental conditions

Dimensions:	90 x 96 mm
System bus:	PCI 32-bit 5 V acc. to specification 2.1 (PCISIG)
Installation in:	PC/ 104-Plus system
Operating voltage:	+5 V or 3.3 V, $\pm 5\%$ from PC
Current consumption:	
+ 3.3 V from PC	95 mA
+ 5 V from PC	45 mA
I/O connector:	40-pin male connector (2-row, 2.54 mm pattern)
Temperature range:	0 to 60 °C (with forced cooling)

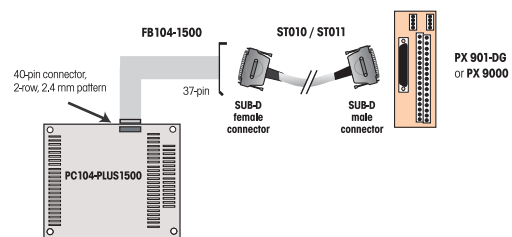
Simplified block diagram



Pin assignment – 40-pin male connector

Dig. input 0	1	2	Dig. input 1
Dig. input 2	3	4	Dig. input 3
Dig. input 4	5	6	Dig. input 5
Dig. input 6	7	8	Dig. input 7
Dig. input 8	9	10	Dig. input 9
Dig. input 10	11	12	Dig. input 11
Dig. input 12	13	14	Dig. input 13
Dig. input 14	15	16	Dig. input 15
24 V ext.	17	18	24 V ext.
Dig. input GND	19	20	Dig. output GND
Dig. output 0	21	22	Dig. output 1
Dig. output 2	23	24	Dig. output 3
Dig. output 4	25	26	Dig. output 5
Dig. output 6	27	28	Dig. output 7
Dig. output 8	29	30	Dig. output 9
Dig. output 10	31	32	Dig. output 11
Dig. output 12	33	34	Dig. output 13
Dig. output 14	35	36	Dig. output 15
Not connected	37	38	Not connected
Not connected	39	40	Not connected

ADDI-DATA connection



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



ORDERING INFORMATION

PC104-PLUS1500

Digital input/output board, 32 isolated I/O channels, 24 V, for a PC/104-Plus system.
Incl. technical description and software drivers.

Connection

FB104-1500: Ribbon cable, 40-pin to 37-pin SUB-D male connector, 25 cm

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, cascable

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 FB104-1500 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