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Find the *Danaher / Kollmorgen / Motion Engineering PCI/DSP* at our website: *Click HERE*



PCI/DSP

4 Axis Model

- C-programmable using MEI standard C function libraries (over 250 functions)
- Fast host communication across PCI bus
- Shielded high-density connectors
- Supports both servos and steppers
- 24 user I/O lines
- 16-bit servo output resolution
- 550 kHz step/direction output
- Point-to-point and coordinated motion
- Supports Windows NT, Windows 95/98, and DOS
- Flexible DSP architecture allows on-the-fly changes to many motion parameters

The PCI/DSP uses a powerful Analog Devices DSP to provide 4 axes of servo or stepper control in a single PCI bus slot. Hardware features include 16-bit servo outputs, encoder inputs to 5 MHz, and 24 lines of opto-isolated user I/O.

You program the PCI/DSP using MEI's flexible C function libraries with over 250 motion control functions. Combining MEI C libraries with compilers from Microsoft, Borland, Watcom, Symantec, and others speeds development of complex motion applications.

The PCI/DSP provides a rich set of software algorithms, including a sophisticated

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second-order PID control algorithm with velocity, acceleration, and friction feed-forward. Advanced features include electronic gearing and camming, dual-loop control, circular and linear interpolation, and trapezoidal, S-curve, parabolic, and custom motion profiles.

The PCI/DSP allows motion control programs to share execution between the on-board DSP (for numerically intensive real-time functions) and the host (for non-real-time functions). This results in an ideal division of labor with minimal host intervention.

Powerful C-programming Libraries

The PCI/DSP draws both its power and flexibility from MEI's
C function libraries. These libraries enable applications developed on the PCI/DSP to run on any MEI motion controller.
The MEI C libraries contain over 250 functions you can use to create motion control programs from simple point-to-point motion to complex multi-axis coordinated motion. Along with source code, MEI provides hundreds of sample applications to help speed development.

Development Environment

MEI controllers support most popular compilers and operating systems, including those with true multitasking.
Operating Systems and Compilers:

- DOS
- Windows 95
- Windows 98
- Windows NT
- Microsoft Visual C/C++
- Borland C/C++
- Watcom C/C++
- Visual BASIC for Windows
- GNU

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PID and Notch Filters

The PCI/DSP uses a software PID control algorithm optimized for high performance. This PID algorithm delivers quick update rates, stable operation, and easy tuning. An option-al post-PID notch filter is available to eliminate mechanical resonances in a closed-loop system.

Powerful Frame Architecture

To create a motion sequence, the DSP executes a series of “frames” generated by the MEI C library and sent from the host. Each frame specifies trajectory calculation variables as well as the trigger point for determining when the next frame should be executed.
Setup and Tuning Tools

To set up and configure your system, you can use Motion Console, a Windows-based program that lets you spin motors with just a few mouse clicks.
Using Motion Console, you can install and configure multiple controllers, modify tuning parameters, check axis status, and graph motion in real time.

Variety of Motion Profiles

With a single C function, you can program independent or simultaneous point-to-point motion for up to four axes (with your choice of trapezoidal, parabolic,S-curve, or user-defined profiles). You can trigger I/O bits on-the-fly for specified positions, velocities, or times.

Advanced Motion Features

• electronic gearing & camming
• coordinated motion with acceleration blending, cubic splining, or circular interpolation
• feed-speed override with pause-on-path
• tangential following and laser power control

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• position latching (under 4 microseconds)
• analog & encoder-based jogging
• sinusoidal commutation
• dual-loop control
• linear interpolation
• high-speed registration
• direct data acquisition (A/D & D/A)

High-Performance DSP Architecture

The PCI/DSP uses a high-performance DSP to execute real-time motion control algorithms, offloading non-real-time functions to the host. The PCI/DSP buffers commands from the host and stores motion and I/O sequences on-board.
This efficient division of labor frees the host from real-time requirements and enables fast host-to-DSP communication across the PCI bus. Even complex functions require virtually no CPU time once motion starts.

Fast Communications

The host compiles C functions and transmits them as binary strings across the high speed PCI bus. While the DSP can interrupt the host to request data or initiate other actions, no host involvement is required once compiled commands are downloaded.
The host CPU can access all on-board peripheral functions (such as digital I/O) without interrupting the real-time control loop calculations of the DSP.
Fast bus communications also allow the PCI/DSP to take full advantage of ever-expanding host CPU performance by leveraging the multitasking capabilities of the Windows NT operating system.

Position Feedback

Up to four encoder inputs accept position feedback at up to 5 MHz. With MEI's unique Encoder Integrity Checking (EIC) feature, on-board encoder inputs can detect broken or shorted encoder wires, detect an illegal state, and digitally filter serious noise. EIC ensures

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that problems with either the encoder or its wiring won’t result in a runaway condition.

Hardware features

• 16-bit servo output resolution
• 32-bit or 48-bit accuracy in all kinematic functions (position, velocity, and acceleration)
• shielded high-density connectors
• support for servo and steppers on one board
• step output rates up to 550 kHz

PCI/DSP Specifications

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