

Microsoft WindowsNT FLOPPY.SYS Update

This application note describes the pertinent modifications for the updated WindowsNT FLOPPY.SYS driver that will begin shipping from Microsoft in February 1994.

PROBLEM

Diskette read errors reported with Microsoft WindowsNT and SMSC FDC37C66X Super I/O controllers.

CAUSE

The problem involves the interpretation of the "Seek End" flag (Status Register 0, Bit 5) by Microsoft's FLOPPY.SYS diskette driver. The SMSC FDC37C66X and Intel 82077 specifications both state that this bit should be set after an Implied Seek command. Apparently, the 82077 does not always set this bit properly, and the original FLOPPY.SYS driver was developed to expect the unspecified response. DOS, OS/2, Unix and other OS floppy interfaces mask this bit on implied seeks to maintain full compatibility. The upgraded WindowsNT driver includes this masks (requires one line of code). This ambiguity does not affect Explicit Seek commands.

CORRECTIVE ACTION

Microsoft Hardware Vendor Relations Group has been advised of this problem and has responded by incorporating the updated driver in the next version of WindowsNT to begin shipping in February, 1994. The new driver is currently available on SMSC's Bulletin Board System, (516) 273-4936, and is being placed on Microsoft's Bulletin Board System, (206) 936-6735. This driver can be installed on current systems with the following procedure.

WindowsNT with FAT File System

1. Boot system with a DOS diskette
2. Copy the updated FLOPPY.SYS over the existing one
3. Remove DOS diskette and reboot under WindowsNT

WindowsNT with Non-FAT File System (i.e. NTFS)

1. Rename old FLOPPY.SYS to FLOPPY.OLD
2. Copy new FLOPPY.SYS to hard disk

The goal of this modification is to completely eliminate the behavioral uncertainty of the Seek End Bit (Status Register 0, Bit 5). Apparently, there are several industry interpretations of this bit from various hardware manufacturers. The release level Microsoft WindowsNT FLOPPY.SYS driver already accounts for some of this variation by masking the Seek End bit during the result phase of all floppy Read and Write commands. Unfortunately, the subroutine for the Read ID command does not mask the appropriate bit, but simply compares the status byte with a constant.

Specifically, this modification (1) creates a Status Register 0 Seek End Bit Mask, like those already defined for the various other Status Register 0 functions in FLO_DATA.H and (2) applies this mask during the result phase of the Read ID Command in F1DetermineMediaType():

Therefore, the following code ...

```
if (( !NT_SUCCESS( ntStatus )) ||
    (ControllerData->FifoBuffer[0] !=
      (UCHAR) (( DisketteExtension->DeviceUnit ) |
        (( driveMediaConstants->NumberOfHeads - 1 ) << 2 ))) ||
    ( ControllerData->FifoBuffer[1] != 0 ) ||
    ( ControllerData->FifoBuffer[2] != 0 )) {...
```

becomes ...

```
#define      STREG0_SEEK_END_BIT_MASK 0xDF
.
.
.
if (( !NT_SUCCESS( ntStatus )) ||
    ((ControllerData->FifoBuffer[0] & STREG0_SEEK_END_BIT_MASK) !=
      (UCHAR) (( DisketteExtension->DeviceUnit ) |
        (( driveMediaConstants->NumberOfHeads - 1 ) << 2 ))) ||
    ( ControllerData->FifoBuffer[1] != 0 ) ||
    ( ControllerData->FifoBuffer[2] != 0 )) {...
```

This modification increases the overall robustness of the driver and eliminates possible problems with other hardware vendors as well.

If you have any further questions, please call our toll-free Applications number at 800-443-SEMI (Canadian and international customers can call 516-435-6000 and ask for Component Products Applications).



80 Arkay Drive
Hauppauge, NY 11788
(631) 435-6000
FAX (631) 273-3123

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