Digital I/O board, optically isolated, 32 digital inputs and outputs, 24 V

CPCI-1500

16 digital inputs, 24 V, including 14 interruptible

16 digital outputs, 24 V, 500 mA/channel

Optical isolation 1000 V

Input and output filters

The outputs are reset to "0" at Power-On

MTBF: 85 150 hours at 45 °C

Timer, watchdog

RoHS 2002/95/EC
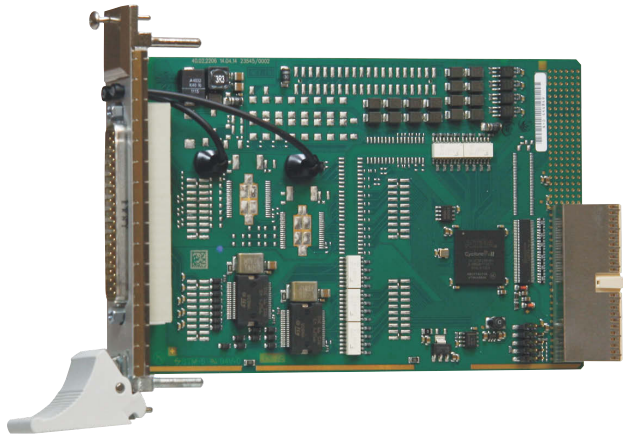
CompactPCI™ 32-bit

Also for
PCI EXPRESS® see APCIe-1532 page 118

Also for *PCI*
See APCI-1500 page 146

URS-1500-6U
6U bracket

Windows™
64/32-bit drivers

LabVIEW™ LabWindows/CVI™

DIAdem®

DASYLab 10
Data Acquisition System Laboratory

Features

- Can be inserted in PXI systems, with restricted functionality
- 3 software-programmable timers
- Connector and software compatible to digital I/O boards APCI-1500/PA 1500
- Monitoring program for testing and setting the board functions

Inputs

- 16 optically isolated digital inputs, 24 V, including 14 interruptible inputs
- Reverse voltage protection
- All inputs are filtered

Outputs

- 16 optically isolated digital outputs, 10 V to 36 V
- Output current per channel 500 mA
- Timer programmable watchdog for resetting the outputs to "0"
- Diagnostic report through status register at short-circuits, 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
- Ext. 24 V voltage supply screened and filtered
- Shutdown logic, when the external supply voltage drops below 5 V
- Programmable watchdog for resetting the outputs in case of error

Safety features

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

Applications

- Industrial I/O control
- PLC coupling
- Acquisition of encoder data for process control
- Signal switching
- Interface to electromechanical relays
- ON/OFF monitoring of motors, lights...
- Watchdog / timer
- Machine interfacing
- ...

Software drivers

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

Standard drivers for:
- Linux
- 32-bit drivers for Windows 8 / 7 / Vista / XP / 2000
- Signed 64-bit drivers for Windows 8 / 7 / XP
- Real-time use with Linux and Windows on request

Drivers and samples for the following compilers and software packages:
- Microsoft VC++ • Microsoft C
- Borland C++ • Borland C
- Visual Basic • Delphi
- LabVIEW • LabWindows/CVI • DASYLab • DIAdem

On request:
Further operating systems, compilers and samples.

Driver download: www.addi-data.com/downloads

Phone: +49 7229 1847-0   info@addi-data.com
Fax: +49 7229 1847-222 www.addi-data.com

ADDI-DATA®
SPIRIT OF EXCELLENCE

Specifications

Digital inputs

Number of inputs:	16 (common ground acc. to IEC 1131-2)
Interruptible inputs:	14 out of 16 digital inputs IRQ line selected through BIOS
Optical isolation:	Through opto-couplers, 1000 V from PC to peripheral
Interrupt compare logic:	AND and OR mode; OR priority
Nominal voltage:	24 V
Input current at 24 V:	6 mA typ.
Logic input levels:	
U nominal:	24 V
UH max.:	30 V/current 9 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)
Maximal input frequency:	5 kHz (at 24 V)

Digital outputs

Number of outputs:	16
Optical isolation:	Through opto-couplers, 1000 V
Output type:	High-side (load to ground) acc. to IEC 1131-2
Nominal voltage:	24 V
Supply voltage:	10 V to 36 V, min. 5 V (via front connector)
Max. current for 16 outputs:	3 A typ.
Output current/output:	500 mA typ.
Short-circuit current/output shutdown at 24 V, R_{load} <0.1 Ω:	1.5 A
RDS ON resistance:	0.4 Ω m1ax.
Switch-on time:	I out = 0.5 A, load = resistance: 120 µs
Switch-off time:	I out = 0.5 A, load = resistance: 60 µs
Overtemperature:	170 °C (output driver)
Temperature hysteresis:	20 °C (output driver)

Safety

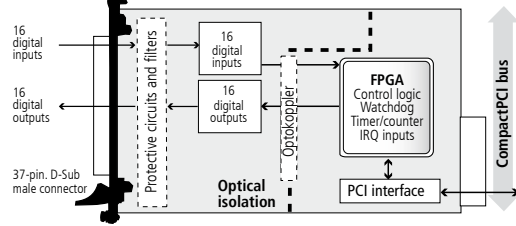|	
Shutdown logic:	When the ext. 24 V voltage drops below 5 V: The outputs are switched off.
Diagnostics:	Short-circuits, overtemperature, status bit or interrupt to the PC.
Timer:	3 (max. 10 kHz, 24 V)
Watchdog:	Timer programmable, 17 µs up to 36 s for switching off the outputs

EMC – Electromagnetic compatibility

The product complies with the European EMC directive. The tests were carried out by a certified EMC laboratory in accordance with the norm from the EN 61326 series (IEC 61326). The limit values as set out by the European EMC directive for an industrial environment are complied with. The respective EMC test report is available on request.
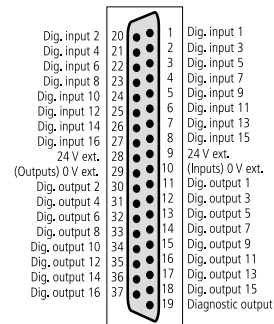
Physical and environmental conditions

|	
Dimensions:	3U/4TE
System bus:	CompactPCI 32-bit (5 V signal voltage)
Space required:	1 CompactPCI slot 3U
Operating voltage:	+5 V, ± 5 %, from the PC
Current consumption:	220 mA typ. ± 10 %
Front connector:	37-pin D-Sub male connector
Temperature range:	0 to 60 °C (with forced cooling)
MTBF:	85 150 hours at 45 °C

Simplified block diagram

Pin assignment – 37-pin D-Sub male connector

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

ADDI-DATA connection

Example 1
Connection of the inputs and outputs through screw terminal panels
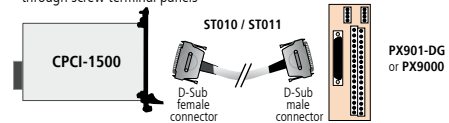
Example 2
- Connection of the inputs through screw terminal panel PX901-DG
- Connection of the outputs through relay output board PX8500-G cascaded in 16 relays
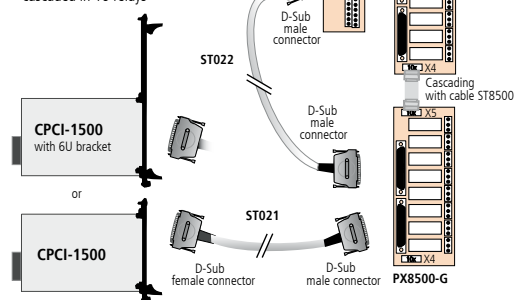
Ordering information

CPCI-1500
Digital I/O board, 32 digital inputs and outputs, optically isolated, 24 V. Incl. technical description, software drivers and monitoring program.

Option
URS-1500-6U:	6U bracket for mounting in 6U housing

Accessories
PX901-D:	Screw terminal panel, LED status display
PX901-DG:	Screw terminal panel, LED status display, for DIN rail
PX9000:	3-row screw terminal panel, for DIN rail, LED status display

PX8500-G:	Relay output board for DIN rail, cascadable
ST010:	Standard round cable, shielded, twisted pairs, 2 m
ST011:	Standard round cable, shielded, twisted pairs, 5 m
ST010-S:	Same as ST010, for high currents (24 V supply separate)
ST021:	Round cable between CPCI-1500 and PX8500, shielded, twisted pairs, 2 m
ST022:	Round cable between PX8500 and PX901, shielded, 2 m
ST8500:	Ribbon cable for cascading two PX8500