

Phoenix Technologies, Ltd.®
CMOS Setup Utility User's Guide
for OPTi 802G Chipset
EliteBIOS™ 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.

To start Setup, press the Del key some time before or while a message similar to this appears briefly at the bottom of the screen during POST:

TO ENTER SETUP PRESS DEL KEY

If the message disappears before you press DEL and you still wish to enter Setup, you must reboot the system.

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 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, 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 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	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, <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 recognizes only IDE hard drives (and some much older technology drive types), so this section does not show information about other IDE devices, such as a CD-ROM drive, or about hard drive types such as SCSI or ESDI 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 /VG A	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.
MO NO	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 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*.

IDE HDD Block Mode

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

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.

Memory Parity Check

Select *Enabled* if the DRAM chips in your system support parity.

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.

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 802G 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. Many fields in this screen are not available when Auto Configuration is *Enabled*.

AT Clock Option

The system board designer selects whether the AT bus clock is tightly synchronized with the CPU or is asynchronous.

Synchronous AT Clock

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

DRAM Read Wait State

These DRAM timing numbers are the pattern of cycles the CPU uses to read data from the main memory. The system board designer must select the proper combination, depending on the memory size and access speed of the DRAMs. Do not reset this option from its default.

DRAM Write Wait State

The system board designer may elect to insert a wait state into the DRAM write cycle, if necessary.

Cache Read Burst

These SRAM timing numbers are the pattern of cycles the CPU uses to read data from the cache. The system board designer must select the proper combination, depending on the cache size and access speed of the cache SRAMs. Do not reset this option from its default.

Cache Write Wait State

The system board designer may elect to insert a wait state into the cache write cycle, if necessary.

Hidden Refresh Option

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.

Slow Refresh Enable

If your system is equipped with slow refresh DRAMs, enabling this setting causes the refresh frequency to be reduced to one-fourth the default speed.

Single ALE Enable

Select *Enabled* to activate a single ALE signal instead of multiple ALEs during a bus conversion cycle.

Extra AT Cycle WS

Select *Enabled* to insert one wait state in the standard AT bus cycle.

Fast AT Cycle

Select *Enabled* to shorten AT bus cycles by one ATCLK signal.

Back to Back I/O Delay

Select *Enabled* to insert three ATCLK signals in back-to-back AT bus I/O cycles.

Master Mode Byte Swap

Select *Enabled* or *Disabled*.

DMA Clock

This item allows you to set the speed of Direct Memory Access (DMA) at either equal to or one-half of the SYSCLK (system clock signal) speed. While speed is always desirable, choosing the higher setting may prove to be too fast for some components.

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.

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.

Onboard FDD 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 IDE Controller

The chipset contains an IDE interface that is permanently configured as the secondary IDE channel. Select *Secondary* to activate this IDE interface. Select *Disabled* to deactivate this interface, if you install an add-in secondary IDE interface.

Parallel Port Mode

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

Onboard Parallel Port

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

Onboard Serial Ports (1, 2)

Select a logical COM port address for the first and second physical serial ports.

Serial Port 1/2 Interrupt

Select between the default PC AT interrupt and no interrupt for COM 1/3 and COM 2/4.

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.

PM Mode

Power management is configured for SMI Green mode, which is the mode required by the system CPU.

Power Management

This option allows you to select the type (or degree) of power saving for Doze and Sleep modes.

This table describes each power management mode:

Max Saving	Maximum power savings. Only Available for SL CPUs.
User Define	Set each mode individually. Select time-out periods in the following sections.
Min Saving	Minimum power savings.

Doze Timer

After the selected period of system inactivity (15 seconds to 4 hours), the CPU clock runs at slower speed while all other devices still operate at full speed.

Sleep Timer

After the selected period of system inactivity (15 seconds to 4 hours), all devices except the fixed disk drive and CPU shut off.

HDD Standby Timer

After the selected period of drive inactivity (1 to 15 minutes), the hard disk drive powers down.

Sleep Clock

Select *Stop Clock* or *Slow Clock* during Sleep mode.

CRT Sleep

Determines the manner in which the monitor is blanked.

H/V SYN C+B LAN K	System turns off vertical and horizontal synchronization ports and writes blanks to the video buffer.
DPM S	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.
BLA NK CRT	System only writes blanks to the video buffer.

PM wait for APM

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

IRQ_n Detection

When *Enabled*, any activity from the selected IRQ (IRQ3-IRQ12; IRQ14-IRQ15) wakes up the system or resets the inactivity timer.

CRT Power Down

When *Enabled*, the CRT powers down when the system enters a Green mode.

LDEV Detection

When *Enabled*, any activity on the LDEV signal line wakes up the system or resets the inactivity timer.

LREQ Detection

When *Enabled*, any activity on the LREQ signal line wakes up the system or resets the inactivity timer.

Video Detection

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

HDD Detection

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

FDD Detection

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

DRQ Detection

When *Enabled*, any activity on a DRQ signal line wakes up the system or resets the inactivity timer.

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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