

Phoenix Technologies, Ltd.®
CMOS Setup Utility User's Guide
for
OPTi Viper-M Chipset
(82C556M/82C557M/82C558M)

*Elite*BIOS Version 4.51PG

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Introduction to Setup

This manual describes the Phoenix Technologies AwardBIOS Setup program. The Setup program lets you modify basic system configuration settings. The settings are then stored in a dedicated battery-backed memory, called CMOS RAM, that retains the information when the power is turned off.

The Phoenix Technologies AwardBIOS in your computer is a customized version of an industry-standard BIOS for IBM PC AT-compatible personal computers. It supports Intel x86 and compatible processors. The BIOS provides critical low-level support for the system central processing, memory, and I/O subsystems.

The Phoenix Technologies AwardBIOS has been customized by adding important, but nonstandard, features such as virus and password protection, power management, and detailed fine-tuning of the chipset controlling the system.

The rest of this manual is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The Phoenix Technologies AwardBIOS is immediately activated when you first turn on the computer. The BIOS reads system configuration information in CMOS RAM and begins the process of checking out the system and configuring it through the power-on self test (POST).

When these preliminaries are finished, the BIOS seeks an operating system on one of the data storage devices (hard drive, floppy drive, etc.). The BIOS launches the operating system and hands control of system operations to it.

During POST, you can start the Setup program in one of two ways:

1. By pressing Del immediately after switching the system on, or
2. By pressing Del or by pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the RESET button on the system case. You may also restart by simultaneously pressing Ctrl-Alt-Del. If you do not press the keys at the correct time and the system does not boot, an error message appears and you are again asked to

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

Setup Keys

These keys help you navigate in Setup:

Up arrow Move to previous item

Down arrow Move to next item

Left arrow Move to the item in the left hand

Right arrow Move to the item in the right hand

Esc Main Menu: Quit and not save changes into CMOS RAM.
Other Pages: Exit current page and return to Main Menu

FgUp Increase the numeric value or make changes

FgDn Decrease the numeric value or make changes

+1+ Increase the numeric value or make changes

+1- Decrease the numeric value or make changes

F1 General help, only for Status Page Setup Menu and Option Page Setup Menu

F2	Change color from total 16 colors. F2 to select color forward, Shift-F2 to select color backward
F3	Calendar, only for Status Page Setup Menu
F4	Reserved
F5	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
F7	Load the default
F8	Reserved
F9	Reserved
F10	Save all the CMOS changes, only for Main Menu

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press Esc or F1 again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no

longer is able to boot, the Phoenix Technologies AwardBIOS supports an override to the CMOS settings that resets your system to its default configuration.

You can invoke this override by immediately pressing Insert when you restart your computer. You can restart by either using the ON/OFF switch, the RESET button or by pressing Ctrl-Alt-Delete.

The best advice is to alter only settings that you thoroughly understand. In particular, do not change settings in the Chipset screen without a good reason. The Chipset defaults have been carefully chosen by Phoenix Technologies or your system manufacturer for the best performance and reliability. Even a seemingly small change to the Chipset setup may causing the system to become unstable.

Setup Variations

Not all systems have the same Setup. While the basic look and function of the Setup program remains the same for all systems, the appearance of your Setup screens may differ from the screens shown here. Each system design and chipset combination require custom configurations. In addition, the final appearance of the Setup program depends on your system designer. Your system designer can decide that certain items should not be available for user configuration and remove them from the Setup program.

Main Setup Menu

When you enter the Phoenix Technologies AwardBIOS CMOS Setup Utility, a Main Menu appears on the screen. The Main Menu allows you to select from several Setup functions and two exit choices. Use the arrow keys to select among the items and press Enter to accept and enter the sub-menu.

A brief description of each highlighted selection appears at the bottom of the screen. Following is a brief summary of each Setup category.

Standard CMOS Setup	Options in the original PC AT-compatible BIOS.
BIOS Features Setup	Phoenix Technologies enhanced BIOS options.
Chipset Features Setup	Options specific to your system chipset.
Power Management Setup	Advanced Power Management (APM) options.
PCI Configuration Setup	Plug and Play standard and PCI Local Bus configuration options.
Password Setting	Change, set, or disable a password. In BIOS versions that allow separate user and supervisor passwords, only the supervisor password permits access to Setup. The user password generally allows only power-on access.
IDE HDD Auto Detection	Automatically detect and configure IDE hard disk parameters.
HDD Low Level Format	This option does not appear in many BIOS versions. Most manufacturers of IDE hard drives strongly recommend that you do not run a low-level format on their drives, because of the danger that the bad-track table may be over-written. Phoenix Technologies supplies this utility for service personnel only. If you feel that you need to run a low-level format on your hard drive, <i>contact your drive manufacturer for instructions!</i>

Load BIOS Defaults	BIOS defaults are factory settings for the most stable, minimal-performance system operations.
Load Setup Defaults	Setup defaults are factory settings for optimal-performance system operations.
Save & Exit Setup	Save settings in nonvolatile CMOS RAM and exit Setup.
Exit Without Save	Abandon all changes and exit Setup.

Standard CMOS Setup

In the Standard CMOS menu you can set the system clock and calendar, record disk drive parameters and the video subsystem type, and select the type of errors that stop the BIOS POST.

Date

The BIOS determines the day of the week from the other date information. This field is for information only.

Press the right and left arrow keys to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the right and left arrow keys to move to the desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Daylight Saving

This category may not be present in your Setup program. When enabled, it adds one hour to the clock when daylight-saving time begins. It also subtracts one hour when standard time returns.

HARD DISKS

The BIOS supports up to four IDE drives. This section does not show information about other IDE devices, such as a CD-ROM drive, or about other hard drive types, such as SCSI drives.

NOTE: We recommend that you select type AUTO for all drives.

The BIOS can automatically detect the specifications and optimal operating mode of almost all IDE hard drives. When you select type AUTO for a hard drive, the BIOS detects its specifications during POST, every time the system boots.

If you do not want to select drive type AUTO, other methods of selecting the drive type are available:

1. Match the specifications of your installed IDE hard drive(s) with the preprogrammed values for drive types 1 through 45.

1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process. These are the selections:

No errors	POST does not stop for any errors.
All errors	If the BIOS detects any non-fatal error, POST stops and prompts you to take corrective action.
All, But Keyboard	POST does not stop for a keyboard error, but stops for all other errors.
All, But Diskette	POST does not stop for diskette drive errors, but stops for all other errors.

All, But POST does not stop for a keyboard or disk
Disk/Key error, but stops for all other errors.

Memory

You cannot change any values in the Memory fields; they are only for your information. The fields show the total installed random access memory (RAM) and amounts allocated to base memory, extended memory, and other (high) memory. RAM is counted in kilobytes (KB: approximately one thousand bytes) and megabytes (MB: approximately one million bytes).

RAM is the computer's working memory, where the computer stores programs and data currently being used, so they are accessible to the CPU. Modern personal computers may contain up to 64 MB, 128 MB, or more.

- **Base Memory**

Typically 640 KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

- **Extended Memory**

Above the 1-MB boundary. Early IBM personal computers could not use memory above 1 MB, but current PCs and their software can use extended memory.

- **Other Memory**

Between 640 KB and 1 MB; often called High memory. DOS may load terminate-and-stay-resident (TSR) programs, such as device drivers, in this area, to free as much conventional memory as possible for applications. Lines in your CONFIG.SYS file that start with LOADHIGH load programs into high memory.

BIOS Features Setup

This screen contains industry-standard options additional to the core PC AT BIOS. This section describes all fields offered by Phoenix Technologies in this screen. Your system board designer may omit or modify some fields.

Virus Warning

When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive. You should then run an anti-virus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you first disable the virus warning.

CPU Internal Cache /External Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type on up contain internal cache memory, and most, but not all, modern PCs have additional (external) cache memory. When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU.

The External Cache field may not appear if your system does not have external cache memory.

Quick Power On Self Test

Select *Enabled* to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally disable quick POST. Better to find a problem during POST than lose data during your work.

Boot Sequence

The original IBM PCs loaded the DOS operating system from drive A (floppy disk), so IBM PC-compatible systems are designed to search for an operating system first on drive A, and then on drive C (hard disk). However, modern computers usually load the operating system from the hard drive, and may even load it from a CD-ROM drive.

Swap Floppy Drive

This field is effective only in systems with two floppy drives. Selecting Enabled assigns physical drive B to logical drive A, and physical drive A to logical drive B.

Boot Up Floppy Seek

When Enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 720 KB, 1.2 MB, and 1.44 MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to Disabled to save time.

Boot Up NumLock Status

Toggle between On or Off to control the state of the NumLock key when the system boots. When toggled On, the numeric keypad generates numbers instead of controlling cursor operations.

Boot Up System Speed

Select High to boot at the default CPU speed; select Low to boot at the speed of the AT bus. Some add-in peripherals or old software (such as old games) may require a slow CPU speed. The default setting is High.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1 MB (extended memory). When set to Fast, the system chipset controls Gate A20. When set to Normal, a pin in the keyboard controller controls Gate A20. Setting Gate A20 to Fast improves system speed, particularly with OS/2 and Windows.

Typematic Rate Setting

When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystrokes repeat at a rate determined by the keyboard controller in your system.

When Enabled, you can select a typematic rate and typematic delay.

Typematic Rate (Chars/Sec)

When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10,12, 15, 20, 24 or 30 characters per second.

Typematic Delay (Msec)

When the typematic rate setting is enabled, you can select a typematic delay (the delay before key strokes begin to repeat) of 250, 500, 750 or 1000 milliseconds.

Security Option

If you have set a password, select whether the password is required every time the System boots, or only when you enter Setup.

IDE Second Channel Control

The chipset contains a PCI IDE interface with support for two IDE channels. Select *Enabled* to activate the secondary on-chip IDE interface. Select *Disabled* to deactivate this interface, if you install a secondary add-in IDE interface.

PS/2 mouse function control

If your system has a PS/2 mouse port and you install a serial pointing device, select *Disabled* to avoid the possibility of conflicts and confusion.

PCI/VGA Palette Snoop

Your BIOS Setup may not contain this field. If the field is present, leave at Disabled.

OS Select for DRAM > 64MB

Select OS2 only if you are running OS/2 operating system with greater than 64 MB of RAM on your system.

Shadow

Software that resides in a read-only memory (ROM) chip on a device is called *firmware*. The Phoenix Technologies AwardBIOS permits *shadowing* of firmware such as the system BIOS, video BIOS, and similar operating instructions that come with some expansion peripherals, such as, for example, a SCSI adaptor.

Shadowing copies firmware from ROM into system RAM, where the CPU can read it through the 16-bit or 32-bit DRAM bus. Firmware not shadowed must be read by the system through the 8-bit X-bus. Shadowing improves the performance of the system BIOS and similar ROM firmware for expansion peripherals, but it also reduces the amount of high memory (640 KB to 1 MB) available for loading device drivers, etc.

Enable shadowing into each section of memory separately. Many system designers hardwire shadowing of the system BIOS and eliminate a System BIOS Shadow option.

Video BIOS shadows into memory area C0000-C7FFF. The remaining areas shown on the BIOS Features Setup screen may be occupied by other expansion card firmware. If an expansion peripheral in your system contains ROM-based firmware, you need to know the address range the ROM occupies to shadow it into the correct area of RAM.

Chipset Features Setup

This section describes features of the OPTi Viper-M chipset. If your system contains a different chipset, this section will bear little resemblance to what you see on your screen.

ADVANCED OPTIONS. The parameters in this screen are for system designers, service personnel, and technically competent users only. Do not reset these values unless you understand the consequences of your changes.

NOTE: This chapter describes all fields offered by Phoenix Technologies in this screen. Your system board designer may omit or modify some fields.

Auto Configuration

Auto Configuration selects predetermined optimal values of chipset parameters. When *Disabled*, chipset parameters revert to setup information stored in CMOS. The field below, AT Bus Clock, is not available when Auto Configuration is *Enabled*.

AT Bus Clock

The AT bus clock speed is the speed at which the CPU communicates with the AT bus (expansion bus). The speed is measured as a fraction of LCLK, the timing signal of the PCI bus. Experiment with setting the bus timing to a lower speed (for example, from LCLK/3 to LCLK/4) if an installed expansion peripheral has performance problems.

Hidden Refresh

When *Disabled*, DRAM is refreshed by IBM AT methodology, using a CPU cycles for each refresh. When hidden refresh is *Enabled*, the DRAM controller seeks the most opportune moment for a refresh, regardless of CPU cycles, with least disruption of system activity and least performance penalty. Hidden refresh is faster and more efficient.

RAS Pulse Width

The system designer must select the number of CPU clock cycles allotted for the RAS pulse refresh, according to DRAM specifications.

Read CAS Pulse Width

The system designer must set the number of CPU cycles the CAS signal requires during a DRAM read operation.

Write CAS Pulse Width

The system designer must set the number of CPU cycles the CAS signal requires during a DRAM write operation.

RAS Precharge Time

Select the number of CPU clocks allocated for the **Row Address Strobe (RAS#)** signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

CAS Precharge Time

Select the number of CPU clocks allocated for the **Column Address Strobe (CAS#)** signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

DRAM Posted Write

The chipset maintains its own internal buffer for DRAM writes. When this buffer is *Enabled*, CPU write cycles to DRAM are posted to the buffer, so the CPU can start another write cycle before the DRAM finishes its cycle.

DRAM Slow Refresh

The default DRAM refresh request signal occurs every 15 μ s. A 16-bit ISA bus master may activate a refresh request when it has bus ownership. Selecting a slow refresh period here specifies the timing of the refresh request signal from an ISA master.

CPU Address Pipelining

Pipelining allows the system controller to signal the CPU for a new memory address even before

all data transfers for the current cycle are complete, resulting in increased throughput.

Byte Merge Support

Byte merging holds 8- or 16-bit data sent from the CPU to the PCI bus in a buffer where it is accumulated, or merged, into 32-bit data for faster performance. The chipset then writes the data in the buffer to the PCI bus when appropriate. *PCI Pipeline* and *Pipelining* combine PCI or CPU pipelining with byte merging. Byte merging is used to enhance video performance.

SRAM Type

The system controller supports both synchronous and asynchronous cache memory. Set this field to match the type installed in your system.

SYNC SRAM Support

If synchronous cache memory is installed, this setting allows you to specify whether this memory is the standard synchronous SRAM or pipelined SRAM.

L1 Cache Policy

Write-Through means that memory is updated with data held in the cache whenever the CPU issues a write cycle. On the other hand, *Write-Back* causes memory to be updated only under certain conditions such as read requests to the memory whose contents are currently in the cache. *Write-Back* allows the CPU to operate with fewer interruptions, increasing its efficiency.

L2 Cache Write Policy

In addition to the *Write-Back* and *Write-Through* options, the L2 cache also offers *Adaptive WB1* and *Adaptive WB2*. Both adaptive write-back modes try to reduce the disadvantages of both the write-through and write-back policies. The system designer must select the optimal cache write policy, according to the SRAM specifications.

Cache Read Burst

Sets the precise timing used during burst reads to the cache.

Cache Write Burst

Sets the precise timing used during burst writes to the cache.

Video BIOS Cacheable

Selecting *Enabled* allows caching of the video BIOS at C0000h-C7FFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Linear Burst Support

Set this field to *Enabled* only if the system contains a Cyrix CPU and linear mode SRAM.

1st/2nd Fast DMA Channel

Select up to two DMA channels for Type F DMA, if supported by the I/O peripheral using the DMA channel.

Onboard FDC Controller

Select *Enabled* if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select *Disabled* in this field.

Onboard Serial Ports (1, 2)

Select a logical COM port address for the first and second serial ports. The second serial port offers these additional options:

- HPSIR IrDA-compliant serial infrared port
 - ASKIR Amplitude shift keyed infrared port
-

TxD, RxD Active

Consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. If you have not selected an IR port for COM2, leave this setting at default.

Onboard Parallel Port

Select a logical LPT port address for the physical parallel port.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. Select *Normal* unless your hardware and software require one of the other modes offered in this field.

ECP Mode Use DMA

Select a DMA channel for the parallel port in ECP mode.

Power Management

NOTE: This chapter describes all fields offered by Phoenix Technologies in this screen. Your system board designer may omit or modify some fields.

Power Management

This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section *PM Timers* for a brief description of each mode.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 9 seconds in each mode.
User Define	Set each mode individually. Select time-out periods in the <i>PM Timers</i> section, following.
Min Saving	Minimum power savings. Inactivity period is 3 hours in each mode.

PM Control by APM

If Advanced Power Management (APM) is installed on your system, selecting *Yes* gives better power savings.

Video Off Option

Selects the power-saving modes during which the monitor goes blank:

Always On	Monitor remains on during power-saving modes.
Suspend --> Off	Monitor blanked when system enters <i>Suspend</i> mode.
Susp,Stby --> Off	Monitor blanked when system enters either <i>Suspend</i> or <i>Standby</i> mode.
All Modes --> Off	Monitor blanked when system enters any power saving mode.

Video Off Method

Determines the manner in which the monitor is blanked.

V/H SYNC+Blank	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards Association (VESA). Use the software supplied for your video subsystem to select video power management values.
Blank Screen	System only writes blanks to the video buffer.

PM Timers

The following modes are Green PC power saving functions. Doze, Suspend, and Standby modes are user-configurable only during User Defined Power Management mode.

HDD Off After

After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down while all other devices remain active. Selecting *Suspend* tells the drive to power down immediately.

Doze Mode

After the selected period of system inactivity (9 seconds to 3 hours), the CPU clock runs at slower speed while all other devices still operate at full speed.

Standby Mode

After the selected period of system inactivity (9 seconds to 3 hours), the fixed disk drive and the video shut off while all other devices still operate at full speed.

Suspend Mode

After the selected period of system inactivity (9 seconds to 3 hours), all devices except the fixed disk drive and CPU shut off.

PM Events

You may disable activity monitoring of some common interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity.

DMA Request

When *Enabled*, any DMA request wakes up the system or resets the inactivity timer.

Video Activity

When *Enabled*, any video activity wakes up the system or resets the inactivity timer.

HDD Port (1F0, 170)

When *Enabled*, any hard drive activity wakes up the system or resets the inactivity timer.

FDD Port (3F5)

When *Enabled*, any floppy drive activity wakes up the system or resets the inactivity timer.

LPT (3BC, 378, 278)

When *Enabled*, any parallel port activity wakes up the system or resets the inactivity timer.

COM Port (3F8, 3E8)

When *Enabled*, any COM1 or COM3 port activity wakes up the system or resets the inactivity timer.

COM Port (2F8, 2E8)

When *Enabled*, any COM2 or COM4 port activity wakes up the system or resets the inactivity timer.

PCI Masters

When *Enabled*, any PCI bus master activity wakes up the system or resets the inactivity timer.

Local Devices

When *Enabled*, any local device activity wakes up the system or resets the inactivity timer.

IRQ_n

When *Enabled*, any activity from the selected IRQ wakes up the system or resets the inactivity timer. The following is a list of IRQs assigned to common system peripherals.

IRQ3 (COM 2)	IRQ10 (Reserved)
IRQ4 (COM 1)	IRQ11 (Reserved)
IRQ5 (LPT 2)	IRQ12 (PS/2 Mouse)
IRQ6 (Floppy Disk)	IRQ13 (Coprocessor)
IRQ7 (LPT 1)	IRQ14 (Hard Disk)
IRQ9 (IRQ2 Redir)	IRQ15 (Reserved)

PCI Configuration

NOTE: This chapter describes all fields offered by Phoenix Technologies in this screen. Your system board designer may omit or modify some fields.

Slot 1/2/3 Using INT#

Some PCI devices use interrupts to signal that they need to use the PCI bus. Some devices, notably most graphics adapters, may not need an interrupt service at all. Each PCI slot is capable of activating up to four interrupts, *INT# A*, *INT# B*, *INT# C* and *INT# D*. By default, a PCI slot is allowed *INT# A*. Assigning *INT# B* has no meaning unless the device in the slot requires two interrupt services rather than just one. Likewise, using *INT# C* can only mean the device requires three interrupts and similarly for *INT# D*.

Selecting the default, *AUTO*, allows the PCI controller to automatically allocate the interrupts.

1st/2nd/3rd/4th Available IRQ

If an installed PCI device requires interrupt service, you may manually select an unused interrupt line for PCI IRQs. *NA* indicates the interrupt is assigned to an ISA bus device and is not available to any PCI slot.

PCI IRQ Activated by

Leave the IRQ trigger set at *Level* unless the PCI device assigned to the interrupt specifies *Edge-triggered* interrupts.

PCI IDE IRQ Map to

This field lets you select PCI IDE IRQ mapping or PC AT (ISA) interrupts. If your system does not have one or two PCI IDE connectors on the system board, select values according to the type of IDE interface(s) installed in your system (PCI or ISA). Standard ISA interrupts for IDE channels are IRQ14 for primary and IRQ15 for secondary.

Primary/Secondary IDE INT#

Each PCI peripheral connection is capable of activating up to four interrupts: *INT# A*, *INT# B*,

INT# C and *INT# D*. By default, a PCI connection is assigned *INT# A*. Assigning *INT# B* has no meaning unless the peripheral device requires two interrupt services rather than just one. Because the PCI IDE interface in the chipset has two channels, it requires two interrupt services. The primary and secondary IDE *INT#* fields default to values appropriate for two PCI IDE channels, with the primary PCI IDE channel having a lower interrupt than the secondary.

PCI Read burst WS

Select the number of cycles allotted for a PCI master burst read.

PCI Write burst WS

Select the number of cycles allotted for a PCI master burst write.

Master Retry Timer

This sets how many PCI clock signals the CPU master attempts a PCI cycle before the cycle is unmasked (terminated).

PCI Pre-Snoop

Pre-snooping is a technique by which a PCI master can continue to burst to local memory until a 4K page boundary is reached rather than just a line boundary.

CPU/PCI Write Phase

Determines the number of clock signals between the address and data phases of the CPU-master-to-PCI-slave writes.

PCI Preempt Timer

Set the length of time (in LCLK ticks) before one PCI master preempts another when a service request is pending.

Bank 0/1 DRAM Type

The value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

CPU to PCI POST/BURST

Data from the CPU to the PCI bus can be posted (buffered by the controller) and/or burst. These are the methods.

POST/CON.BURST	Posting and conservative bursting
POST/Agg.BURST	Posting and aggressive bursting
NONE/NONE	Neither posting nor bursting
POST/NONE	Posting but not bursting

On-Chip PCI IDE

The chipset contains a PCI IDE interface with support for two IDE channels. Select *Enabled* to activate the IDE interface. Select *Disabled* to deactivate this interface, if you install a primary and/or secondary add-in IDE interface. You can disable the second IDE interface separately in the IDE Second Channel Control field in the BIOS Features Setup screen.

IDE HDD Block Mode

Select *Enabled* only if your hard drives support block mode.

IDE PIO Modes (Primary/Secondary Master/Slave)

The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of up to four IDE devices that the internal PCI IDE interface supports. Modes 0 through 4 provide successively increased performance. In *Auto* mode, the system automatically determines the best

mode for each device.

Password Setting

When you select this function, a message appears at the center of the screen:

ENTER PASSWORD:

Type the password, up to eight characters, and press Enter. Typing a password clears any previously entered password from CMOS memory.

Now the message changes:

CONFIRM PASSWORD:

Again, type the password and press Enter.

To abort the process at any time, press Esc.

In the Security Option item in the BIOS Features Setup screen, select System or Setup:

System Enter a password each time the system boots and when
 ever you enter Setup.

Setup Enter a password when ever you enter Setup.

***NOTE:** To clear the password, simply press Enter when asked to enter a password. Then the password function is disabled.*

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