PMC
Precision MicroControl Corp.

TechNOTE

Title:	Memory Shadowing Conflicts with ISA-Bus Controllers
Products:	DCX-AT100, DCX-AT200, DCX-AT300, DCX-PC100
Keywords:	Hardware Not Present, Memory Shadowing, BIOS
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Summary
Memory shadowing refers to the technique of copying Basic Input/Output System (BIOS) program code from slow ROM memory chips into faster RAM chips during boot-up, resulting in improved PC performance. The disadvantage of shadowing is that memory ranges reserved for add-in cards are often shadowed by default. This shadowing prevents the PC from communicating with the add-in card, rendering it unusable.

More Information
The ISA-bus motion control cards listed in the products section above ship from PMC with a default base address of D0000H (hexadecimal) and use memory from D0000H to D0FFFH. To avoid a conflict, shadowing must be disabled in the memory region that is used by the motion control card. Below shows a portion of the BIOS Features Setup menu (BIOS by Award Software, Inc.) with memory shadowing disabled from D0000H to D3FFFFH.

```
Video      BIOS Shadow :   Enabled
C8000 - CBFFF Shadow :   Enabled
CC000 - CFFFF Shadow :   Enabled
D0000 - D3FFF Shadow :   Disabled
D4000 - D7FFF Shadow :   Enabled
D8000 - DBFFF Shadow :   Enabled
DC000 - DFFFF Shadow :   Enabled
```

For systems using only one motion control card, and where the card's rotary switch is set to the default position of zero, the above example will usually suffice.

The use of multiple motion control cards and or conflicts with other peripherals requires that you change the base address of the motion control card to an unoccupied area of memory. The rotary switch on the card selects the second most-significant digit of the cards base address, in the range of 0H to FH. Thus setting the rotary switch to 3 selects a base address of D3000H, setting the switch to 7 selects a base address of D7000H, etc. Once a suitable address is found locate the shadowing range in your BIOS that includes the new base address and set shadowing to **Disabled**.