

SECOND EDITION

PC

INTERRUPTS

A PROGRAMMER'S REFERENCE TO
BIOS, DOS, AND THIRD-PARTY CALLS

RALF BROWN & JIM KYLE



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Organization and Master Interrupt List

The brief listings in Tables 2-1 through 2-4 show which chapters describe functions for each of the 256 possible interrupts. Those referenced for more than one chapter or program probably have conflicts under some conditions.

Two areas in particular have a high probability of conflicts. The first is the multiplex interrupt, INT 2Fh (Table 2-2), and the second is the user interrupts, INT 60h to INT 67h.

Interrupt 2Fh is shared by many programs, with the value of AH on call specifying the program which is to handle the call. As more programs use the multiplex interrupt to provide an interface to resident code, the probability of conflicting multiplex numbers (the value in AH) increases. While there is a standardized method for determining whether a particular multiplex number is in use (though not all programs follow the convention), there is no standardized approach for determining whether a specific program is using it. Thus, a program may be fooled into thinking that it is already installed if a different program happens to be using the same multiplex number, or worse yet, make calls which are handled by a program other than the intended one, possibly with disastrous results.

We consider a two-level scanning approach such as that used by Quarterdeck's RPCI (Chapter 63) the minimum for avoiding conflicts between programs on INT 2Fh, but recommend using the Alternate Multiplex Interrupt Specification described in Chapter 50 instead of INT 2Fh. AMIS-compliant TSRs automatically avoid conflicts (including hotkey conflicts) and provide standardized calls for removal and popup while imposing an overhead of less than 100 bytes in the resident code; they may also be removed in any order.

One problem caused by the lack of a written specification for INT 2Fh usage is that not all programs use the convention of returning AL=FFh when called with AL=00h, and many that do support the convention also modify other registers—including segment registers or BP—even without the presence of “magic” values on entry. Therefore, any program which searches a range of multiplex numbers must be prepared for all registers except SS:SP to be destroyed by an attempted installation check.

The user interrupts 60h to 67h do not have a convention for an installation-check call, and thus require a different approach. However, the user interrupts are rarely chained, so a check whether the vector is 0000h:0000h suffices to determine if a particular interrupt is available. To determine whether the vector is in use by the program making the installation check, the usual approach is to place a signature immediately prior to or immediately following the interrupt handler address, since there are no safe calls which can be made—the vector may not even point at code! Table 2-3 lists programs we have identified as using this group of interrupts, but like Table 2-2, it is almost certain to be incomplete.

A final area of conflict needs to be mentioned here, as it is the reason so few programs use interrupts 86h through F0h. These vectors are used by the BASIC interpreter in the ROM of genuine IBM machines to allow extensions and tracing. The BASIC.COM and BASICA.COM

extensions to the ROM Cassette BASIC set these vectors to handlers inside themselves at startup, but never restore them. Thus, any resident programs which have hooked any of these interrupts will lose them if the user runs an interpreted BASIC program. Worse, the vectors will be pointing at whatever code or data happens to have been loaded into those locations since BASIC terminated, virtually guaranteeing a system crash. GWBASIC (the version for those without an IBM ROM containing BASIC), on the other hand, only uses interrupts EFh and F0h, and restores those on exit.

2-1 Overview of Interrupt Usage

INT	Usage
00h	Divide Error (Chapter 3), Zenith ROM Debugger (Chapter 57)
01h	Single-Step/Debugging Exceptions (Chapter 3)
02h	Non-Maskable Interrupt (Chapter 3)
03h	Breakpoint (Chapter 3); Columbia ROM Debugger, Soft-ICE (Chapter 57)
04h	Overflow Detected (Chapter 3)
05h	Bounds Exceeded (Chapter 3), Print Screen (Chapter 4), PS/PS (Chapter 15)
06h	Invalid Opcode (Chapter 3), HP 95LX (Chapter 7)
07h	Coprocessor Not Present (Chapter 3)
08h	Double Fault, IRQ0 (Chapter 3)
09h	Coprocessor Protection Violation, IRQ1 (Chapter 3)
0Ah	Invalid TSS, IRQ2 (Chapter 3)
0Bh	Segment Not Present, IRQ3 (Chapter 3); HP 95LX (Chapter 7)
0Ch	Stack Violation, IRQ4 (Chapter 3); IBM System 36/38 Workstation Emulation (NI)
0Dh	General Protection Violation, IRQ5 (Chapter 3); HP 95LX (Chapter 7)
0Eh	Page Fault, IRQ6 (Chapter 3); HP 95LX (Chapter 7)
0Fh	IRQ7 (Chapter 3), HP 95LX (Chapter 7)
10h	Coprocessor Error (Chapter 3); AX PC Video (Chapter 6); Corona/Cordata BIOS (Chapter 7); BIOS Video, Chips&Technologies Extended BIOS, Compaq Extensions, Everex Extended Video BIOS, HP Vectra Extended BIOS, EGA Register Interface Library, BIOS Window Extension, Compaq ADAPT.COM, M10 SCR, Hercules GRAFEX, SCROLOCK, UltraVision, Netroom SCRNLCK, MSHERC, Realtek RTVGA, Direct Graphics Interface Standard, SCREENR, Show Partner F/X, VUIIMAGE (Chapter 8); SuperVGA Video, Cirrus Logic BIOS, VESA SuperVGA BIOS, SOLLEX SuperVGA (Chapter 9); FASTBUFF (Chapter 13); FRIEZE (Chapter 15); Tintyalk Personal (Chapter 23); GO32 DOS extender (Chapter 37); TopView, DESQview Video (Chapter 44); Carbon Copy Plus (Chapter 58); CU Writer (Chapter 66); 3270PC (NI), Alloy MW386 (NI)
11h	Alignment Check (Chapter 3), Get Equipment List (Chapter 4), SDLP (Chapter 11), BNU FOSSIL (Chapter 12), Blank-It screen blanker (Chapter 14), Back&Forth (Chapter 49), Borland C++ IDE (Chapter 54), RainbowFAX (Chapter 64)
12h	Get Memory Size (Chapter 4), KEYBUI (Chapter 13), Back&Forth (Chapter 49), Borland C++ IDE (Chapter 54), PARKER (Chapter 66)
13h	Disk I/O, ESDI Hard Disk, Priam EDVRSYS, SWBIOS, Western Digital SuperBIOS (Chapter 10); Adaptec AHA-154x BIOS, Future Domain SCSI (Chapter 11); FAST! disk cache, HyperDisk, IBMCACHE.SYS, NOW! disk cache, QUICKCACHE II, Super PC-Kwik (Chapter 17); ScanBoot, VSAFE/VWATCH (Chapter 59); Beame&Whiteside BWLPD (NI)
14h	Video FOSSIL (Chapter 8); Serial I/O, COMM-DRV, COURIERS.COM, Digiboard DigiCHANNEL, IBM/Yale EBIOS, FOSSIL, MBBIOS, MX5 Extended

*Low-Level Disk I/O***Standard BIOS****INT 13h Function 00h****RESET DISK SYSTEM**

Purpose: Force the controller to recalibrate the drive heads (i.e. seek to track 0).

Registers at call:

AH = 00h

DL = drive (if bit 7 is set both hard disks and floppy disks reset)

See also: Functions 0Dh and 11h, TI Professional INT 4Eh (below), MS-DOS INT 21h Function 0Dh (Chapter 24)

Return Registers:

AH = status (see Table 10-1)

CF clear if successful (returned status = 00h)

CF set on error

INT 13h Function 01h**GET STATUS OF LAST OPERATION**

Registers at call:

AH = 01h

DL = drive (bit 7 set for hard disk)

Return Registers:

CF clear if successful (returned status = 00h)

CF set on error

AH = status of previous operation (see Table 10-1)

Details: Some BIOSes return the status in AL; the PS/2 Model 30/286 returns the status in both AH and AL.

10-1 Disk operation status:

00h	successful completion
01h	invalid function in AH or invalid parameter
02h	address mark not found
03h	disk write-protected
04h	sector not found/read error
05h	reset failed (hard disk)
06h	disk changed (floppy)
07h	drive parameter activity failed (hard disk)
08h	DMA overrun
09h	attempted DMA across 64K boundary
0Ah	bad sector detected (hard disk)
0Bh	bad track detected (hard disk)
0Ch	unsupported track or invalid media
0Dh	invalid number of sectors on format (hard disk)
0Eh	control data address mark detected (hard disk)

0Fh	DMA arbitration level out of range (hard disk)
10h	uncorrectable CRC or ECC error on read
11h	data ECC corrected (hard disk)
20h	controller failure
40h	seek failed
80h	timeout (not ready)
AAh	drive not ready (hard disk)
BBh	undefined error (hard disk)
CCh	write fault (hard disk)
E0h	status register error (hard disk)
FFh	sense operation failed (hard disk)

INT 13h Function 02h**READ SECTOR(S) INTO MEMORY**

Registers at call:

AH = 02h
 AL = number of sectors to read (must be nonzero)
 CH = low eight bits of cylinder number
 CL = sector number 1-63 (bits 0-5)
 high two bits of cylinder (bits 6-7, hard disk only)
 DH = head number
 DL = drive number (bit 7 set for hard disk)
 ES:BX -> data buffer

Return Registers:

CF set on error
 if AH = 11h (corrected ECC error), AL = burst length
 CF clear if successful
 AH = status (see Table 10-1)
 AL = number of sectors transferred

Details: Errors on a floppy may be due to the motor failing to spin up quickly enough; the read should be retried at least three times, resetting the disk with Function 00h between attempts.

The IBM AT BIOS and many other BIOSes use only the low four bits of DH (head number) since the WD-1003 controller which is the standard AT controller (and the controller that IDE emulates) only supports 16 heads.

AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.

See also: Functions 03h and 0Ah

INT 13h Function 03h**WRITE DISK SECTOR(S)**

Registers at call:

AH = 03h
 AL = number of sectors to write (must be nonzero)
 CH = low eight bits of cylinder number
 CL = sector number 1-63 (bits 0-5)
 high two bits of cylinder (bits 6-7, hard disk only)
 DH = head number
 DL = drive number (bit 7 set for hard disk)
 ES:BX -> data buffer

Return Registers:

CF set on error
 CF clear if successful
 AH = status (see Table 10-1)
 AL = number of sectors transferred

Details: Errors on a floppy may be due to the motor failing to spin up quickly enough; the write should be retried at least three times, resetting the disk with Function 00h between attempts.

The IBM AT BIOS and many other BIOSes use only the low four bits of DH (head number) since the WD-1003 controller which is the standard AT controller (and the controller that IDE emulates) only supports 16 heads.

INT 13h Function 02h

AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.
See also: Functions 02h and 0Bh

INT 13h Function 04h VERIFY DISK SECTOR(S)

Registers at call:

AH = 04h

AL = number of sectors to verify (must be nonzero)

CH = low eight bits of cylinder number

CL = sector number 1-63 (bits 0-5)

high two bits of cylinder (bits 6-7, hard disk only)

DH = head number

DL = drive number (bit 7 set for hard disk)

ES:BX → data buffer (PC,XT,AT with BIOS prior to 11/15/85)

Details: Errors on a floppy may be due to the motor failing to spin up quickly enough; the write should be retried at least three times, resetting the disk with Function 00h between attempts.

This function does not compare the disk with memory, it merely checks whether the sector's stored CRC matches the data's actual CRC.

The IBM AT BIOS and many other BIOSes use only the low four bits of DH (head number) since the WD-1003 controller which is the standard AT controller (and the controller that IDE emulates) only supports 16 heads.

AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.

See also: Function 02h

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

AL = number of sectors verified

INT 13h Function 05h FORMAT TRACK

FLOPPY DISK

Registers at call:

AH = 05h

AL = number of sectors to format

CH = track number

DH = head number

DL = drive number

ES:BX → address field buffer (see Table 10-2)

Details: On AT or higher, call Function 17h first. The number of sectors per track is read from the diskette parameter table pointed at by INT 1Eh.

Conflicts: Fixed Disk below, Future Domain SCSI (Chapter 11)

See also: Fixed Disk Function 05h, Functions 17h and 18h, INT 1Eh

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

10-2 Format of address field buffer entry (one per sector in track):

Offset	Size	Description
00h	BYTE	track number
01h	BYTE	head number (0-based)
02h	BYTE	sector number
03h	BYTE	sector size (00h=128 bytes, 01h=256 bytes, 02h=512, 03h=1024)

INT 13h Function 05h FORMAT TRACK

FIXED DISK

Registers at call:

AH = 05h

AL = interleave value (XT-type controllers only)

ES:BX → 512-byte format buffer

INT 13h Function 05h

Return Registers:

the first 2* (sectors/track) bytes contain E,N
for each sector

F = 00h for good sector, 80h for bad sector

N = sector number

CH = cylinder number (bits 8,9 in high bits of CL)

CL = high bits of cylinder number (bits 7,6)

DH = head

DL = drive

Details: AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.

For XT-type controllers on an AT or higher, Function 0Fh should be called first.

The IBM AT BIOS and many other BIOSes use only the low four bits of DH (head number) since the WD-1003 controller which is the standard AT controller (and the controller that IDE emulates) only supports 16 heads.

Conflicts: Floppy Disk above, Future Domain SCSI (Chapter 11)

See also: Floppy Disk Function 05h, Fixed Disk Functions 06h and 07h, Function 0Fh and 18h, ESDI Function 1Ah (below)

INT 13h Function 06h**FORMAT TRACK AND SET BAD SECTOR FLAGS***FIXED DISK**IBM XT, IBM Portable*

Registers at call:

AH = 06h

AL = interleave value

CH = cylinder number (bits 8,9 in high bits of CL)

CL = sector number

DH = head

DL = drive

Return Registers:

AH = status code (see Table 10-1)

Details: AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.

Conflicts: Future Domain SCSI (Chapter 11), Adaptec AHA-154xA (Chapter 11)

See also: Fixed Disk Functions 05h and 07h

INT 13h Function 07h**FORMAT DRIVE STARTING AT GIVEN TRACK***FIXED DISK**IBM XT, IBM Portable*

Registers at call:

AH = 07h

AL = interleave value (XT only)

ES:BX = 512-byte format buffer (see Table 10-2)

CH = cylinder number (bits 8,9 in high bits of CL)

CL = sector number

DH = head

DL = drive

Return Registers:

AH = status code (see Table 10-1)

Details: AWARD AT BIOS and AMI 386sx BIOS have been extended to handle more than 1024 cylinders by placing bits 10 and 11 of the cylinder number into bits 6 and 7 of DH.

Conflicts: Future Domain SCSI (Chapter 11)

See also: Fixed Disk Functions 05h and 06h, ESDI Function 1Ah (below)

INT 13h Function 08h**GET DRIVE PARAMETERS**

Registers at call:

AH = 08h

DL = drive (bit 7 set for hard disk)

Return Registers:

CF set on error

AH = status (07h) (see Table 10-1)

INT 13h Function 06h

CF clear if successful

AH = 00h

BL = drive type (AT/PS2 floppies only) (see Table 10-3)

CH = low eight bits of maximum cylinder number

CL = maximum sector number (bits 5-0)
high two bits of maximum cylinder
number (bits 7-6)

DH = maximum head number

DL = number of drives

ES:DI → drive parameter table (floppies only)

Details: May return successful even though specified drive is greater than the number of attached drives of that type (floppy/hard); check DL to ensure validity.

For systems predating the IBM AT, this call is only valid for hard disks, as it is implemented by the hard disk BIOS rather than the ROM BIOS.

Toshiba laptops with HardRAM return DL=02h when called with DL=80h, but fail on DL=81h. The BIOS data at 40h:75h correctly reports 01h.

See also: Function 15h, INT 1Eh, INT 41h, Adaptec Function 06h (Chapter 11)

10-3 Drive types:

01h 360K

02h 1.2M

03h 720K

04h 1.44M

05h *(reportedly an obscure drive type shipped on some IBM machines)*

2.88M on some newer BIOSes such as the AMI 486 BIOS

06h 2.88M

INT 13h Function 09h

INITIALIZE CONTROLLER WITH DRIVE PARAMETERS

HARD DISK

PC/AT, PS/2

Registers at call:

AH = 09h

DL = drive (80h for first, 81h for second)

Return Registers:

CF clear if successful

CF set on error

AH = status (see Table 10-1)

Details: On the PC and XT, this function uses the parameter table pointed at by INT 41h.

On the AT and later, this function uses the parameter table pointed at by INT 41h if DL=80h, and the parameter table pointed at by INT 46h if DL=81h.

See also: INT 41h, INT 46h

INT 13h Function 0Ah

READ LONG SECTOR(S)

HARD DISK

PC/AT and later models

Registers at call:

AH = 0Ah

AL = number of sectors

CH = low eight bits of cylinder number

CL = sector number (bits 5-0)

high two bits of cylinder number (bits 7-6)

DH = head number

DL = drive number (80h = first, 81h = second)

ES:BX → data buffer

Return Registers:

CF clear if successful

CF set on error

AH = status (see Table 10-1)

AL = number of sectors transferred

Details: This function reads in four to seven bytes of error-correcting code along with each sector's worth of information.

INT 13h Function 0Ah

Data errors are not automatically corrected, and the read is aborted after the first sector with an ECC error. Used for diagnostics only on PS/2 systems.
See also: Functions 02h and 0Bh

INT 13h Function 0Bh WRITE LONG SECTOR(S)

HARD DISK

PC/AT and later models

Registers at call:

AH = 0Bh

AL = number of sectors

CH = low eight bits of cylinder number

CL = sector number (bits 5-0)
high two bits of cylinder number (bits 7-6)

DH = head number

DL = drive number (80h = first, 81h = second)

ES:BX → data buffer

Details: Each sector's worth of data must be followed by four to seven bytes of error-correction information.

Used for diagnostics only on PS/2 systems.

See also: Functions 03h and 0Ah

Return Registers:

CF clear if successful

CF set on error

AH = status (see Table 10-1)

AL = number of sectors transferred

INT 13h Function 0Ch SEEK TO CYLINDER

HARD DISK

Registers at call:

AH = 0Ch

CH = low eight bits of cylinder number

CL = sector number (bits 5-0)
high two bits of cylinder number (bits 7-6)

DH = head number

DL = drive number (80h = first, 81h = second
hard disk)

See also: Functions 00h, 02h, and 0Ah

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

INT 13h Function 0Dh RESET HARD DISKS

HARD DISK

Registers at call:

AH = 0Dh

DL = drive number (80h = first,
81h = second hard disk)

Details: Reinitializes the hard disk controller, resets the specified drive's parameters, and recalibrates the drive's heads (seek to track 0).

Not for PS/2 ESDI drives.

See also: Function 00h, MS-DOS INT 21h Function 0Dh (Chapter 24)

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

INT 13h Function 0Eh READ SECTOR BUFFER

HARD DISK

PC/XT only

Registers at call:

AH = 0Eh

DL = drive number (80h = first,
81h = second hard disk)

ES:BX → buffer

Details: Transfers controller's sector buffer. No data is read from the drive.

Used for diagnostics only on PS/2 systems.

See also: Function 0Ah

Return Registers:

CF set on error

CF clear if successful

AH = status code (see Table 10-1)

INT 13h Function 0Bh

**INT 13h Function 0Fh
WRITE SECTOR BUFFER***HARD DISK
PC/XT only*

Registers at call:

AH = 0Fh

DL = drive number (80h = first,

81h = second hard disk)

ES:BX → buffer

Return Registers:

CF set on error

CF clear if successful

AH = status code (see Table 10-1)

Details: Does not write data to the drive.

Should be called before formatting to initialize an XT-type controller's sector buffer.

Used for diagnostics only on PS/2 systems.

See also: Function 0Bh

**INT 13h Function 10h
CHECK IF DRIVE READY***HARD DISK*

Registers at call:

AH = 10h

DL = drive number (80h = first,

81h = second hard disk)

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

**INT 13h Function 11h
RECALIBRATE DRIVE***HARD DISK*

Registers at call:

AH = 11h

DL = drive number (80h = first,

81h = second hard disk)

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

Details: Causes hard disk controller to seek the specified drive to cylinder 0.

See also: Functions 00h and 0Ch, Fixed Disk Function 19h

**INT 13h Function 12h
CONTROLLER RAM DIAGNOSTIC***HARD DISK
PC/XT, PS/2*

Registers at call:

AH = 12h

DL = drive number (80h = first,

81h = second hard disk)

Return Registers:

CF set on error

CF clear if successful

AH = status code (see Table 10-1)

Conflicts: Future Domain SCSI (Chapter 11)

See also: Functions 13h and 14h

**INT 13h Function 13h
DRIVE DIAGNOSTIC***HARD DISK
PC/XT, PS/2*

Registers at call:

AH = 13h

DL = drive number (80h = first,

81h = second hard disk)

Return Registers:

CF set on error

CF clear if successful

AH = status code (see Table 10-1)

See also: Functions 12h and 14h

**INT 13h Function 14h
CONTROLLER INTERNAL DIAGNOSTIC***HARD DISK*

Registers at call:

AH = 14h

Return Registers:

CF set on error

CF clear if successful

AH = status code (see Table 10-1)

See also: Functions 12h and 13h

INT 13h Function 14h

INT 13h Function 15h**GET DISK TYPE***IBM XT 1/10/86 or later, all newer models*

Registers at call:

AH = 15h

DL = drive number (bit 7 set for hard disk)

Return Registers:

CF clear if successful

AH = type code

00h no such drive

01h floppy without change-line support

02h floppy with change-line support

03h hard disk

CX:DX = number of 512-byte sectors

CF set on error

AH = status (see Table 10-1)

See also: Functions 08h, 16h, and 17h, SCSI Function 19h (Chapter 11)

INT 13h Function 16h**DETECT DISK CHANGE (XT 1/10/86 or later, XT286, AT, PS)***FLOPPY DISK*

Registers at call:

AH = 16h

DL = drive number

Return Registers:

CF clear if change line inactive

AH = 00h (disk not changed)

CF set if change line active

AH = status

06h change line active or not supported

80h drive not ready or not present

Details: Call Function 15h first to determine whether the drive supports a change line.

See also: Function 15h

INT 13h Function 17h**SET DISK TYPE FOR FORMAT (AT, PS)***FLOPPY DISK*

Registers at call:

AH = 17h

AL = format type

01h = 320/360K disk in 360K drive

02h = 320/360K disk in 1.2M drive

03h = 1.2M disk in 1.2M drive

04h = 720K disk in 720K drive

DL = drive number

Return Registers:

CF set on error

CF clear if successful

AH = status (see Table 10-1)

Details: This function does not handle 1.44M drives; use Function 18h instead.

Conflicts: Future Domain SCSI (Chapter 11)

See also: Functions 15h and 18h

INT 13h Function 18h**SET MEDIA TYPE FOR FORMAT***IBM AT model 3x9, all newer machines*

Registers at call:

AH = 18h

DL = drive number

CH = lower 8 bits of highest cylinder

number (number of cylinders - 1)

CL = sectors per track (bits 0-5)

top 2 bits of highest cylinder number

(bits 6,7)

Return Registers:

AH = status

00h requested combination supported

01h function not available

0Ch not supported or drive type unknown

80h there is no disk in the drive

ES:DI -> 11-byte parameter table

Conflicts: Future Domain SCSI (Chapter 11)

See also: Functions 05h, 07h, and 17h

INT 13h Function 15h

**INT 13h Function 19h
PARK HEADS (XT286,PS)**

FIXED DISK

Registers at call:

AH = 19h

DL = drive

See also: Function 11h

Return Registers:

CF set on error

AH = status (see Table 10-1)

INT 1Eh

SYSTEM DATA

DISKETTE PARAMETERS

Details: Default parameter table at F000h:EFC7h for 100% compatible BIOSes.

See also: INT 13h Function 0Fh, INT 41h

10-4 Format of diskette parameter table:

Offset	Size	Description
00h	BYTE	first specify byte bits 7-4: step rate bits 3-0: head unload time (0Fh = 240 ms)
01h	BYTE	second specify byte bits 7-1: head load time (01h = 4 ms) bit 0: non-DMA mode (always 0)
02h	BYTE	delay until motor turned off (in clock ticks)
03h	BYTE	bytes per sector (00h = 128, 01h = 256, 02h = 512, 03h = 1024)
04h	BYTE	sectors per track
05h	BYTE	length of gap between sectors (2Ah for 5.25", 1Bh for 3.5")
06h	BYTE	data length (ignored if bytes-per-sector field nonzero)
07h	BYTE	gap length when formatting (50h for 5.25", 6Ch for 3.5")
08h	BYTE	format filler byte (default F6h)
09h	BYTE	head settle time in milliseconds
0Ah	BYTE	motor start time in 1/8 seconds

INT 40h

DISKETTE

ROM BIOS DISKETTE HANDLER RELOCATED BY HARD DISK BIOS

See also: INT 13h, SuperBIOS INT 47h (below), 4+Power INT 63h (below)

INT 41h

SYSTEM DATA

HARD DISK 0 PARAMETER TABLE

Details: The default parameter table array is located at F000h:E401h in 100% compatible BIOSes; the pointer may be overridden by the hard disk controller's BIOS to support drive formats unknown to the ROM BIOS.

Conflicts: Z100 (Chapter 7), Acorn BBC Master (Chapter 7), MS Windows debugging kernel (Chapter 57)

See also: INT 13h Function 09h, INT 1Eh, INT 46h

10-5 Format of fixed disk parameters:

Offset	Size	Description
00h	WORD	number of cylinders
02h	BYTE	number of heads
03h	WORD	starting reduced write current cylinder (XT only, 0 for others)
05h	WORD	starting write precompensation cylinder number
07h	BYTE	maximum ECC burst length (XT only)
08h	BYTE	control byte bits 0-2: drive option (XT only, 0 for others)

INT 41h