

Phoenix Technologies, Ltd.[®]
CMOS Setup Utility User's Guide
for Intel 82440FX PCIset
AwardBIOS™ Version 4.51PG

Table of Contents

Introduction to Setup - 2

Main Setup Menu - 5

Standard CMOS Setup - 6

BIOS Features Setup - 10

Chipset Features Setup - 14

Power Management - 19

PnP/PCI Configuration - 23

Integrated Peripherals - 25

Password Setting - 28

Introduction to Setup

This manual describes the **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 **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 **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 **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 pressing Ctrl-Alt-Esc when the following message appears briefly at the bottom of the screen during POST:

TO ENTER SETUP BEFORE BOOT PRESS 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 Ctr-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, 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
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
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 the F1 key 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 **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, your Setup screens may differ from the screens described 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 **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	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.
PnP/PCI Configuration	Plug and Play standard and PCI Local Bus configuration options.
Integrated Peripherals	I/O subsystems that depend on the integrated peripherals controller in your system.
Supervisor/User 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 left or right 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.

Time

The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right 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.

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.

2. Select USER and enter values into each drive parameter field.
3. Use the IDE HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any pre-defined type are classified as type USER.

- **Size:** Disk drive capacity (approximate). Note that this size is usually slightly greater than the size of a formatted disk given by a disk-checking program.
- **Cyls:** Number of cylinders
- **Head:** Number of heads
- **Precomp:** Write precompensation cylinder
- **Landz:** Landing zone
- **Sector:** Number of sectors
- **Mode:** Auto, Normal, large, or LBA

Auto: The BIOS automatically determines the optimal mode.

- **Normal:** Maximum number of cylinders, heads, and sectors supported are 1024, 16, and 63.
- **Large:** For drives that do not support LBA and have more than 1024 cylinders.
- **LBA (Logical Block Addressing):** During drive accesses, the IDE controller transforms the data address described by sector, head, and cylinder number into a physical block address, significantly improving data transfer rates. For drives with greater than 1024 cylinders.

Drive A

Drive B

Select the correct specifications for the diskette drive(s) installed in the computer.

None	No diskette drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
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 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.

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. Some fields may vary from those in your Setup program. 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, the BIOS now offers many boot sequence options.

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.

PS/2 Mouse Function Control

If your system has a PS/2 mouse port and you install a serial pointing device, select *Disabled*.

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 **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 Intel 82440FX PCIset. 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. Many fields in this screen are not available when Auto Configuration is *Enabled*.

DRAM Speed Selection

The value in this field must correspond to the speed of the DRAM installed in your system. **DO NOT** change the default setting of this field, as determined by the system board manufacturer for the installed DRAM. This value is *access* speed, so a lower value means a faster system.

DRAM RAS# Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refresh. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.

MA Additional Wait State

Selecting *Enabled* inserts an additional wait state before the beginning of a memory read. The setting of this parameter depends on the board design. Do not change from the manufacturer's default unless you are getting memory addressing errors.

RAS# to CAS# Delay

This field lets you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. *Disabled* gives faster performance; and *Enabled* gives more stable performance.

DRAM Read Burst (B/E/F)

Set the timing for burst-mode reads from DRAM. The lower the timing numbers, the faster the system addresses memory.

DRAM Write Burst (B/E/F)

Set the timing for burst-mode writes from DRAM. The lower the timing numbers, the faster the system addresses memory.

ISA Bus Clock

Set the speed of the ISA bus here. The settings are tied to the speed of the PCI bus. If the PCI bus operates at 33 MHz, a setting of PCICLK/4 (default) would yield an ISA bus speed of approximately 8 MHz, the standard speed of the ISA bus. While most devices operate at higher ISA bus speeds, try a slower bus speed if your ISA device does not function properly at a high bus speed.

DRAM Refresh Queue

Enabled permits queuing up to four DRAM refresh requests, so DRAM can refresh at optimal times. *Disabled* makes all refreshes priority requests. Installed DRAM must support this feature; most do.

DRAM RAS Only Refresh

An alternate to CAS-before-RAS refresh. Leave *Disabled* unless your DRAM requires this older method of refresh generation.

DRAM ECC/Parity Select

Select *Parity*, *ECC*, or *Disabled*, depending on the type of DRAM installed in your system.

Fast DRAM Refresh

The cache DRAM controller offers two refresh modes, *Normal* and *Hidden*. In both modes, CAS takes place before RAS but the *Normal* mode requires a CPU cycle for each. On the other hand, a cycle is eliminated by "hiding" the CAS refresh in *Hidden* mode. Not only is the *Hidden* mode faster and more efficient, but it also allows the CPU to maintain the status of the cache even if the system goes into a power management "suspend" mode.

Read-Around-Write

DRAM optimization feature: If a memory read is addressed to a location whose latest write is being held in a buffer before being written to memory, the read is satisfied through the buffer contents, and the read is not sent to the DRAM.

PCI Burst Write Combine

When this option is *Enabled*, the chipset assembles long PCI bursts from the data held in these buffers.

PCI-To-DRAM Pipeline

DRAM optimization feature: If *Enabled*, full PCI-to-DRAM write pipelining is enabled. Buffers in the chipset store data written from the PCI bus to memory. When *Disabled*, PCI writes to DRAM are limited to a single transfer per write cycle.

CPU-To-PCI Write Post

When this field is *Enabled*, writes from the CPU to the PCI bus are buffered, to compensate for the speed differences between the CPU and the PCI bus. When *Disabled*, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

CPU-To-PCI IDE Posting

Select *Enabled* to post write cycles from the CPU to the PCI IDE interface. IDE accesses are posted in the CPU to PCI buffers, for cycle optimization.

System BIOS Cacheable

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

Video RAM Cacheable

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

8/16 Bit I/O Recovery Time

The I/O recovery mechanism adds bus clock cycles between PCI-originated I/O cycles to the ISA bus. This delay takes place because the PCI bus is so much faster than the ISA bus.

These two fields let you add recovery time (in bus clock cycles) for 16-bit and 8-bit I/O.

Memory Hole at 15M-16M

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

DRAM Fast Leadoff

Select *Enabled* to shorten the leadoff cycles and optimize performance.

Passive Release

When *Enabled*, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles.
Select *Enabled* to support compliance with PCI specification version 2.1.

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. These modes are described later in this chapter.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs. Inactivity period is 1 minute in each mode.
User Define	Set each mode individually. Select time-out periods in the section for each mode, below.
Min Saving	Minimum power savings. Inactivity period is 1 hour in each mode (except the hard drive).

PM Control by APM

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

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.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

Doze Mode

After the selected period of system inactivity, the CPU clock throttles to a small percentage of its duty cycle — between 10 percent and 25 percent for most chipsets. All other devices still operate at full speed.

Standby Mode

After the selected period of system inactivity, the CPU clock stops, the hard drive enters an idle state, and the L2 cache enters a power-save mode. All other devices still operate at full speed.

Suspend Mode

After the selected period of system inactivity, the chipset enters a hardware suspend mode, stopping the CPU clock and possibly causing other system devices to enter power management modes.

HDD Power Down

After the selected period of drive inactivity, any system IDE devices compatible with the ATA-2 specification or later power manage themselves, putting themselves into an idle state after the specified timeout and then waking themselves up when accessed.

Wake Up Events

When the system is in Doze or Standby mode, 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. In these wake-up event fields, you can turn *On* or *Off* commonly used interrupts. For example, if you have a modem on IRQ3, you can turn *On* IRQ3 as a wake-up event, so an interrupt from the modem can wake up the system. Or you may wish to turn *Off* IRQ12 (the PS/2 mouse) as a wake-up event, so accidentally brushing the mouse does not awaken the system.

Power Down and Resume Events

The global timer is the hardware timer that counts down to Doze, Standby, and Suspend modes. If a doze timeout is set, the system enters Doze mode when the timeout expires. Then the timer reloads with the standby timeout, if one is set. If not, it reloads with the suspend timeout, if one is set. If not, the timer turns off. The timer works in a similar way for the standby and suspend timeouts. When more than one global timeout is set, the timeouts run one after the other.

Select *ON* if you want an IRQ, when accessed, to reload the original count of the global timer. Selected IRQs also cause the system to wake up from a global Doze, Standby, or Suspend mode when accessed.

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)
IRQ8 (RTC Alarm)	IRQ15 (Reserved)
IRQ9 (IRQ2 Redir)	

PnP/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.

Resources Controlled By

The Plug and Play **AwardBIOS** can automatically configure all the boot and Plug and Play-compatible devices. If you select *Auto*, all the interrupt request (IRQ) and DMA assignment fields disappear, as the BIOS automatically assigns them.

Reset Configuration Data

Normally, you leave this field *Disabled*. Select *Enabled* to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system cannot boot.

IRQ *n* Assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1).

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

DMA *n* Assigned to

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific DMA channel

PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.

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.

Used Mem base addr

Select a base address for the memory area used by any peripheral that requires high memory.

Used Mem Length

Select a length for the memory area specified in the previous field. This field does not appear if no base address is specified.

Integrated Peripherals

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

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.

On-Chip PCI IDE (Primary/Secondary)

The Intel 82C440FX chipset contains a PCI IDE interface with support for two IDE channels. Select *Enabled* to activate the primary and/or secondary IDE interface. Select *Disabled* to deactivate this interface, if you install a primary and/or secondary add-in IDE interface.

PCI Slot IDE 2nd Channel

Select *Enabled* if you install a secondary add-in IDE interface in a PCI slot.

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.

Onboard Parallel Port

Select a logical LPT port name and matching address for the physical parallel (printer) port.

Parallel Port Mode

Select an operating mode for the onboard parallel port. Select *Compatible* or *Extended* unless you are certain both your hardware and software support EPP or ECP mode.

<i>Compatible</i>	PC AT parallel port
<i>Extended</i>	PS/2-compatible, bidirectional
<i>EPP</i> (Enhanced Parallel Port)	Fast, bidirectional port used primarily by non-printer peripherals, CD ROM, tape, hard drive, network adapters, etc.
<i>ECP</i> (Extended Capabilities Port)	Fast, buffered port, used primarily by new generation of printers and scanners

For information about parallel port modes, see <http://www.fapo.com/1284.htm>

ECP Mode Use DMA

Select a DMA channel for the port.

EPP Version

Select EPP port type 1.7 or 1.9.

InfraRed Duplex Type

Select the value required by the IR device connected to the IR port. *Full-duplex* mode permits simultaneous two-direction transmission. *Half-duplex* mode permits transmission in one direction only at a time. If no infrared port is present in the system, select *Disabled*.

USB Controller

Select *Enabled* if your system contains a USB controller and you have USB peripheral(s) connected.

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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