



**AMD Athlon™**

# **User Guide**

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# Introduction

This manual discusses Award™ Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The AwardBIOS™ installed in your computer system's ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means that it supports Athlon™ processors in a standard IBM-AT compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The AwardBIOS™ has been customized by adding important, but non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire 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 AwardBIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing <Del> immediately after switching the system on, or

2. by pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

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>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

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## Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

**Table 1 Legend Keys**

### Navigating through the menu bar

Use the left and right arrow keys to choose the menu you want to be in.

**To display a sub menu**, use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A “>” pointer marks all sub menus.

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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 AwardBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

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## **A Final Note About Setup**

Not all systems have the same Setup. While the basic look and function of the Setup program remains the same for all systems, individual motherboard and chipset combinations require custom configurations. For example, you may find that your Setup main menu has a different number of entries from the main menu displayed in this manual. These are simply features not supported (or not user configurable) on your system.

The final appearance of the Setup program also depends on the Original Equipment Manufacturer (OEM) who built your system. If your OEM has decided that certain items should only be available to their technicians, those items may very well be removed from the Setup program.

# Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear 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.

CMOS Setup Utility - Copyright ( C ) 1984-1999

Standard CMOS Feature	Frequency/Voltage Control
Advanced BIOS Feature	Load Fail-Safe Defaults
Advanced Chipset Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit      F9 : Menu in BIOS    ↑ ↓ ← → : Select Item	
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type....	

Note that a brief description of each highlighted selection appears at the bottom of the screen.

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## Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

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**Standard CMOS Features** Use this menu for basic system configuration. See Section 2 for the details.

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**Advanced BIOS Features** Use this menu to set the Advanced Features available on your system. See Section 3 for the details.

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**Advanced Chipset Features** Use this menu to change the values in the chipset registers and optimize your system's performance. See section 4 for the details.

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**Integrated Peripherals** Use this menu to specify your settings for integrated peripherals. See section 4 for the details.

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**Power Management Setup** Use this menu to specify your settings for power management. See section 5 for the details.

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**PnP / PCI Configuration** This entry appears if your system supports PnP / PCI. See section 6 for the details.

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**PC Health Status** This menu helps you to get more information about your system. See section 7 for the detail.

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**Frequency/Voltage Control** Use this menu to specify your settings for frequency/voltage control. See section 7 for the details.

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**Load Fail-Safe Defaults** Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate. See section 8 for the details.



**Load Optimized Defaults** Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs. See section 8 for the details.

**Supervisor / User Password** Use this menu to set User and Supervisor Passwords. See section 9 for the details.

**Save & Exit Setup** Save CMOS value changes to CMOS and exit setup. See section 10 for the details.

**Exit Without Saving** Abandon all CMOS value changes and exit setup. See section 10 for the details.

# Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

CMOS Setup Utility – Copyright © 1984-1999 Award Software  
Standard CMOS Features

Date:	Mon, Aug 16	Item Help
1999		
Time:	16:19:20	
> IDE Primary Master	2557 MB	Menu Level >
> IDE Primary Slave	None	
> IDE Secondary Master	None	Change the day, month,
> IDE Secondary Slave	None	year and century
Drive A	1.44M, 3.5 in.	
	Drive B None	
Video	EGA/VGA	
Halt On	All,But	
Keyboard		
Based Memory	640K	
Extended Memory	64512K	
Total Memory	65536K	
↑↓←→Move Enter: Select +/-PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

## Main Menu Selections

This table shows the selections that you can make on the Main Menu

Item	Options	Description
Date	MM DD YYYY	Set the system date. Note that the 'Day' automatically changes when you set the date
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
Video	EGA/VGA CGA 40 CGA 80 MONO	Select the default video device
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up
Total Memory	N/A	Displays the total memory available in the system

## IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Following figure shows the IDE primary master sub menu.

CMOS Setup Utility – Copyright © 1984-1999 Award Software  
IDE Primary Master

IDE HDD Auto-Detection	<b>Press Enter</b>	Item Help
IDE Primary Master	Auto 2557 MB	Menu Level >>
Access Mode	Auto	To auto-detect the HDD's size, head... on this channel
Capacity	0	
Cylinder	4956	
Head	16	
Precomp	0	
Landing Zone	4955	
Sector	63	
↑↓←→Move Enter: Select +/-PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Use the legend keys to navigate through this menu and exit to the main menu. Use following table to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.
IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal	Choose the access mode for

	LBA Large Auto	this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** <b>Warning:</b> Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

# Advanced BIOS Features

This section allows you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.

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Advanced BIOS Features

Virus Warning	Enabled	Item Help
CPU Internal Cache	Enabled	
External Cache	Enabled	
Quick Power On Self Test	Disabled	Menu Level >
First Boot Device	Floppy	
Second Boot Device	HDD-0	
Third Boot Device	Floppy	Allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep
Boot other Device	Disabled	
Swap Floppy Drive	Disabled	
Boot Up Floppy Seek	Disabled	
Boot Up NumLock Status	Off	
Gate A20 Option	Normal	
Typematic Rate Setting	Enable	
Security Option	Setup	
OS Select For DRAM > 64MB	Non-OS2	
Vedio BIOS Shadow	No	
C8000-CBFFF Shadow	Disabled	
CC000-D3FFF Shadow	Disabled	
D0000-D3FFF Shadow	Disabled	
D4000-D7FFF Shadow	Disabled	
D8000-DBFFF Shadow	Disabled	
DC000-DFFF Shadow	Disabled	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

## Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempt to write

data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

---

#### CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

---

#### Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

---

#### First/Second/Third/ Other Boot Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these items.

The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disabled.

---

#### Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The choice: Enabled/Disabled.

---

#### Boot Up Floppy Seek

Seek disk drives during boot up. Disabling speeds boot up.

The choice: Enabled/Disabled.

**Boot Up NumLock Status**

Select power on state for NumLock.

The choice: Enabled/Disabled.

**Gate A20 Option**

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

**Typematic Rate Setting**

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The choice: Enabled/Disabled.

**Typematic Rate (Chars/Sec)**

Sets the number of times a second to repeat a key stroke when you hold the key down.

The choice: 6, 8, 10, 12, 15, 20, 24, 30.

**Typematic Delay (Msec)**

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The choice: 250, 500, 750, 1000.

**Security Option**

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select **PASSWORD SETTING** at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.



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**OS Select For  
DRAM > 64MB**

Select the operating system that is running with greater than 64MB of RAM on the system.

The choice: Non-OS2, OS2.

---

**Video BIOS  
Shadow**

Determines whether video BIOS will be copied to RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

---

**C8000 - CBFFF  
Shadow/DC000 -  
DFFFF Shadow**

An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

# Advanced Chipset Features/ Integrated Peripherals

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and accesses to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

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Advanced Chipset Features

		Item Help
System BIOS Cacheable	Disabled	
Vedio RAM Cacheable	Disabled	
Memory Hole At 15M-16M	Disabled	Menu Level >
AGP Aperture Size (MB)	32	
AGP ISA Aliasing	Enabled	
K7 CLK_CTL Select	Optimal	
SDRAM ECC Setting	Disabled	
SDRAM Timing Setting by	Manual	
SDRAM PH Limit	32 Cycle	
SDRAM Idle Limit	8 Cycle	
SDRAM Trc Timing Value	8 Cycle	
SDRAM Trp Timing Value	3 Cycle	
SDRAM Tras Timing Value	5 Cycle	
SDRAM CAS Latency	3 Cycle	
SDRAM Trcd Timing Value	2 Cycle	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help  
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

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## DRAM Settings

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The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

---

### 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.

The choice: Enabled, Disabled.

---

### Video RAM Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled.

---

### 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.

The Choice: Enabled, Disabled.

---

### AGP Aperture Size (MB)

Select the size of Accelerated Graphics Port (AGP) aperture. The Aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

The Choice: 4M, 8M, 16M, 32M, 65M, 128M, 256M

---

### AGP ISA Aliasing

You can reserve this item for more compatibility with ISA VGA.

The Choice: Enable, Disable.

<hr/> <b>K7 CLK_CTL Select</b>	<p>Use this item to specify the clock control for ramp rate. Select default for a defaulted time value, and optimal for optimum time value which depends on different CPU ratio.</p> <p>Choice: Default, Optimal.</p>
<hr/> <b>SDRAM ECC Setting</b>	<p>This item allows you to enable/disable SDRAM ECC checking.</p> <p>The choice: Enabled, Disabled.</p>
<hr/> <b>SDRAM Timing setting by</b>	<p>Select Auto for setting SDRAM timing by SPD.</p> <p>The choice: Auto, Manual.</p>
<hr/> <b>SDRAM PH Limit</b>	<p>Use this item to specify the number of consecutive Page-Hit requests to allow before choosing a non-Page-Hit request.</p> <p>The choice: 1, 4, 32 (Default), 64</p>
<hr/> <b>SDRAM Idle Limit</b>	<p>Use this item to specify the number of idle cycles to wait before precharging an idle bank.</p> <p>The choice: 1, 8 (Default), 32, 64.</p>
<hr/> <b>SDRAM Trc Timing Value</b>	<p>Use this item to specify the minimum time from activate to activate of the same bank.</p> <p>The Choice: 3, 4, 5, 6, 7, 8 (Default).</p>
<hr/> <b>SDRAM Trp Timing Value</b>	<p>Use this item to specify the delay from precharge command to activate command.</p> <p>The Choice: 3 (Default), 2, 1.</p>

---

**SDRAM Tras  
Timing Value**

Use this item to specify the minimum bank active time.

The Choice: 2, 3, 4, 5(Default), 6, 7.

---

**SDRAM CAS  
Latency**

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing.

The Choice: 2, 3

---

**SDRAM Trcd  
Timing Value**

Use this item to specify the delay from the activation of a bank to the time that a read or write command is accepted.

The Choice: 1, 2(Default), 3, 4.

## Integrated Peripherals

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Integrated Peripherals

IDE Read/Write Prefetch	Disabled	Item Help
IDE Primary Master PIO	Auto	
IDE Primary Slave PIO	Auto	Menu Level >
IDE Secondary Master PIO	Auto	If your IDE hard drive supports
IDE Secondary Slave PIO	Auto	block mode select Enabled for
IDE Primary Master UDMA	Auto	automatic detection of the optimal
IDE Primary Slave UDMA	Auto	number of block read/write per
IDE Secondary Master UDMA	Auto	sector the drive can support
IDE Secondary Slave UDMA	Auto	
On-Chip Primary PCI IDE BIOS	Enabled	
On-Chip Secondary PCI IDE BIOS	Enabled	
USB Host Controller	Enabled	
USB Keyboard Support	Enabled	
Init Display First	PCI Slot	
IDE HDD Block Mode	Enabled	
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	3F8/IRQ4	
Onboard Serial Port 2	2F8/IRQ3	
Onboard IR Controller		
IR Address Select	2E8H	
IR Mode		
IR Transmission Delay	Enable	
IR IRQ Select	IRQ10	
IR Mode Use DMA	Disable	
Onboard Parallel Port		
Parallel Port Mode		
ECP Mode Use DMA	3	
EPP Mode Select	EPP1.9	
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

### IDE Read/ Write Prefetch Mode

The onboard IDE drive interfaces support IDE prefetching which is support for faster drive accesses. If you install a primary and/or secondary add-in IDE interfaces, set this field to *Disabled* if the interface does not support prefetching.

### IDE Primary/Secondary Master/Slave PIO

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

The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

---

<b>IDE Primary/Secondary Master/Slave UDMA</b>	<p>Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.</p> <p>The Choice: Auto, Disabled.</p>
<b>OnChip Primary/Secondary PCI IDE BIOS</b>	<p>The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select <i>Enabled</i> to activate each channel separately.</p> <p>The choice: Enabled, Disabled.</p>
<b>USB Host Controller</b>	<p>Select <i>Enabled</i> if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.</p> <p>The choice: Enabled, Disabled.</p>
<b>USB Keyboard Support</b>	<p>Select <i>Enabled</i> if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.</p> <p>The choice: Enabled, Disabled.</p>
<b>Init Display First</b>	<p>This item allows you to decide to active whether PCI Slot or on-chip VGA first.</p> <p>The choice: PCI Slot, Onboard .</p>
<b>IDE HDD Block Mode</b>	<p>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.</p> <p>The choice: Enabled, Disabled</p>

---

<b>Onboard FDC Controller</b>	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 and-in FDC or the system has no floppy drive, select Disabled in this field.  The choice: Enabled, Disabled.
<b>Onboard Serial Port 1/Port 2</b>	Select an address and corresponding interrupt for the first and second serial ports.  The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.
<b>On board IR Controller</b>	This item allows you to enable/disable the on board IR function.
<b>IR Address Select</b>	Select IR address.  The choice: Disabled, 3F8H, 2F8H, 3E8H, 2E8H., 3EQH, 2EQH.
<b>IR Mode</b>	This item allows you to determine which Infra Red (IR) function of onboard I/O chip.  The Choice: IRDA, ASKIR, FIR.
<b>IR Transmission delay</b>	This item allows you to enable/disable IR transmission delay.  The choice: Enabled, Disabled.
<b>IR IRQ Select</b>	Select IRQ for IR.  Choices are: IRQ3, IRQ4, IRQ10, IRQ11.
<b>IR Mode Use DMA</b>	Select DMA for FIR.  Choices are: 1, 3, Disable.
<b>Onboard Parallel Port Mode</b>	This item allows you to determine access onboard parallel port controller with which I/O addresses.  The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.



---

**Parallel Port Mode**

Select an operating mode for the onboard parallel (printer) port. Select *Normal*, *Compatible*, or *SPP* unless you are certain your hardware and software both support one of the other available modes.

The choice: SPP, EPP, ECP, ECP+EPP.

---

**ECP Mode Use  
DMA**

Select a DMA channel for the parallel port use during ECP mode.

The choice: 3, 1.

---

**EPP Mode Select**

Select EPP port type 1.7 or 1.9.

The choice: EPP1.7, 1.9.

# Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.

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Power Management Setup

ACPI function	Enabled	Item Help
Power Management	User Define	
Video Off Method	V/H SYNC+Blank	Menu Level >
Suspend Type	Stop Grant	
Standby Mode	Disable	
HDD Power Down	Disable	
HDD Down In Suspend	Disable	
Soft-Off by PBTN	Instant-off	
Wake-Up by PCI Card	Disable	
RI Resume/WOL	Disable	
Modem Use IRQ	3	
RTC Resume	enable	
** Reload Global Timer Events **		
Primary IDE 0	Enabled	
Primary IDE 1	Disabled	
Secondary IDE 0	Disabled	
Secondary IDE 1	Disabled	
Parallel Port	Disabled	
Serial Port	Disabled	
IRQ 3(Com 2)	Disabled	
IRQ 3(Com 1)	Disabled	
IRQ 5 LPT 2	Disabled	
IRQ 6 Floppy Disk	Disabled	
IRQ 7 LPT 1	Disabled	
IRQ 8 RTC Alarm	Disabled	
IRQ 9 IRQ2 Redir	Disabled	
IRQ 10 Reserved	Disabled	
IRQ 11 Reserved	Disabled	
IRQ 12 PS/2 Mouse	Disabled	
IRQ 13 Coprocessor	Disabled	
IRQ 14 Hard Disk	Disabled	
IRQ 15 Reserved	Disabled	
↑↓←→Move Enter: Select +/-PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

**ACPI Function**

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The choice: Enabled, Disabled.

**Power Management**

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. HDD Power Down
2. Doze Mode
3. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- <b>ONLY AVAILABLE FOR SL CPU's</b> . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

**Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

**Suspend Type**

Select the Suspend Type.

The choice: PwrON Suspend, Stop Grant.

---

<b>Standby Mode</b>	<p>When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.</p>
<b>HDD Power Down</b>	<p>When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.</p> <p>The choice: Enabled, Disabled.</p>
<b>HDD Down In Suspend</b>	<p>When enabled and after the set time of system inactivity, the hard disk drive would be suspend while all other devices still operate at full speed.</p> <p>The choice: Enabled, Disabled.</p>
<b>Soft-Off by PBTN</b>	<p>Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has “hung”.</p> <p>The choice: Delay 4 Sec, Instant-Off.</p>
<b>Wake-Up by PCI Card</b>	<p>The system can be waked up by the PME# on the PCI Card.</p> <p>The choice: Enabled, Disabled.</p>
<b>RI Resume/WOL</b>	<p>An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.</p> <p>The choice: Enabled, Disabled.</p>
<b>MODEM Use IRQ</b>	<p>This determines the IRQ in which the MODEM can use.</p> <p>The choice: 3, 4, 5, 7, 9, 10, 11, NA.</p>
<b>RTC Resume</b>	<p>When <i>Enabled</i>, you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.</p> <p>The choice: Enabled, Disabled.</p>

---

## **PM Events**

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *Enabled*, even when the system is in a power down mode.

**Primary IDE 0**

**Primary IDE 1**

**Secondary IDE 0**

**Secondary IDE 1**

**Parallel Port**

**Serial Port**

.

The following is a list of IRQ's, Interrupt **Re**Quests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **IRQ3 (COM 2)**
- **IRQ4 (COM 1)**
- **IRQ5 (LPT 2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT 1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**

- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 ( PS / 2 Mouse )**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved).**

# PnP/PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

CMOS Setup Utility – Copyright © 1984-1999 Award Software  
PnP/PCI Configurations

PnP OS Installed	<u>No</u>	Item Help
Reset Configuration Data	Disabled	-----
Resources Controlled By	Auto(ESCD)	Menu Level   ➤
X IRQ Resources	Press Enter	Select Yes if you are using a
X DMA Resources	Press Enter	Plug and Play capable operating
		system select No if you need
		the BIOS to configure non-boot
		devices.
PCI/VGA Palette Snoop	Disabled	
PCI Latency Timer(CLK)	32	
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

---

## PnP OS Installed

This item allows you to determine install PnP OS or not.

The choice: Yes, No.

---

**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 can not boot.

The choice: Enabled, Disabled .

---

**Resource  
controlled by**

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “>”).

The choice: Auto(ESCD), Manual.

---

**IRQ Resources**

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

---

**IRQ3/4/5/7/9/10/11/  
12/14/15  
assigned to**

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: *Legacy ISA* and *PCI/ISA PnP*.

---

**DMA Resources**

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DM channel.

---

**DMA 0/1/3/5/6/7  
assigned to**

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

Choices are *Legacy ISA* and *PCI/ISA PnP*.



**PCI/VGA Palette  
Snoop**

Leave this field at *Disabled*.

The choice: Enabled, Disabled.

**PCI Latency Timer  
(CLK)**

The latency timer defines the minimum amount of time, in PCI clock cycles, that the bus master can retain the ownership of the bus.

The choice: 0-255.

## PC Health Status

This section helps you to get more information about your system including CPU temperature, FAN speed and voltages. It is recommended that you contact with your motherboard supplier to get proper value about your setting of the CPU temperature.

CMOS Setup Utility – Copyright © 1984-1999 Award Software  
PC Health Status

CPU Warning Temperature	120	Item Help
Current System Temp.		-----
Current CPU1 Temperature		Menu Level >
Current CPUFAN1 Speed		
Current CPUFAN2 Speed		
Current CPUFAN3 Speed		
IN0 (V)		
IN1 (V)		
IN2 (V)		
+ 5 V		
+12 V		
-12 V	-	
- 5 V	-	
Shutdown Temputer	60° c/140° F	

↑↓←→ Move Enter: Select +/-PU/PD: Value F10:Save ESC: Exit F1:General Help  
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults

### CPU Warning Temperature

This item will prevent CPU from overheating.

The choice: 30-120.

<hr/> <b>Current System Temp.</b>	Show you the current system temperature.
<hr/> <b>Current CPU1 Temperature</b>	Show you the current CPU1 temperature.
<hr/> <b>Current CPUFAN 1/2/3 Speed</b>	Show you the current CPUFAN operating speed.
<hr/> <b>IN0/1/2 (V)</b>	Show you the voltage of Vin (0)/(1)/(2).
<hr/> <b>+5V/+12V/-12V/-5V</b>	Show you the voltage of +5V/+12V/-12V/-5V.
<hr/> <b>Shutdown Temperature</b>	<p>This item allows you to set up the CPU shutdown Temperature. This item only effective under Windows 98 ACPI mode.</p> <p>The Choice: 60°C/140°F, 65°C/149°F, 70°C/159°F, 75°C/167°F</p>

# Frequency/Voltage Control

CMOS Setup Utility – Copyright © 1984-1999 Award Software  
Frequency/Voltage Control

Auto Detect DIMM/PCI CLK	Enabled	Item Help
Spread Spectrum Modulated	1.0%(Down)	-----
CPU Host/PCI Clock		Menu Level >
↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

---

## Auto Detect

This item allows you to enable/disable auto detect DIMM/PCI Clock.

The choice: Enabled, Disabled.

---

## Spread Spectrum Modulated

This item allows you to enable/disable the spread spectrum modulate.

The choice: Enabled, Disabled.

---

**CPU Host/PCI  
Clock**

This item allows you to select CPU/PCI frequency.

The choice: Default, 50/25MHz, 66/33MHz, 133/33MHz, 100/33MHz.

## Defaults Menu

Selecting “Defaults” from the main menu shows you two options which are described below

### **Load Fail-Safe Defaults**

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Fail-Safe Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the BIOS default values for the most stable, minimal-performance system operations.

### **Load Optimized Defaults**

When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

Load Optimized Defaults (Y/N) ? **N**

Pressing ‘Y’ loads the default values that are factory settings for optimal performance system operations.

# Supervisor/User Password Setting

You can set either supervisor or user password, or both of them. The differences between are:

**supervisor password** : can enter and change the options of the setup menus.

**user password** : just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to “System”, the password will be required both at boot and at entry to Setup. If set to “Setup”, prompting only occurs when trying to enter Setup.



## Exit Selecting

### Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

**Save to CMOS and EXIT (Y/N)?** **Y**

Pressing “Y” stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

### Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

**Quit without saving (Y/N)?** **Y**

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

**(This page blank)**

## POST Messages

During the Power On Self-Test (POST), if the BIOS detects an error requiring you to do something to fix, it will either sound a beep code or display a message.

If a message is displayed, it will be accompanied by:

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

---

### ***POST Beep***

Currently there are two kinds of beep codes in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps. The other code indicates that your DRAM error has occurred. This beep code consists of a single long beep repeatedly.

---

### ***Error Messages***

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list includes messages for both the ISA and the EISA BIOS.

#### **CMOS BATTERY HAS FAILED**

CMOS battery is no longer functional. It should be replaced.

### **CMOS CHECKSUM ERROR**

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

### **DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER**

No boot device was found. This could mean that either a boot drive was not detected or the drive does not contain proper system boot files. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from the hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

### **DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP**

Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

### **DISPLAY SWITCH IS SET INCORRECTLY**

Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

### **DISPLAY TYPE HAS CHANGED SINCE LAST BOOT**

Since last powering off the system, the display adapter has been changed. You must configure the system for the new display type.

### **EISA Configuration Checksum Error PLEASE RUN EISA CONFIGURATION UTILITY**

The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has been configured incorrectly. Also be sure the card is installed firmly in the slot.

### **EISA Configuration Is Not Complete PLEASE RUN EISA CONFIGURATION UTILITY**

The slot configuration information stored in the EISA non-volatile memory is incomplete.

Note: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.
---

**ERROR ENCOUNTERED INITIALIZING HARD DRIVE**

Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

**ERROR INITIALIZING HARD DISK CONTROLLER**

Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

**FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT**

Cannot find or initialize the floppy drive controller. make sure the controller is installed correctly and firmly. If there are no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

**Invalid EISA Configuration****PLEASE RUN EISA CONFIGURATION UTILITY**

The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

<p><b>NOTE:</b> When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.</p>
--

**KEYBOARD ERROR OR NO KEYBOARD PRESENT**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

**Memory Address Error at ...**

Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

**Memory parity Error at ...**

Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

### **MEMORY SIZE HAS CHANGED SINCE LAST BOOT**

Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

### **Memory Verify Error at ...**

Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

### **OFFENDING ADDRESS NOT FOUND**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

### **OFFENDING SEGMENT:**

This message is used in conjunction with the I/O CHANNEL CHECK and RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

### **PRESS A KEY TO REBOOT**

This will be displayed at the bottom screen when an error occurs that requires you to reboot. Press any key and the system will reboot.

### **PRESS F1 TO DISABLE NMI, F2 TO REBOOT**

When BIOS detects a Non-maskable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

### **RAM PARITY ERROR - CHECKING FOR SEGMENT ...**

Indicates a parity error in Random Access Memory.

### **Should Be Empty But EISA Board Found PLEASE RUN EISA CONFIGURATION UTILITY**

A valid board ID was found in a slot that was configured as having no board ID.

<p>NOTE; When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.</p>
---

**Should Have EISA Board But Not Found  
PLEASE RUN EISA CONFIGURATION UTILITY**

The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**Slot Not Empty**

Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...**

Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

**Wrong Board In Slot  
PLEASE RUN EISA CONFIGURATION UTILITY**

The board ID does not match the ID stored in the EISA non-volatile memory.

NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

**FLOPPY DISK(S) fail (80) → Unable to reset floppy subsystem.**

**FLOPPY DISK(S) fail (40) → Floppy Type mismatch.**

**Hard Disk(s) fail (80) → HDD reset failed**

**Hard Disk(s) fail (40) → HDD controller diagnostics failed.**

**Hard Disk(s) fail (20) → HDD initialization error.**

**Hard Disk(s) fail (10) → Unable to recalibrate fixed disk.**

**Hard Disk(s) fail (08) → Sector Verify failed.**

**Keyboard is locked out - Unlock the key.**

BIOS detect the keyboard is locked. P17 of keyboard controller is pulled low.

**Keyboard error or no keyboard present.**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

**Manufacturing POST loop.**

System will repeat POST procedure infinitely while the P15 of keyboard controller is pull low. This is also used for M/B burn in test.

**BIOS ROM checksum error - System halted.**

The checksum of ROM address F0000H-FFFFFFH is bad.



**Memory test fail.**

BIOS reports the memory test fail if the onboard memory is tested error.



## POST Codes

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: -Disable shadow RAM -Disable L2 cache (socket 7 or below) -Program basic chipset registers
C1h	Detect memory -Auto-detection of DRAM size, type and ECC. -Auto-detection of L2 cache (socket 7 or below)
C3h	Expand compressed BIOS code to DRAM
C5h	Call chipset hook to copy BIOS back to E000 & F000 shadow RAM.
0h1	Expand the Xgroup codes locating in physical address 1000:0
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto detect ports for keyboard & mouse followed by a port & interface swap (optional).

POST (hex)	Description
	3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD & DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set real-time clock power status, and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial Early_Init_Onboard_Generator switch.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR & S/W interrupts to SPURIOUS_soft_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook platform)
20h	Reserved
21h	HPM initialization (notebook platform)
22h	Reserved
23h	<ol style="list-style-type: none"> <li>1. Check validity of RTC value: e.g. a value of 5Ah is an invalid value for RTC minute.</li> <li>2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.</li> <li>3. Prepare BIOS resource map for PCI &amp; PnP use. If ESCD is valid, take into consideration of the ESCD's legacy information.</li> <li>4. Onboard clock generator initialization. Disable respective clock resource to empty PCI &amp; DIMM slots.</li> <li>5. Early PCI initialization: <ul style="list-style-type: none"> <li>-Enumerate PCI bus number</li> <li>-Assign memory &amp; I/O resource</li> </ul> </li> </ol>

<b>POST (hex)</b>	<b>Description</b>
	-Search for a valid VGA device & VGA BIOS, and put it into C000:0.
24h	Reserved
25h	Reserved
26h	Reserved
27h	Initialize INT 09 buffer
28h	Reserved
29h	<ol style="list-style-type: none"> <li>1. Program CPU internal MTRR (P6 &amp; PII) for 0-640K memory address.</li> <li>2. Initialize the APIC for Pentium class CPU.</li> <li>3. Program early chipset according to CMOS setup. Example: onboard IDE controller.</li> <li>4. Measure CPU speed.</li> <li>5. Invoke video BIOS.</li> </ol>
2Ah	Reserved
2Bh	Reserved
2Ch	Reserved
2Dh	<ol style="list-style-type: none"> <li>1. Initialize multi-language</li> <li>2. Put information on screen display, including Award title, CPU type, CPU speed ....</li> </ol>
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Reset keyboard except Winbond 977 series Super I/O chips.
34h	Reserved
35h	Reserved
36h	Reserved
37h	Reserved
38h	Reserved
39h	Reserved
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved

<b>POST (hex)</b>	<b>Description</b>
46h	Reserved
47h	Initialize EISA slot
48h	Reserved
49h	<ol style="list-style-type: none"> <li>1. Calculate total memory by testing the last double word of each 64K page.</li> <li>2. Program writes allocation for AMD K5 CPU.</li> </ol>
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	<ol style="list-style-type: none"> <li>1. Program MTRR of M1 CPU</li> <li>2. Initialize L2 cache for P6 class CPU &amp; program CPU with proper cacheable range.</li> <li>3. Initialize the APIC for P6 class CPU.</li> <li>4. On MP platform, adjust the cacheable range to smaller one in case the cacheable ranges between each CPU are not identical.</li> </ol>
4Fh	Reserved
50h	Initialize USB
51h	Reserved
52h	Test all memory (clear all extended memory to 0)
53h	Reserved
54h	Reserved
55h	Display number of processors (multi-processor platform)
56h	Reserved
57h	<ol style="list-style-type: none"> <li>1. Display PnP logo</li> <li>2. Early ISA PnP initialization -Assign CSN to every ISA PnP device.</li> </ol>
58h	Reserved
59h	Initialize the combined Trend Anti-Virus code.
5Ah	Reserved
5Bh	(Optional Feature) Show message for entering AWDFLASH.EXE from FDD (optional)
5Ch	Reserved
5Dh	<ol style="list-style-type: none"> <li>1. Initialize Init_Onboard_Super_IO switch.</li> <li>2. Initialize Init_Onboard_AUDIO switch.</li> </ol>
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility; i.e. not until this POST stage can users enter the CMOS setup utility.
61h	Reserved
62h	Reserved
63h	Reserved
64h	Reserved
65h	Initialize PS/2 Mouse

POST (hex)	Description
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup & Auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assign ports to onboard COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller 2. Set up floppy related fields in 40:hardware.
70h	Reserved
71h	Reserved
72h	Reserved
73h	(Optional Feature) Enter AWDFLASH.EXE if : -AWDFLASH is found in floppy drive. -ALT+F2 is pressed
74h	Reserved
75h	Detect & install all IDE devices: HDD, LS120, ZIP, CDROM.....
76h	Reserved
77h	Detect serial ports & parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect & install co-processor
7Bh	Reserved
7Ch	Reserved
7Dh	Reserved
7Eh	Reserved
7Fh	1. Switch back to text mode if full screen logo is supported. -If errors occur, report errors & wait for keys -If no errors occur or F1 key is pressed to continue: ♦Clear EPA or customization logo.
80h	Reserved
81h	Reserved
82h	1. Call chipset power management hook. 2. Recover the text fond used by EPA logo (not for full screen logo) 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS
84h	Initialize ISA PnP boot devices

<b>POST (hex)</b>	<b>Description</b>
85h	<ol style="list-style-type: none"> <li>1. USB final Initialization</li> <li>2. NET PC: Build SYSID structure</li> <li>3. Switch screen back to text mode</li> <li>4. Set up ACPI table at top of memory.</li> <li>5. Invoke ISA adapter ROMs</li> <li>6. Assign IRQs to PCI devices</li> <li>7. Initialize APM</li> <li>8. Clear noise of IRQs.</li> </ol>
86h	Reserved
87h	Reserved
88h	Reserved
89h	Reserved
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend Anti-Virus code
94h	<ol style="list-style-type: none"> <li>1. Enable L2 cache</li> <li>2. Program boot up speed</li> <li>3. Chipset final initialization.</li> <li>4. Power management final initialization</li> <li>5. Clear screen &amp; display summary table</li> <li>6. Program K6 write allocation</li> <li>7. Program P6 class write combining</li> </ol>
95h	<ol style="list-style-type: none"> <li>1. Program daylight saving</li> <li>2. Update keyboard LED &amp; typematic rate</li> </ol>
96h	<ol style="list-style-type: none"> <li>1. Build MP table</li> <li>2. Build &amp; update ESCD</li> <li>3. Set CMOS century to 20h or 19h</li> <li>4. Load CMOS time into DOS timer tick</li> <li>5. Build MSIRQ routing table.</li> </ol>
FFh	Boot attempt (INT 19h)