Date: Wed, 24 Aug 1994 12:29:06 EDT
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Subject: ATA Rev 2F—Section 6.2.13, etc

NOTE: STATUS REGISTER COMMENTS DELETED IN THIS REPRINT.

I propose that the following new section be added. I'm not sure 6.2.14 is the "correct" section number. And I know many of you are going to ask why this such a mess—why are there two methods? Please refer to the strange little note near the beginning of the existing section 6.2.13...

Note: If Device 1 is not detected as being present, Device 0 clears the Device 1 Status register to 00H (indicating that the device is Not Ready).

This strange little note is the *ONLY* comment in the document that describes this condition. This note has resulted in implementations that worked as described by the second method.

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6.2.14 Single device configurations

In a single device configuration where device 0 is the only device and the host selects device 1, device 0 may respond to accesses of the Command Block and Control Block registers in one of two methods. These two methods exist because previous versions of the ATA standard did not specify the required behaviour for this configuration.

The first method requires that device 0 implement an Error, Status and Alternate Status register that is used whenever device 1 is selected. The first method is the recommended implementation. The first method is:

1) The device 1 Error, Status and Alternate status registers are set to 00H by a reset.
2) A write to the Device Control register shall complete as if device 0 was the selected device.
3) A write to the Command Block register, other than the Command register, shall complete as if device 0 was selected.
4) A write to the Command command register with a command code other than the INITIALIZE DEVICE PARAMETERS or EXECUTE DEVICE DIAGNOSTICS command causes the device 1 Error, Status and Alternative status registers to be used as follows:
    a) the BSY bit is set in the device 1 status registers.
    b) the ABRT bit is set in the device 1 Error register.
    c) the ERR bit is set in the device 1 status registers.
    d) the BSY bit is cleared in the device 1 status registers.
    e) if the nIEN bit in the Device Control Register is cleared, the INTRQ signal is asserted.
5) An EXECUTE DEVICE DIAGNOSTIC command is executed as if it addressed to device 0.
6) An INITIALIZE DEVICE PARAMETERS command is executed as if device 1 is present and is actually executing the command. The command shall have no effect of the device parameters of device 0.
    [Editors note: Why is this you ask? Because this command is

    NOT allowed to set the ERR bit in the Status register at any

    time or for any reason!]

7) A read of the Control Block or Command Block registers, other than the Status or Alternate Status registers, shall complete as if device 0 was selected.
8) A read of the Error, Status or Alternate status register returns the value in the device 1 copy of these registers. The device 1 status registers will contain 00H following a reset and the value 01H following an attempt to execute a command, other than EXECUTE DEVICE DIAGNOSTICS or INITIALIZE DEVICE PARAMETERS, on device 1.
    The second method is:

1) A write to the Device Control register shall complete as if device 0 was the selected device.
2) A write to the Command Block register, other than the Command register, shall complete as if device 0 was selected.
3) A write to the Command command register is ignored.
5) A read of the Control Block or Command Block registers, other than the Status or Alternate Status registers, shall complete as if device 0 was selected.
6) A read of the Status or Alternate status register returns the value 00H.
   In a single device configuration where device 1 is the only device and the host selects device 0, device 1 shall respond to accesses of the Command Block and Control Block registers in the same way it would if device 0 was present. This is because device 1 can not determine if device 0 is, or is not, present.