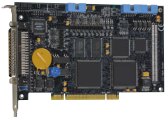


# Motion control for 4 servo or stepper motors



CompactPCI™ 32-bit



Also for **PCI**  
See page 212



The board CPCI-8004 for the CompactPCI bus is used for the control of up to four servo or stepper motor axes through a PC. With this intelligent and flexible board, many control tasks from simple to complicated can be realised.

The board has four stepping/direction output channels (D/A channels, 16-bit). They are isolated from the digital current supply and are used for the control of commercially available power amplifiers connected as speed controlling devices or current regulators.

Incremental encoders, SSI encoders and EnDat encoders as well as end and reference switches can be connected to each axis channel.

Digital PID filters with forward compensation and optional Notch filters are also involved in the axis control.

The "open" controlling concept of the CPCI-8004 is intended in the first place for manufacturers of special-purpose machines and users which need a flexible integration as well as a CNC solution.

## Features

### Hardware/Properties

- Intelligent board based on a 64-bit RISC processor
- Positioning of up to 4 axes either with servo or stepper motors. Mixed operating of servo and stepper motors possible.
- Interface for all commercially available power amplifiers
- All input and output channels are optically isolated
- A multiple-axis system can be realised by inserting several CPCI-8004 in the same PC.

### Software

- Linear, circular, helical, spline and CAD interpolation
- Point-to-point movement with independent control of each axis
- Function library for Pascal, C-Basic, Borland Delphi, Borland C++, Visual Basic, Visual C++
- Programming through a PC application software or stand-alone
- The operating program can be easily adapted to specific requirements using program modules supplied with the board
- User programs created with the compiler can be processed automatically
- Multitasking: the board can simultaneously process up to 4 user programs.

## CPCI-8004

For 1 to 4 servo or stepper motors

Onboard 64-bit RISC processor

Optical isolation

16-bit analog output channels

24 digital inputs and 12 digital outputs,  
optically isolated

## Applications

- Precision positioning
- CNC control
- Semi-conductor manufacturing
- Event counting
- Motion control
- Robots
- X-Y-Z position control
- Stepper motor control
- Machine monitoring
- Research and development

## Software

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:

- Visual C++ • Microsoft C Lib. • Borland C Lib.
- Visual Basic • Delphi

### On request:

Further operating systems, compilers and samples.

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

## Specifications

### CPCI-8004

CPU system:	64-bit RISC processor 150 MHz
RAM:	16 MB
Data exchange with the PC:	Through CompactPCI bus
Controller software:	PIDF (PID filters with forward compensation)
Interpolation:	2D .. 4D linear, 2D circular, 3D circular, 4D helix, Interpolation with secondary axes.
Inputs for incremental encoders:	Diff. or TTL max. 2 MHz. Word length: 32-bit with sign
Inputs for SSI encoders:	Up to 32-bit, gray / binary code variable frequency 30 kHz to 1.5 MHz
Setpoint value outputs (servo):	1 per channel, D/A converter, 16-bit resolution, ± 10 V
Pulse outputs: (stepper motors)	1 stepper signal (RS422) and 1 directional signal (RS422) for each channel, pulse frequency up to 2 MHz
Isolated digital inputs:	24 inputs, 24 V, as end or reference switch or freely programmable
Isolated digital outputs:	12 channels, 24 V / 500 mA, for releasing the power amplifiers or freely programmable
Interrupts:	Through PCI BIOS
DMA:	Bus master
Auxiliary voltage:	24 V external for digital I/O
Options:	Interbus or CAN-Bus

### Safety

Optical isolation: 1000 V

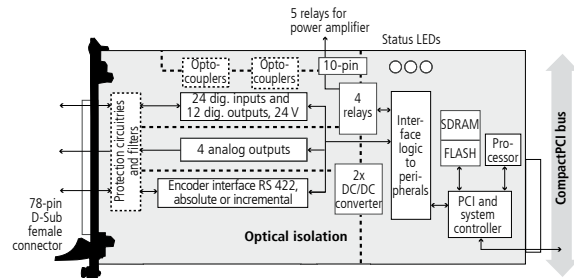
### EMC – Electromagnetic compatibility

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.

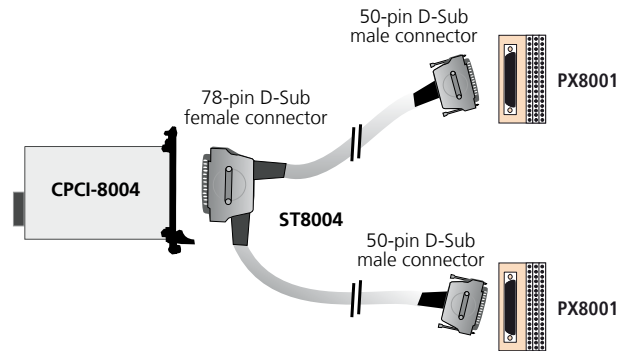
### Physical and environmental conditions

Dimensions:	160 x 100 mm
System bus:	CompactPCI 32-bit
Space required:	1 CompactPCI slot
Operating voltage:	+5 V and 3.3 V, ± 5 % from the PC
Front connector for CPCI-8004:	Axis 1, 2, 3, 4: 78-pin D-Sub female connector
Temperature range:	0 to 60 °C (with forced cooling)

## Simplified block diagram



## ADDI-DATA connection



## Ordering information

### CPCI-8004

Motion control board for 4 servo or stepper motors. Incl. technical description and software drivers.

### Accessories

- PX8001:** 3-row screw terminal panel, 50-pin, for DIN-rail mounting
- ST8004:** Shielded round cable, 2 m, 78-pin female connector to 2 x 50-pin male connector