

**Phoenix Technologies, Ltd.®**  
**CMOS Setup Utility User's Guide**  
**for ALI M6117 Chipset**  
*EliteBIOS™ Version 4.51PG*

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## **Table of Contents**

**Introduction to Setup - 2**  
**Main Setup Menu - 6**  
**Standard CMOS Setup - 7**  
**BIOS Features Setup - 11**  
**Chipset Features Setup - 15**  
**Power Management - 18**  
**Password Setting - 21**

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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.

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## 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 by 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

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## 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

**PgUp** Increase the numeric value or make changes

**PgDn** Decrease the numeric value or make changes

**+** Increase the numeric value or make changes

**-** 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 Shift-F2 color forward, Shift-F2 to select color backward

**F3** Calendar, only for Status Page Setup Menu

<b>F4</b>	Reserved
<b>F5</b>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<b>F6</b>	Load the default CMOS RAM value from BIOS default table, only for Option Page Setup Menu
<b>F7</b>	Load the default
<b>F8</b>	Reserved
<b>F9</b>	Reserved
<b>F10</b>	Save all the CMOS changes, only for Main Menu

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## 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 the F1 key again.

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## 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.

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## 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.

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# 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 submenu.

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	Options in the original PC AT-compatible BIOS.
BIOS Features	Phoenix Technologies enhanced BIOS options.
Chipset Features	Options specific to your system chipset.
Power Management	Advanced Power Management (APM) 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, <b><i>contact your drive manufacturer for instructions!</i></b>
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.

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## Date

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

Press the right arrow or left arrow key 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.

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## 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 arrow or left arrow key to move to the desired field . Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

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## 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.

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## Drive C

## Drive D

The BIOS supports two 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



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

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## 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

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## 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 Disk/Key	POST does not stop for a keyboard or disk 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.

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# 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.

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## 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

Cache memory is a small area of additional memory that is much faster than conventional DRAM (system 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. (NOTE: This field is moot. 386-type CPUs do not contain internal cache.)

---

## 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.

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## 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.

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## 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.

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## 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.

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## Boot Up NumLock Status

Toggle between *On* and *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.

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## 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.

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## IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select *Enabled* for automatic detection of the optimal number of block read/writes per sector the drive can support.

---

## 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.

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## Memory Parity Check

Parity is a testing feature built into some system memory chips (DRAM). Select *Enabled* only if your system DRAM contains parity. This field may not be present in systems without parity DRAM.

Selecting *Enabled* adds a parity check to the boot-up memory tests. If the BIOS detects a parity error, a message appears, describing the problem and, if possible, the location of the problem. The boot process then terminates and you must replace the faulty DRAM.

Selecting *Disabled* omits the memory parity check.

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## 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.

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### 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.

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## 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*.

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## 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

**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.*

---

## DRAM refresh type

The refresh type (*RAS only* or *CAS before RAS*) depends on the specifications of the installed DRAMs. The system board designer must select the correct type. Do not change from the default setting.

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## Fast RAS precharge time

The RAS precharge time (*1.5T* or *2.5T*) depends on the specifications of the installed DRAMs. The system board designer must select the correct type. Do not change from the default setting.

---

## Memory remap

You can remap the area of memory between the 640 KB application memory boundary and the 1 MB boundary up to the top of installed memory. This technique allows an additional 384 KB of RAM above 1 MB.

---

## RAS active time insert wait

Select *Enabled* if the installed DRAM requires additional wait states. The system board designer must set this option according to the installed DRAM. Do not change from the default setting unless you are experiencing memory errors.

---

## CAS precharge insert wait

Select *Enabled* if the installed DRAM requires additional wait states. The system board designer must set this option according to the installed DRAM. Do not change from the default setting unless you are experiencing memory errors.

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## Memory CAS read insert wait

Select *Enabled* if the installed DRAM requires additional wait states. The system board designer must set this option according to the installed DRAM. Do not change from the default setting unless you are experiencing memory errors.

---

## Memory write insert wait

Select *Enabled* if the installed DRAM requires additional wait states. The system board designer must set this option according to the installed DRAM. Do not change from the default setting unless you are experiencing memory errors.

---

## Memory miss read insert wait

Select *Enabled* if the installed DRAM requires additional wait states. The system board designer must set this option according to the installed DRAM. Do not change from the default setting unless you are experiencing memory errors.

---

## AT-BUS Clock

You can set the speed of the AT bus in terms of a fraction of the CPU clock speed (PCLK2), or at the fixed speed of 7.16 MHz.

---

## DRAM self refresh

When *Disabled*, DRAM is refreshed by IBM AT methodology, using a CPU cycles for each refresh. When self 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. Self refresh is faster and more efficient, and it also allows the CPU to maintain the status of the DRAM even if the system goes into a power management "suspend" mode.

---

## Slow Refresh

Select a longer period to refresh system memory if you are encountering data corruption because your DRAM is not fast enough to handle faster timing.

---

## **ISA memory high speed**

Select *Enabled* if you have installed high-speed add-on RAM in an ISA expansion slot.

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## **ISA I/O high speed**

Select *Enabled* if you have installed a high-speed add-on I/O peripheral in an ISA expansion slot.

---

## **ISA write cycle insert wait**

If you have add-on RAM in an ISA expansion slot, select *Enabled* to allow additional time for the slower throughput of the ISA bus.

---

## **On-chip I/O recovery**

Select *Enabled* to allow extra preparation time between I/O cycles controlled by the M6117 chip.

---

## **16 Bit ISA insert wait**

Your system quite possibly has much higher performance than some of your input/output (I/O) devices. This means that unless the system is instructed to allow more time, more wait states, for devices to respond, it might think the device has malfunctioned and stop its request for I/O. If all your I/O devices are capable, then disabling this setting could result in greater throughput. Otherwise, data could be lost.

---

## **I/O recovery**

Select *Enabled* to allow extra preparation time between I/O cycles controlled by add-on peripherals.

---

## **I/O recovery period**

When I/O recovery (above) is *Enabled*, you can set the recovery period.

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# 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.*

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## 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:

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

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## PM Control by APM

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

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## Video Off Option

Select 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 <i>Suspend</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.

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## PM Timers

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

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### Doze Mode

After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed.

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### Standby Mode

After the selected period of system inactivity, 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, all devices except the CPU shut off.

---

## PM Events

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

When *Enabled*, any of the system peripheral devices or IRQs listed below wakes up the system.

DMA Request	IRQ6 (Floppy Disk)
VGA Activity	IRQ7 (LPT 1)
FDD (3F5)	IRQ9 (IRQ2 Redir)
LPT (3BC, 378, 278)	IRQ10 (Reserved)
COM Port (3F8, 3E8)	IRQ11 (Reserved)

COM Port (2F8, 2E8)  
IRQ3 (COM 2 )  
IRQ4 (COM 1)  
IRQ5 (LPT 2)

IRQ12 (PS/2 Mouse)  
IRQ13 (Coprocessor)  
IRQ14 (Hard Disk)  
IRQ15 (Reserved)

---

# 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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