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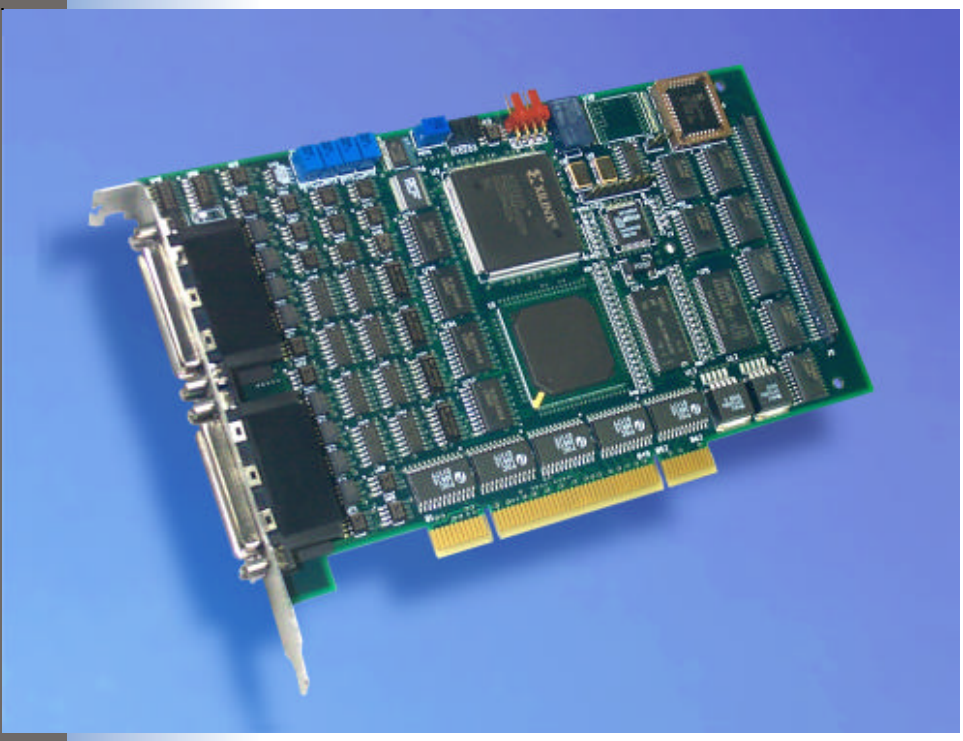
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MultiFlex PCI 1440 Motion Controller

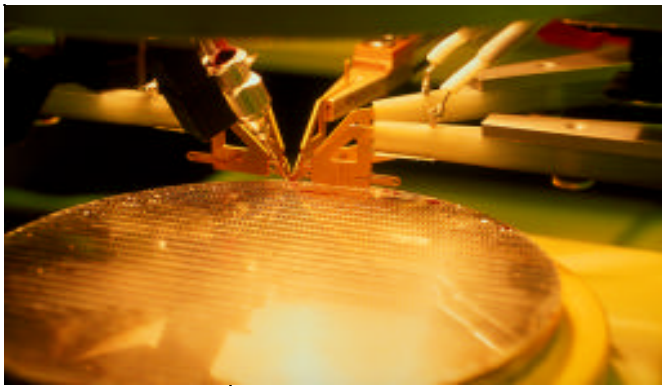
An Introduction to the MultiFlex PCI 1440 Motion Control Card...



The MultiFlex PCI 1440 is a multi-axis servo and stepper motion control card designed to provide OEM machine builders with more flexibility and better overall value than any motion controller on the market today. Comprehensive features include:

- Up to 8 axes of combined servo and stepper control in an economical half-length PCI card
- 1-4 axes of analog (servo) command, *plus* 1-4 axes of pulse (stepper or servo) command
- Available with either 4 or 8 encoders - providing up to 8 axes of closed-loop control
- Multi-axis point-to-point & coordinated motion
- Trapezoidal, S-curve and parabolic profiles
- 4 KHz servo loop update rate each axis
- Four 16-bit analog servo command outputs
- 5 MHz pulse outputs for precise micro-stepping
- 20 million encoder counts/sec
- Open and closed-loop stepper control
- On-the-fly trajectory changes
- On-board multi-tasking and programmable interrupts free host PC for other tasks
- Consistent real-time behavior: Peak performance is maintained no matter which features are enabled
- Eight 14-bit analog inputs (optional)
- Dedicated high-speed I/O (capture & compare)
- I/O signals conveniently available via high-density SCSI connectors on end bracket
- All I/O signals are differential or complementary twisted-pairs for superior noise immunity
- Includes Motion Integrator™ suite of graphical installation, tuning and diagnostic programs
- 32 and 64-bitWindows and Linux drivers

- ***A powerful and economical 1-8 axis servo and stepper motion controller***
- ***Advanced RISC processor for robust real-time motion and I/O control***
- ***Extensive on-board digital and analog I/O***
- ***Small footprint: PCI Short-Card***
- ***Comprehensive support for C/C++/C#, Delphi LabVIEW and Visual Basic programmers***
- ***Powerful suite of software utilities and sample programs included***
- ***High-performance, value priced***



PMC
Precision MicroControl Corp.

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MultiFlex PCI 1440 Specifications

Form-factor

- Single slot, PCI-bus Short-Card
- PCI Universal card (3.3 & 5V signaling)

Communication

- High speed binary communication via dual-ported RAM
- Configurable for PCI-bus interrupt or polling communication

Programming

- Programmable with C/C++, Visual Basic, Delphi or LabVIEW
- Native LabVIEW/BridgeVIEW support via the Motion VI Library
- Supports Windows 98/2000/XP® Plug&Play & Windows NT®
- Includes Motion Integrator™ graphical and intuitive Windows® software suite for easy installation, tuning and diagnostics
- For Real-Time OS support, contact PMC
- Also programmable in easy-to-use on-board command language
- Programmable PC interrupt conditions
- Programmable in user units (mm, microns, ft./sec...etc.)

Motion Capabilities

- Up to 8 control axes per card
- 1-4 axes of analog (servo) control
- 1-4 axes of pulse (stepper or servo) control
- 4-axes (standard) or 8-axes (optional) closed-loop control
- Point-to-point positioning
- Multi-axis synchronized & coordinated motion
- Trapezoidal, parabolic and S-curve velocity profiles
- Independent acceleration & deceleration
- Linear & circular interpolation
- High-resolution electronic gearing
- Position, velocity and gain control modes
- Backlash compensation
- Motion trajectory & PID parameters can be changed on-the-fly
- High-speed position capture inputs and compare outputs

Memory

- 16 Mbytes Dynamic RAM
- 512 Kbytes Flash ROM

Kinematic Ranges

- Position: 64 bit floating point
- Velocity and acceleration: 64 bit floating point

Servo Control Signals

- 4 axes of ±10V analog command signals with 16-bit resolution
- 4 axes of pulse & direction signals for pulse-controlled servo drives: 5MHz maximum pulse rate each axis

Servo Filter

- Proportional/Integral/Derivative with acceleration, deceleration & velocity feed forward (PID-FF)
- 4 KHz servo loop rate each axis

Stepper Control Signals

- 4 axes of pulse/direction or CW/CCW stepper control
- 5 MHz maximum step (pulse) rate each axis (up to 4 axes)
- Full step, half-step and microstepping control. Full & half current
- Open or closed-loop stepper control

Position Feedback

- Standard: 4 quadrature incremental encoders with index
- Optional: 8 quadrature incremental encoders with index
- 20 MHz encoder count rate for each axis (up to 8 axes)
- Single-ended or differential inputs (A+, A-, B+, B-, I+, I-)
- High-speed encoder failure detection circuitry
- Digital noise filtering
- 32-bit position resolution (+/-2,147,483,647 encoder counts)

I/O Signals

- 16 uncommitted bi-directional opto-isolated inputs with individually configurable supply & return: 5 to 24 Volts. (For home, ± limits, amp fault, etc.)
- 12 uncommitted high-current outputs (sinking up to 100 mA): 5 to 24 Volts. (For drive enable/disable, full/half current, step/microstep, etc.)
- 32 uncommitted digital TTL I/O channels, 16 in and 16 out
- All TTL outputs can sink 24 mA and source 15 mA
- 8 channels of 14-bit analog inputs (optional) for analog joystick or other general purpose use
- 4 channels of 16-bit analog outputs (individually configurable as either a servo command signal or a general purpose analog output)
- 4 high-speed position capture (latch) inputs and 2 high-speed

Other Features

- Consistent, predictable execution: Peak performance is maintained no matter which features are enabled
- All features are software-configurable: no jumpers required
- Windows Flash Wizard for quick, power-on firmware updates
- On-board watchdog timer for failsafe operation
- All software is supplied at no extra charge
- Custom features and performance enhancements available upon request - source code is available to qualified OEM's

Connections

- All I/O signals on industry-standard 68 pin high-density VHDCI (SCSI) connectors on PCI end-bracket
- Low-cost, industry-standard, shielded 68-conductor SCSI cables, available from PMC or from 3rd party cable suppliers
- All I/O signals routed as matched twisted pairs for superior noise immunity
- Low-cost screw-terminal wiring interconnection boards available

Environmental & Mechanical

- Operating temperature: 0-55 ºC (32-131 ºF) R.H. non-condensing
- Size: 176mm x 107mm (6.875" x 4.2") per PCI 2.2 specification

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