

Title: Migrating MC110 servo applications to the PCI bus
Products(s): DCX-PC100, DCX-PCI100
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Summary

The DCX-PCI100 motion control motherboard was designed to allow MC110 and MC100 servo module users to migrate to their applications to the PCI bus.

Upgraded Modules required

The DCX-PCI100 motion control motherboard provides enhanced module bus communication handshaking. To support the more robust communications the MC110 and MC100 module designs have been upgraded (to revision B). Viewing the module part number label easily identifies an upgraded module. If an upgrade has been performed a 'B' will be appended to the end of the part number ("**DCX-MC110B**"). **All PCI based MC110 and MC100 applications require rev. B modules.** Factory upgrades of older modules (rev. A) can be arranged by contacting PMC Sales at sales@pmccorp.com.



Revision B modules are 100% compatible with both the DCX-PC100 and the DCX-PCI100 motion control motherboards.

Required changes when migrating to the DCX-PCI100

The DCX-PCI100 motion control motherboard is not 100% backward compatible with the DCX-PC100. For existing ISA-based applications programmed using either the MCAPI function library or MCCL commands, when migrating to the PCI-based DCX-PCI100, the following changes will be required:

Operating system and High Level Language software issues

- The DCX-PCI100 **must be installed in a PC computer running Windows 2000/NT/ME/98**, it does not support **Windows 3.X or 95**.
- The DCX-PCI100 does not support DOS application programming, but it does support 32-bit Console Mode applications. For additional information please refer to **TechNOTE 1013 "Porting Legacy MS-DOS Motion Applications to Windows NT"**.
- Upgrade the MCAPI – the DCX-PCI100 requires MCAPI revision **3.1.0** or higher. For additional information on installing the MCAPI (and removing older revisions of the MCAPI) please refer to the **DCX-PCI100 User Manual, chapter 2, Controller and Software Installation**.

Hardware and firmware issues

- The PCI bus was not designed to carry high current DC voltages to PCI bus cards. To provide the necessary current for DCX-MC110B Direct Motor Drive modules (as much as 4.0 amps) the DCX-PCI100 Motion Control Motherboard includes an auxiliary motor power connector (J33) with a pinout that matches HDD's (Hard Disk Drive) and Floppy Disk Drives. Each DCX-PCI100 shipped includes a Drive Power Cable Splitter that is used to route the PC's +12VDC to the DCX-PCI100 connector J33.
- Trajectory parameters (Set Velocity, Set Acceleration) are expressed in encoder counts per second (velocity = counts/sec, accel/decel = counts/sec/sec) instead of encoder counts per sample period (velocity = counts * .000341 * 65,536; accel/decel = counts * .000341 * .000341 * 65,536).
- Time units (WAit, Wait for Stop) are expressed in seconds instead of milliseconds (1WS5 converts to 1WS0.005).
- The Motor Table no longer uses hard coded addressing. For example, with the ISA based DCX-PC100 the command 1RL0 would load the status word of axis #1 into the accumulator. When using the DCX-PCI100 the user first issues the **Look Up** variable command with the parameter equal to the variable name (enclosed in quotation marks). Then issue a read command (long, word, double, etc...) to the appropriate axis:

```
LU"STATUS",1RL@0 ;load axis #1 status into accumulator
```

- General purpose digital I/O: The DCX-PC100 provided 16 general purpose digital I/O channels, each of which could be configured as an input or an output. On the DCX-PCI100 there are 8 digital input channels and 8 digital output channels and they cannot be reconfigured.
- **No longer supported: manual positioning** (jogging) by activating the Jog Right and Jog Left inputs.
- **No longer supported: stand alone applications** (RS-232 or IEEE-488).
- **No longer supported: analog inputs** - unlike the ISA based DCX-PC100, the PCI based DCX-PCI100 motion control motherboard does not include 4 A/D channels. For applications that require A/D inputs the DCX-MC500/510 analog module will be required.



For additional information on migrating MC110B applications to the PCI bus please refer to the section titled **Converting from an ISA bus DCX-PC100 motion controller** in **Chapter 8** of the **DCX-PCI100 User's manual**.