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TO: X3T10
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SUBJ.: IO Port List for IBM PC

In the search for unused registers for ATA command queuing, I was told that some ATA tape drives are using address 03F3h. This is good input, although I would like some confirmation (and if this is the case, why has not anyone asked to reserve that byte in the ATA document?). In the control block range, I see the following usage:

03F0  unused
03F1  unused
03F2  floppy
03F3  tape(?)
03F4  floppy
03F5  floppy
03F6  hard disk (bits 7-3 reserved)
03F7  floppy

Note that if worse came to worse we have bits 7-3 of an already allocated register, which gives us 5 bits or 32 tags.

I would like to suggest as working guidance to silicon people that they consider BOTH 3F3 and 3F6 (bits 7 through 3) to be possible for use the ATA queuing protocol, and would like to echo John in requesting people to cite specific product conflicts - John is right, it will almost certainly be the case that queuing capability will have to be explicitly turned on by the host in any event, so a minor backward compatibility issue can be handled (some people don't like using 3F6 since it has the soft reset bit in it).


I/O addresses in the 3F2h-03F7h range are primary diskette controller addresses. Bit settings also apply to addresses 0372h-0377h.
03F2h  W  Diskette controller digital output register, where:
    bit 7 = 0  Reserved
    bit 6 = 0  Reserved
    bit 5 = 1  Drive 1 motor enable
    bit 4 = 1  Drive 0 motor enable
    bit 3 = 1  Diskette DMA enable
    bit 2 = 0  Controller reset
    bit 1 = 0  Reserved
    bit 0 = 0  Drive 0 select
             = 1  Drive 1 select

03F4h  R  Diskette controller status register, where:
    bit 7 = 1  Data register is ready
    bit 6 = 1  Transfer is from controller to system
               = 0  Transfer is from system to controller
    bit 5 = 1  non-DMA mode
    bit 4 = 1  diskette controller busy
    bit 2-3 =  Reserved
    bit 1 = 1  Drive 1 busy
    bit 0 = 0  Drive 0 busy

03F5h  R/W  Diskette controller data register

03F6h  R  Fixed disk control port, where:
    bit 7-4 =  Reserved
    bit 3 = 0  Reduce write current
             = 1  Head 3 select enable
    bit 2 = 1  Disk reset enable
             = 0  Disk reset disable
    bit 1 = 0  Disk initialization enable
             = 1  Disk initialization disable
    bit 0 = 0  Reserved

03F7h  R  Diskette digital input register, where:
    bit 7 = 1  Diskette change
    bit 6 = 1  Write gate
    bit 5 =  Head select 3/reduced write current
    bit 4 =  Head select 2
    bit 3 =  Head select 1
    bit 2 =  Head select 0
    bit 1 =  Drive 1 select
    bit 0 =  Drive 0 select

(bits 6-0 apply to the currently selected fixed disk drive)