



DATE: October 27, 1994  
TO: X3T10  
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SUBJ.: IO Port List for IBM PC

In the search for unuded 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).

From "System BIOS for IBM PCs, Compatibles, and EISA Computers", 2nd edition, Phoenix Technologies, pp 84.

I/O addresses in the 3F2h-03F7h range are primary diskette controller addresses. Bit settings also apply to addresses 0372h-0377h.

IO Address	Read/Write Status	Description
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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)