

Motion control board for 4 servo or stepper motors

IN PREPARATION!



The board CPCI-8004 was developed in order to come up with the growing requirements in motion control and positioning. With this intelligent and flexible board, many control tasks from simple to complicated can be realised.

The CPCI-8004 for the CompactPCI bus is used for the control of up to 8 servo or stepper motor axes on the basis of a CompactPCI computer system.

The board has four stepper/direction output channels (16-bit D/A channels). 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. Each channel is assigned an input channel used for the connection of all common incremental or SSI encoders for reference switch.

Digital PID filters with forward compensation and optional Notch filters or Langham controllers 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 interpretation as well as a CNC solution.

Features

Hardware features

- Intelligent board based on a 64-bit RISC processor
- Positioning of up to 4 axes either with servo or with stepper motors. Mixed operating of servo and stepper motors possible.
Positioning of up to 8 axes with slave board
- Interface for all commercially available power amplifiers
- All input and output channels are isolated
- A multiple axis system can be realised by inserting several CPCI-8004 in the same system.

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

CPCI-8004

For 1 up to 8 servo or stepper motors

On-board 64-bit RISC processor

Optical isolation

16-bit analog output channels

40 dig. inputs and 24 dig. outputs, isolated

Open system

Menu-driven test application

- Multitasking: the board can simultaneously process up to 4 user programs.

Noise immunity

Test level:

- ESD: 4 kV
- Fields: 10 V/m
- Burst: 4 kV
- Conducted radio interferences: 10 V

EMC tested according to 89/336/EEC

- In preparation

Applications

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

Software drivers

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

Drivers:

Windows NT 4.0 and Windows XP/2000:

API als 32-Bit DLL + SYS- driver.

Delphi 2.0 interface, Microsoft C Lib., Borland C Lib.

Windows 9x/Windows ME:

API als 32-Bit DLL + VXD driver.

Delphi 2.0 interface, Microsoft C Lib., Borland C Lib.

Linux: on request

Also delivered: stand alone program

Samples:

Samples for Visual Basic 4.0 (32-bit version), Visual C++, Borland Delphi

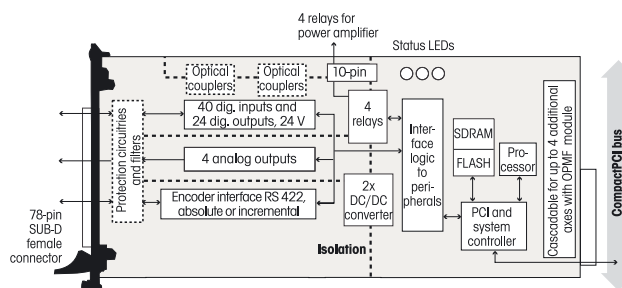
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CPCI-8004

Specifications

CPU system:	64-bit RISC processor 150 MHz
RAM:	32 MB
Data exchange with the PC:	through Dual Port Memory approx. 100 kB
Controller software:	PIDF (PID filter with forward compensation)
Interpolation:	2D .. 8D linear, 2D circular, 8D circular, 8D helical, spline, asynchronous and synchronous interpolation with secondary axes.
Inputs for incremental encoders:	Diff. or TTL max. 2.1875 MHz (8.75 MHz after quadrupling). Word length: 32-bit with sign
Inputs for SSI encoders:	up to 32-bit, gray/binary code variable frequency 30 KHz, 2.1875 MHz
Setpoint value outputs (servo):	1 for each channel, D/A converter, 16-bit resolution, ± 10 V
Pulse outputs (stepper):	1 stepper signal (RS422) and 1 directional signal (RS422) for each channel, pulse frequency up to 10 MHz
Isolated digital inputs:	40 inputs, 24 V, as end or reference switch or freely programmable
Isolated digital outputs:	24 channels, 24 V/500 mA, for releasing the power amplifier or freely programmable
Interrupts:	Through PCI BIOS
DMA:	Bus master
Auxiliary voltage:	24 V external for dig. I/O
Options:	Interbus/CAN-Bus
Safety	
Optical isolation:	1000 V
Noise immunity	
Test level:	- ESD: 4 kV - Fields: 10 V/m - Burst: 4 kV - Cond. radio interferences: 10 V
Physical and environmental conditions	
Dimensions:	3U/4TE
System bus:	CompactPCI 32-bit 5 V acc. to spec. 2.1 (PCISIG)
Place required:	Board CPCI-8004: 1 slot Slave board OPMF-C: 1 slot Cable FB8001-C: 1 slot opening
Operating voltage:	+ 5 V, ± 5 % from the PC
Front connector CPCI-8004:	Axis 1, 2, 3, 4: 78-pin SUB-D female connector
Front connector OPMF-C:	Axis 5, 6, 7, 8: 78-pin SUB-D female connector
Temperature range:	0 to 60°C (with forced cooling)

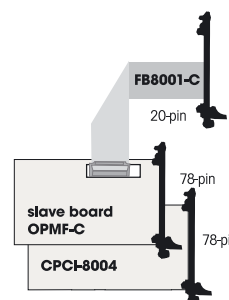
Simplified block diagram



ADDI-DATA connection

Example for ein 8-axes-System

CPCI-8004: Standard 1 to 4 axes
OPMF/8C: 8 axes, incl. 4 on the 78-pin front connector
Cable FB8001-C: for option OPMF-AI12, 4 analog inputs
Options: Interbus / CAN Bus



IN PREPARATION!

ORDERING INFORMATION

ADDIPOS CPCI-8004

CPCI-8004: Axis control board for 4 servo or stepper motor axes. Incl. technical description and software drivers

Zubehör

OPMF-C: Slave board for an extension of up to 8 axes

OPMF/5C: Extension to 5 axes in total

OPMF/6C: Extension to 6 axes in total

OPMF/7C: Extension to 7 axes in total

OPMF/8C: Extension to 8 axes in total

OPMF/AI12-C: 4 analog inputs, 12-bit resolution
each channel can be set to the following measuring range through software:
0..5 V, 0..10 V, -5 V..+5 V, -10 V..+10 V

FB8001-C: This module is available as single or double
Ribbon cable between OPMF/AI12C and a 20-pin
SUB-D male connector with bracket