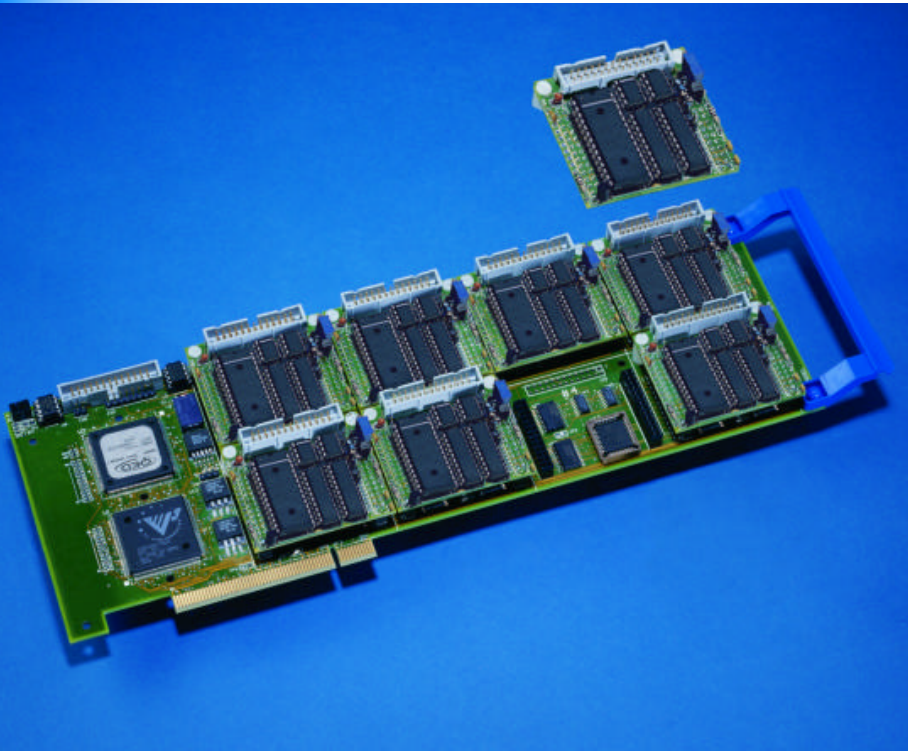# DCX-PCI 100 Motion Controller

An Introductory Guide to the DCX-PCI 100 Motion Control Card...

The DCX-PCI 100 Series card is based on field-proven technology designed to control miniature brush DC servo motors in applications such as optoelectronic R&D and production, lab automation and medical and scientific instrumentation. Features include:

- 1 to 8 axes of servo control
- Economical PCI card form-factor
- Drive up to 8 small DC servo motors directly
- No external amplifiers needed
- 12 Volts, 0.5 Amp = 6 Watts power per channel.
- Independent position or velocity control of 1 to 8 axes simultaneously
- Up to 32 general-purpose analog inputs and 32 general-purpose analog outputs
- 3.3 KHz servo loop update rate each axis (up to 8 axes)
- On-the-fly parameter and trajectory changes
- On-board multi-tasking of up to ten independent user programs - frees host PC for other tasks
- Fully programmable in C, C++, LabVIEW, Visual Basic, Delphi, or easy-to-use on-board command language
- Supports PMC's Motion Integrator suite of graphical setup, tuning and diagnostic programs
- Full support for Windows 98/NT/2000/XP

- *An exceptionally cost-effective PCI-bus motion control card*

- *Control and drive up to eight small DC servo motors or motorized actuators*

- *From 1 to 8 servo amplifiers on-board*

- *No external amplifiers needed*

- *Native LabVIEW support via our extensive Motion VI library*

- *Powerful Windows software for superior ease-of-use and programming flexibility*
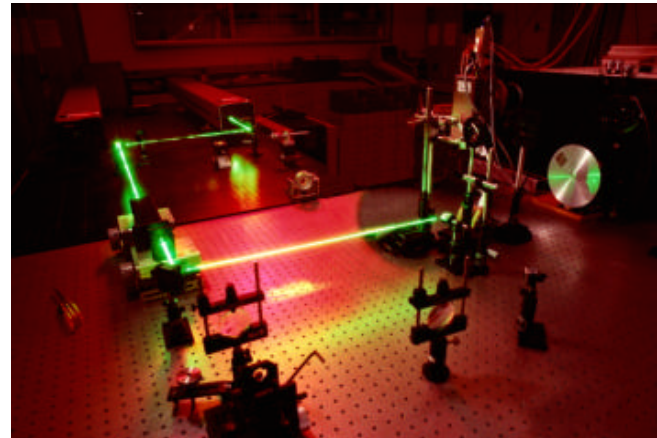
DCX-PCI100 Series Specifications

Processor

- Motherboard: 32-bit MIPS RISC processor / with 64-bit floating-point co-processor
- Axis modules: 32 bit microcontroller (one per axis)

Communication

- PC-PCI bus via dual-ported RAM
- High speed binary communication
- ASCII mode communication also available

Programming

- Programmable using C/C++, Visual Basic or Delphi (Pascal)
- Native LabVIEW/BridgeVIEW support via our Motion VI Library
- Native drivers for Windows 98/NT/2000/XP
- Motion Integrator™ graphical Windows utilities for tuning, setup and diagnostics
- On-board Motion Command Language with multitasking of up to 10 tasks

Motion Capabilities

- 1 to 8 control axes per card
- Direct drive of up to 8 small DC servos – no external amplifier needed
- Independent point-to-point positioning of up to 8 axes
- Independent velocity control of up to 8 axes
- Position, velocity, gain and jog control modes
- Motion trajectory & parameters can be changed on-the-fly

Memory

- 4 Mbytes RAM
- Non-volatile user program memory: 64K
- 256 general purpose user registers (variables)

Kinematic Ranges

- Position: 32 bit
- Velocity and acceleration: 32 bit

Servo Control Signals

- Amplified drive output for small servo motors (12 volts, <0.5 Amp)
- ±10V command signal with 12-bit DAC resolution
- Simultaneous update of all axes

Servo Filter

- Proportional/Integral/Derivative (PID) servo filter
- 3.3 KHz servo loop rate per axis (up to 8 axes)

Position Feedback

- Quadrature incremental encoder with index
- 1 MHz encoder count rate for each axis (up to 8 axes)
- Single-ended or differential inputs (A+, A-, B+, B-, I+, I-)
- 32-bit resolution

Dedicated I/O (each axis)

- Axis inputs: Home, ± limits, amp fault
- Axis outputs: Amp enable

General Purpose I/O

- 16 digital I/O on motherboard, 8 inputs and 8 outputs
- Up to 128 additional configurable digital I/O
- Up to 64 analog I/O, 12-bit resolution

Other Features

- Windows Flash Wizard for quick firmware updates
- Programmable in user units
- On-board watchdog timer with external or PC-bus reset

Connections

- 26 pin dual-row IDC ribbon header for each axis module
- 26 pin dual-row IDC ribbon header for on-board digital I/O
- Direct connection compatibility with many models of motorized 5micropositioning actuators
- Plug-compatible interface adapter for Opto 22 or Grayhill relay racks
- Optional axis interconnect adapters with individually labeled screw terminals

Environmental & Mechanical

- Operating temperature: 0-55 ºC (32-131 ºF) R.H. non-condensing
- Size: 314mm x 107mm (12.3" x 4.2")