
Chapter 3

Award BIOS

This chapter tells how to configure the system parameters. You may update your BIOS via AWARD Flash Utility.



Important: Because the BIOS code is the most often changed part of the mainboard design, the BIOS information contained in this chapter (especially the Chipset Setup parameters) may be a little different compared to the actual BIOS that came with your mainboard.

3.1 Entering the Award BIOS Setup Menu

The BIOS setup utility is a segment of codes/routines residing in the BIOS Flash ROM. This routine allows you to configure the system parameters and save the configuration into the 128 byte CMOS area, (normally in the RTC chip or directly in the main chipset). To enter the BIOS Setup, press **[DEL]** during POST (Power-On Self Test). The BIOS Setup Main Menu appears as follows.

AWARD BIOS

ROM PCI/ISA BIOS (XXXXXXXX)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	
LOAD TURBO DEFAULTS	
ESC : Quit	á â à ß : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Description of each function	



Tip: Choose "Load Setup Defaults" for recommended optimal performance. Choose "Load Turbo Defaults" for best performance with light system loading. Refer to section 3.7.

The section at the bottom of the screen tells how to control the screen. Use the arrow keys to move between items, **[SHIFT] [F2]** to color scheme of the display, **[ESC]** to exit, and **[F10]** to save the changes before exit. Another section at the bottom of the screen displays a brief description of the highlighted item.

After selecting an item, press **[ENTER]** to select or enter a submenu.

3.2 Standard CMOS Setup

The "Standard CMOS Setup" sets the basic system parameters such as the date, time, and the hard disk type. Use the arrow keys to highlight an item and **[PGUP]** or **[PGDN]** to select the value for each item.

AWARD BIOS

ROM PCI/ISA BIOS (XXXXXXXX)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Wed. Mar 6 1996									
Time (hh:mm:ss) : 00:00:00									
HARD DISK	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTORS	MODE	
Primary Master	: Auto	0	0	0	0	0	0	AUTO	
Primary Slave	: Auto	0	0	0	0	0	0	AUTO	
Secondary Master	: Auto	0	0	0	0	0	0	AUTO	
Secondary Slave	: Auto	0	0	0	0	0	0	AUTO	
Drive A : 1.44M, 3.5 in					Base Memory : 640 K Extended Memory: 15360 K Other Memory : 384 K				
Drive B : None									
Video : EGA/VGA					Total Memory : 16384 K				
Halt On : All Errors									
ESC : Quit					á â à ß : Select Item				
F10 : Save & Exit Setup					(Shift) F2 : Change Color				

Standard CMOS à Date

To set the date, highlight the Date parameter. Press **PGUP** or **PGDN** to set the current date. The date format is month, date, and year.

Standard CMOS à Time

To set the time, highlight the Time parameter. Press **PGUP** or **PGDN** to set the current time in hour, minute, and second format. The time is based on the 24 hour military clock.

AWARD BIOS

Standard CMOS à Primary Master à Type
Standard CMOS à Primary Slave à Type
Standard CMOS à Secondary Master à Type
Standard CMOS à Secondary Slave à Type

Type
Auto
User
None
1
2
...
45

This item lets you select the IDE hard disk parameters that your system supports. These parameters are Size, Number of Cylinder, Number of Head, Start Cylinder for Pre-compensation, Cylinder number of Head Landing Zone and Number of Sector per Track. The default setting is **Auto**, which enables BIOS to automatically detect the parameters of installed HDD at POST (Power-On Self Test). If you prefer to enter HDD parameters manually, select User. Select None if no HDD is connected to the system.

The IDE CDROM is always automatically detected.



Tip: For an IDE hard disk, we recommend that you use the "IDE HDD Auto Detection" to enter the drive specifications automatically. See the section "IDE HDD Auto Detection".

Standard CMOS à Primary Master à Mode
Standard CMOS à Primary Slave à Mode
Standard CMOS à Secondary Master à Mode
Standard CMOS à Secondary Slave à Mode

Mode
Auto
Normal
LBA
Large

The enhanced IDE feature allows the system to use a hard disk with a capacity of more than 528MB. This is made possible through the Logical Block Address (LBA) mode translation. The LBA is now considered as a standard feature of current IDE hard disk on the market because of its capability to support capacity larger than 528MB. Note that if HDD is formatted with LBA On, it will not be able to boot with LBA Off.

AWARD BIOS

Standard CMOS à Drive A Standard CMOS à Drive B

Drive A

None
360KB 5.25"
1.2MB 5.25"
720KB 3.5"
1.44MB 3.5"
2.88MB 3.5"

These items select floppy drive type. The available settings and types supported by the mainboard are listed on the left.

Standard CMOS à Video

Video

EGA/VGA
CGA40
CGA80
Mono

This item specifies the type of video card in use. The default setting is VGA / EGA. Since current PCs use VGA only, this function is almost useless and may be disregarded in the future.

Standard CMOS à Halt On

Halt On

No Errors
All Errors
All, But Keyboard
All, But Diskette
All, But Disk/Key

This parameter enables you to control the system stops in case of Power-On Self Test (POST) error.

AWARD BIOS

3.3 BIOS Features Setup

This screen appears when you select the option "BIOS Features Setup" from the main menu.

ROM PCI/ISA BIOS (XXXXXXXX)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
External Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	CC000-CFFFF Shadow	: Disabled
Boot Sequence	: A,C,SCSI	D0000-D3FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up NumLock Status	: ON	DC000-DFFFF Shadow	: Disabled
Boot Up System Speed	: High		
Typematic Rate Setting	: Disabled	ESC: Quit	á â à ß : Select Item
Typematic Rate (Chars/Sec)	: 6	F1 : Help	PU/PD/+/- : Modify
Typematic Delay (Msec)	: 250	F5 : Old Values (Shift) F2 : Color	
Security Option	: Setup	F6 : Load Setup Defaults	
PCI/VGA Palette Snoop	: Disabled	F7 : Load Turbo Defaults	
OS Select for DRAM > 64MB	: Non-OS/2		

BIOS Features à Virus Warning

Virus Warning

Enabled
Disabled

Set this parameter to Enabled to activate the warning message. This feature protects the boot sector and partition table of your hard disk from virus intrusion.

Any attempt during boot up to write to the boot sector of the hard disk drive stops the system and the following warning message appears on the screen. Run an anti-virus program to locate the problem.

! WARNING !

Disk Boot Sector is to be modified
Type "Y" to accept write, or "N" to abort write
Award Software, Inc.

AWARD BIOS

BIOS Features à External Cache

External Cache

Enabled
Disabled

Enabling this parameter activates the secondary cache (currently, PBSRAM cache). Disabling the parameter slows down the system. Therefore, we recommend that you leave it enabled unless you are troubleshooting a problem.

BIOS Features à Power-On Self-Test

Quick Power-on Self-test

Enable
Disabled

This parameter speeds up POST by skipping some items that are normally checked.

BIOS Features à Boot Sequence

Boot Sequence

A,C,SCSI
C,A,SCSI
C,CDROM,A
CDROM,C,A
D,A,SCSI
E,A,SCSI
F,A,SCSI
SCSI,A,C
SCSI,C,A
C only
LS120,C

This parameter allows you to specify the system boot up search sequence. The hard disk ID are listed below:

C: Primary master
D: Primary slave
E: Secondary master
F: Secondary slave

BIOS Features à Swap Floppy Drive

Swap Floppy Drive

Enabled
Disabled

This item allows you to swap floppy drives. For example, if you have two floppy drives (A and B), you can assign the first drive as drive B and the second drive as drive A or vice-versa.

BIOS Features à Boot-up Floppy Seek

AWARD BIOS

<u>Boot-up Floppy Seek</u>

Enabled
Disabled

When enabled, the BIOS issues the seek command to the floppy drive during POST to move floppy drive head forward and backward.

BIOS Features à Boot-up NumLock Status

<u>Boot-up NumLock Status</u>
--

On
Off

Setting this parameter to On enables the numeric function of the numeric keypad. Set this parameter to Off to disregard the function. Disabling the numeric function allows you to use the numeric keypad for cursor control.

BIOS Features à Boot-up System Speed

<u>Boot-up System Speed</u>
--

High
Low

Select High or Low system speed after boot.

BIOS Features à Typematic Rate Setting

<u>Typematic Rate Setting</u>
--

Enabled
Disabled

Set this parameter to Enable/Disable the keyboard repeat function. When enabled, continually holding down a key on the keyboard will generate repeatedly keystrokes.

AWARD BIOS

BIOS Features à Typematic Rate

<u>Typematic Rate</u>
6
8
10
12
15
20
24
30

This item allows you to control the speed of repeated keystrokes. The default is 30 characters/sec.

BIOS Features à Typematic Delay

<u>Typematic Delay</u>
250
500
750
1000

This parameter allows you to control the delay time between the first and the second keystroke (where the repeated keystrokes begin). The typematic delay settings are 250, 500, 750, and 1000 msec.

BIOS Features à Security Option

<u>Security Option</u>
Setup
System

The **System** option limits access to both the System boot and BIOS setup. A prompt asking you to enter your password appears on the screen every time you boot the system.

The **Setup** option limits access only to BIOS setup.

To disable the security option, select Password Setting from the main menu, don't type anything and just press <Enter>.

AWARD BIOS

BIOS Features à PCI/VGA Palette Snoop

<u>PCI/VGA Palette Snoop</u>

Enabled
Disabled

Enabling this item informs the PCI VGA card to keep silent (and to prevent conflict) when palette register is updated (i.e., accepts data without responding any communication signals). This is useful only when two display cards use the same palette address and plugged in the PCI bus at the same time (such as MPEQ or Video capture). In such case, PCI VGA is silent while MPEQ/Video capture is set to function normally.

BIOS Features à OS Select for DRAM > 64MB

<u>OS Select for DRAM > 64MB</u>
--

OS/2
Non-OS/2

Set to OS/2 if your system is utilizing an OS/2 operating system and has a memory size of more than 64 MB.

BIOS Features à Video BIOS Shadow

<u>Video BIOS Shadow</u>

Enabled
Disabled

VGA BIOS Shadowing means to copy video display card BIOS into the DRAM area. This enhances system performance because DRAM access time is faster than ROM.

BIOS Features à C800-CBFF Shadow

BIOS Features à CC00-CFFF Shadow

BIOS Features à D000-D3FF Shadow

BIOS Features à D400-D7FF Shadow

BIOS Features à D800-DBFF Shadow

BIOS Features à DC00-DFFF Shadow

<u>C8000-CBFFF Shadow</u>

Enabled
Disabled

These six items are for shadowing ROM code on other expansion cards. Before you set these parameters, you need to know the specific addresses of that ROM code. If you do not know this information, enable all the ROM shadow settings.

AWARD BIOS



Note: The F000 and E000 segments are always shadowed because BIOS code occupies these areas.

AWARD BIOS

3.4 Chipset Features Setup

The "Chipset Features Setup" includes settings for the chipset dependent features. These features are related to system performance.

ROM PCI/ISA BIOS (XXXXXXXX)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	
DRAM Timing	: 60 ns	
DRAM Leadoff Timing	: 10/6/3/3	
DRAM Read Burst (EDO/FP)	: x222/x333	
DRAM Write Burst Timing	: x222	
Fast EDO Lead Off	: Disabled	
Refresh RAS# Assertion	: 5 Clks	
DRAM Page Idle Timer	: 2 Clks	
DRAM Enhanced Paging	: Enabled	
Fast MA to RAS# Delay	: 2 Clks	
SDRAM(CAS Lat/RAS-to-CAS)	: 3/3	
SDRAM Speculative Read	: Disabled	
System BIOS Cacheable	: Enabled	
Video BIOS Cacheable	: Enabled	
8 Bit I/O Recovery Time	: 4	
16 Bit I/O Recovery Time	: 1	
Memory Hole At 15M-16M	: Disabled	
PCI Passive Release	: Disabled	
PCI Delayed Transaction	: Disabled	
Mem. Drive Str.(MA/RAS)	: 16mA/16mA	
		ESC: Quit á â ã ß : Select Item F1 : Help PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load Setup Defaults F7 : Load Turbo Defaults



Caution: Make sure you fully understand the items contained in this menu before you try to change anything. You may change the parameter settings to improve system performance. However, it may cause system unstable if the setting are not correct for your system configuration.

AWARD BIOS

Chipset Features à Auto Configuration

Auto Configuration

Enabled
Disabled

When **Enabled**, the DRAM and cache related timing are set to pre-defined value according to CPU type and clock. Select **Disable** if you want to specify your own DRAM timing.

Chipset Features à DRAM Timing

DRAM Timing

60 ns
70 ns

There to sets of DRAM timing parameters can be automatically set by BIOS, 60ns and 70ns.



Warning: The default memory timing setting is 60ns to get the optimal performance. Because the specification limitation of INTEL TX chipset, 70ns SIMM can only be used with CPU external clock 60MHz. To use 70ns SIMM with 66MHz CPU external clock may result in unstable system behavior.

Chipset Features à DRAM Leadoff Timing

DRAM Leadoff Timing

11/7/3/4
10/6/3/3
11/7/4/4
10/6/4/3

The Leadoff means the timing of first memory cycle in the burst read or write. Actually, this item controls only page miss read/write leadoff timing and the clocks of RAS precharge and RAS to CAS delay. The four digital represent Read Leadoff/ Write Leadoff/ RAS Precharge/ RAS to CAS delay. For example, default is **10/6/3/3**, which means you have 10-x-x-x DRAM page miss read and 6-x-x-x DRAM write, with 3 clocks RAS precharge and 3 clocks RAS to CAS delay.

Chipset Features à DRAM Read Burst (EDO/FP)

AWARD BIOS

DRAM Read Burst (EDO/FP)

x444/x444
x333/x444
x222/x333

Read Burst means to read four continuous memory cycles on four predefined addresses from the DRAM. The default value is **x222/x333** for 60ns EDO or FPM (Fast Page Mode) DRAM. Which means the 2nd,3rd and 4th memory cycles are 2 CPU clocks for EDO and 3 clocks for FPM. The value of x is the timing of first memory cycle and depends on the "DRAM Leadoff Timing" setting.

Chipset Features à DRAM Write Burst Timing

DRAM Write Burst Timing

x444
x333
x222

Write Burst means to write four continuous memory cycles on four predefined addresses to the DRAM. This item sets the DRAM write timing of the 2nd,3rd and 4th memory cycles. There is no difference of EDO and FPM DRAM on the write burst timing. The value of x depends on the "DRAM Leadoff Timing" setting.

Chipset Features à Fast EDO Lead Off

Fast EDO Lead Off

Enabled
Disabled

This item enables fast EDO read timing, results 1 clock pull-in for read leadoff latency of EDO read cycles. It must be Disabled, if any FPM DRAM is installed.

Chipset Features à Refresh RAS# Assertion

Refresh RAS# Assertion

5 Clks
4 Clks

This item controls the number of clocks RAS is asserted for refresh cycle.

Chipset Features à DRAM Page Idle Timer

AWARD BIOS

DRAM Page Idle Timer

2 Clks
4 Clks
6 Clks
8 Clks

This item determines the amount of time in CPU clocks that DRAM page will be close after CPU becomes idle.

Chipset Features à DRAM Enhance Paging

DRAM Enhance Paging

Enabled
Disabled

When Enabled, TX chipset will keep DRAM page open as long as possible according to enhanced method.

Chipset Features à SDRAM(CAS Lat/RAS-to-CAS)

SDRAM(CAS Lat/RAS-to-CAS)

2/2
3/3

These are timing of SDRAM CAS Latency and RAS to CAS Delay, calculated by clocks. They are important parameters affects SDRAM performance, default is 2 clocks. If your SDRAM has unstable problem, change 2/2 to 3/3.

Chipset Features à SDRAM Speculative Read

SDRAM Speculative Read

Enabled
Disabled

Enable this item reduce one clock of SDRAM read leadoff timing by presenting the SDRAM read request before the controller chip decodes the final memory target. This Item must be **Disabled** if more than one DIMM is installed in the system.

Chipset Features à System BIOS Cacheable

System BIOS Cacheable

Enabled
Disabled

Enabling this item allows you to cache the system BIOS to further enhance system performance.

AWARD BIOS

Chipset Features à Video BIOS Cacheable

<u>Video BIOS</u>

<u>Cacheable</u>

Enabled

Disabled

Allows the video BIOS to be cached to allow faster video performance.

Chipset Features à 8 Bit I/O Recovery Time

<u>8 Bit I/O Recovery</u>
<u>Time</u>

1

2

3

4

5

6

7

8

NA

For some old I/O chips, after the execution of an I/O command, the device requires a certain amount of time (recovery time) before the execution of the next I/O command. Because of new generation CPU and mainboard chipset, the assertion of I/O command is faster, and sometimes shorter than specified I/O recovery time of old I/O devices. This item lets you specify the delay of 8-bit I/O command by count of ISA bus clock. If you find any unstable 8-bit I/O card, you may try to extend the I/O recovery time via this item. The BIOS default value is **4 ISA clock**. If set to NA, the chipset will insert 3.5 system clocks.

Chipset Features à 16 Bit I/O Recovery Time

<u>16 Bit I/O Recovery</u>
<u>Time</u>

1

2

3

4

NA

The same as 16-bit I/O recovery time. This item lets you specify the recovery time for the execution of 16-bit I/O commands by count of ISA bus clock. If you find any of the installed 16-bit I/O cards unstable, try extending the I/O recovery time via this item. The BIOS default value is **1 ISA clocks**. If set to NA, the chipset will automatically insert 3.5 system clocks.

AWARD BIOS

Chipset Features à Memory Hole At 15M-16M

<u>Memory Hole At 15M-16M</u>
--

Enabled
Disabled

This option lets you reserve system memory area for special ISA cards. The chipset accesses code/data of these areas from the ISA bus directly. Normally, these areas are reserved for memory mapped I/O card.

Chipset Features à PCI Passive Release

<u>PCI Passive Release</u>

Enabled
Disabled

This item lets you control the Passive Release function of the PIIX4 chipset (Intel PCI to ISA bridge). This function is used to meet latency of ISA bus master. Try to enable or disable it, if you have ISA card compatibility problem.

Chipset Features à PCI Delayed Transaction

<u>PCI Delayed Transaction</u>

Enabled
Disabled

This item lets you control the Delayed Transaction function of the PIIX4 chipset (Intel PCI to ISA bridge). This function is used to meet latency of PCI cycles to or from ISA bus. Try to enable or disable it, if you have ISA card compatibility problem.

Chipset Features à Mem. Drive Str. (MA/RAS)

<u>Mem. Drive Str. (MA/RAS)</u>
--

10mA/10mA
10mA/16mA
16mA/10mA
16mA/16mA

This option controls the driving strength of memory address and control signals. It is recommended to use less driving current for light memory loading, to prevent undershoot or overshoot.

AWARD BIOS

3.5 Power Management Setup

The Power Management Setup screen enables you to control the mainboard's green features. See the following screen.

ROM PCI/ISA BIOS (XXXXXXXX)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management : Disabled	** Reload Global Timer Events **
PM Control by APM : Yes	IRQ [3-7,9-15],NMI : Enabled
Video Off Method : V/H SYNC + Blank	Primary IDE 0 : Disabled
Video Off After : Suspend	Primary IDE 1 : Disabled
Doze Mode : Disabled	Secondary IDE 0 : Disabled
Standby Mode : Disabled	Secondary IDE 1 : Disabled
Suspend Mode : Disabled	Floppy Disk : Disabled
HDD Power Down : Disabled	Serial Port : Disabled
Suspend Mode Option : Power On Suspend	Parallel Port : Disabled
Throttle Duty Cycle : 62.5%	
VGA Active Monitor : Disabled	
** Break event From Suspend **	ESC: Quit áâàß : Select Item
IRQ 8 Clock Event : Disabled	F1 : Help PU/PD/+/- : Modify
	F5 : Old Values (Shift) F2 : Color
	F6 : Load Setup Defaults
	F7 : Load Turbo Defaults

Power Management à Power Management

Power Management

Max Saving
Mix Saving
User Defined
Disabled

This function allows you to set the default parameters of power-saving modes. Set to **Disable** to turn off power management function. Set to User Defined to choose your own parameters.

Mode	Doze	Standby	Suspend	HDD Power Down
Min Saving	1 hour	1 hour	1 hour	15 min
Max Saving	1 min	1 min	1 min	1 min

AWARD BIOS

Power Management à PM Controlled by APM

PM Controlled by

APM

Yes

No

If "Max Saving" is selected, you can turn on this item, transfer power management control to APM (Advanced Power Management) and enhance power saving function. For example, stop CPU internal clock.

Power Management à Video Off Method

Video Off Method

Blank Screen

V/H SYNC+Blank

DPMS

This determines the way that monitor is off. Blank Screen writes blanks to video buffer. V/H SYNC+Blank allows BIOS to control VSYNC and HSYNC signals. This function applies only for DPMS (Display Power Management Standard) monitor. The DPMS mode uses DPMS function provided by VGA card.

Power Management à Video Off After

Video Off After

N/A

Doze

Standby

Suspend

To turn off video monitor at which power down mode.

Power Management à Doze Mode

Doze Mode

Disabled

1 Min

2 Min

4 Min

8 Min

12 Min

20 Min

30 Min

40 Min

1 Hour

This item lets you set the period of time after which the system enters into Doze mode. In this mode, the CPU clock slows down. The ratio is specified in the "Throttle Duty Cycle". Any activity detected returns the system to full power. The system activity (or event) is detected by monitoring the IRQ signals.

AWARD BIOS

Power Management à Standby Mode

Standby Mode

Disabled
1 Min
2 Min
4 Min
8 Min
12 Min
20 Min
30 Min
40 Min
1 Hour

This item lets you set the period of time after which the system enters into Standby mode. In this mode, CPU clock slows down, hard disk will be shut off and the monitor power-saving feature activates. Any activity detected returns the system to full power. The system activity (or event) is detected by monitoring the IRQ signals.

Power Management à Suspend Mode

Suspend Mode

Disabled
1 Min
2 Min
4 Min
8 Min
12 Min
20 Min
30 Min
40 Min
1 Hour

This item lets you set the period of time after which the system enters into Suspend mode. The Suspend mode can be Power On Suspend or Suspend to Hard Drive, selected by "Suspend Mode Option".

Power Management à HDD Power Down

HDD Power Down

Disabled
1 Min
.....
15 Min

This option lets you specify the IDE HDD idle time before the device enters the power down state. This item is independent from the power states previously described in this section (Standby and Suspend).

Power Management à Suspend Mode Option

AWARD BIOS

Suspend Mode Option

Power On Suspend
Suspend to Hard Drive

You can select suspend mode by this item. **Power On Suspend** is the traditional Green PC suspend mode, the CPU clock is stop, all other devices are shut off. But power must be kept On to detect activities from modem, keyboard/mouse and returns the system to full power. The system activities is detected by monitoring the IRQ signals. **Suspend to Hard Drive** saves system status, memory and screen image into hard disk, then the power can be totally Off. Next time, when power is turned On, the system goes back to your original work within just few seconds. You need AOZVHDD to reserve disk space. Refer to section 3.16 "Suspend to Hard Drive" for more information".

Power Management à Throttle Duty Cycle

Throttle Duty Cycle

12.5 %
25.0 %
37.5 %
50.0 %
62.5 %
75.0 %
87.5 %

Clock Throttling means at the Doze/Standby state, the CPU clock count in a given time (not the frequency) is reduced to the ratio specified in this parameter. Actually, the period per CPU clock is not changed. For example, a 66MHz CPU clock remains the same 30ns clock period when system goes into Doze/Suspend. The chipset generates the STPCLK (stop clock) signal periodically to prevent CPU for accepting clock from clock generator. For full power on, the CPU can receive 66M count in one second. If the Slow Clock Ratio is set to 50%, the CPU will only receive 33M clock count in one second. This will effectively reduce CPU speed as well as CPU power.

Power Management à VGA Active Monitor

VGA Activity Monitor

Enabled
Disabled

To enable or disable the detection of VGA activity for power down state transition.

Power Management à IRQ 8 Clock Event

AWARD BIOS

IRQ 8 Clock Event

Enabled
Disabled

To enable or disable the detection of IRQ8 (RTC) event for power down state transition. OS2 has periodically IRQ8 (RTC) interruptions, If IRQ8 is not set to **Disabled**, OS/2 may fail to go into Doze/Standby/Suspend mode.

Power Management à IRQ [3-7,9-15],NMI

IRQ [3-7,9-15],NMI

Enabled
Disabled

To enable or disable the detection of IRQ3-7, IRQ9-15 or NMI interrupt events for power down state transition.

Power Management à Primary IDE 0

Power Management à Primary IDE 1

Power Management à Secondary IDE 0

Power Management à Secondary IDE 1

Power Management à Floppy Disk

Power Management à Serial Port

Power Management à Parallel Port

Primary IDE 0

Enabled
Disabled

These items enable or disable the detection of IDE, floppy, serial and parallel port activities for power down state transition. Actually it detects the read/write to/from I/O or address port.

3.6 PNP/PCI Configuration Setup

The PNP/PCI Configuration Setup allows you to configure the ISA and PCI devices installed in your system. The following screen appears if you select the option "PNP/PCI Configuration Setup" from the main menu.

ROM PCI/ISA BIOS (XXXXXXXX)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP OS Installed	: No	PCI IDE IRQ Map To	: PCI-Auto
Resources Controlled By	: Manual	Primary IDE INT#	: A
Reset Configuration Data	: Disabled	Secondary IDE INT#	: B
IRQ 3 assigned to	: PCI/ISA PnP	Used MEM base addr	: N/A
IRQ 4 assigned to	: PCI/ISA PnP	Used MEM Length	: 8K
IRQ 5 assigned to	: PCI/ISA PnP		
IRQ 7 assigned to	: PCI/ISA PnP		
IRQ 9 assigned to	: PCI/ISA PnP		
IRQ 10 assigned to	: PCI/ISA PnP		
IRQ 11 assigned to	: PCI/ISA PnP		
IRQ 12 assigned to	: PCI/ISA PnP		
IRQ 14 assigned to	: PCI/ISA PnP		
IRQ 15 assigned to	: PCI/ISA PnP		
DMA 0 assigned to	: PCI/ISA PnP		
DMA 1 assigned to	: PCI/ISA PnP		
DMA 3 assigned to	: PCI/ISA PnP		
DMA 5 assigned to	: PCI/ISA PnP		
DMA 6 assigned to	: PCI/ISA PnP		
DMA 7 assigned to	: PCI/ISA PnP		
		ESC: Quit	á â à ß : Select Item
		F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load Setup Defaults	
		F7 : Load Turbo Defaults	

PNP/PCI Configuration à PnP OS Installed

PnP OS Installed	Normally, the PnP resources are allocated by BIOS during POST (Power-On Self Test). If you are using a PnP operating system (such as Windows 95), set this item to Yes to inform BIOS to configure only the resources needed for booting (VGA/IDE or SCSI). The rest of system resources will be allocated by PnP operating system.
Yes	
No	

AWARD BIOS

PNP/PCI Configuration → Resources Controlled By

Resources Controlled

by

Auto
Manual

Setting this option to Manual allows you to individually assign the IRQs and DMAs to the ISA and PCI devices. Set this to **Auto** to enable the auto-configuration function.

PNP/PCI Configuration → Reset Configuration Data

Reset Configuration

Data

Enabled
Disabled

In case conflict occurs after you assign the IRQs or after you configure your system, you can enable this function, allow your system to automatically reset your configuration and reassign the IRQs.

PNP/PCI Configuration → **IRQ3** (COM2)

PNP/PCI Configuration → **IRQ4** (COM1)

PNP/PCI Configuration → **IRQ5** (Network/Sound or Others)

PNP/PCI Configuration → **IRQ7** (Printer or Others)

PNP/PCI Configuration → **IRQ9** (Video or Others)

PNP/PCI Configuration → **IRQ10** (SCSI or Others)

PNP/PCI Configuration → **IRQ11** (SCSI or Others)

PNP/PCI Configuration → **IRQ12** (PS/2 Mouse)

PNP/PCI Configuration → **IRQ14** (IDE1)

PNP/PCI Configuration → **IRQ15** (IDE2)

IRQ 3

Legacy ISA
PCI/ISA PnP

If your ISA card is not PnP compatible and requires a special IRQ to support its function, set the selected IRQ to **Legacy ISA**. This setting informs the PnP BIOS to reserve the selected IRQ for the installed legacy ISA card. The default is **PCI/ISA PnP**. Take note that PCI cards are always PnP compatible (except old PCI IDE card).

AWARD BIOS

- PNP/PCI Configuration à DMA 0
- PNP/PCI Configuration à DMA 1
- PNP/PCI Configuration à DMA 3
- PNP/PCI Configuration à DMA 5
- PNP/PCI Configuration à DMA 6
- PNP/PCI Configuration à DMA 7

DMA 0

- Legacy ISA
- PCI/ISA PnP

If your ISA card is not PnP compatible and requires a special DMA channel to support its function, set the selected DMA channel to **Legacy ISA**. This setting informs the PnP BIOS to reserve the selected DMA channel for the installed legacy ISA card. The default is **PCI/ISA PnP**. Take note that PCI card does not require DMA channel.

PNP/PCI Configuration à PCI IDE IRQ Map To

PCI IDE IRQ Map To

- ISA
- PCI-Slot1
- PCI-Slot2
- PCI-Slot3
- PCI-Slot4
- PCI-Auto

Some old PCI IDE add-on cards are not fully PnP compatible. These cards require you to specify the slot in use to enable BIOS to properly configure the PnP resources. This function allows you to select the PCI slot for any PCI IDE add-on card present in your system. Set this item to **Auto** to allow BIOS to automatically configure the installed PCI IDE card(s).

- PNP/PCI Configuration à Primary IDE INT#
- PNP/PCI Configuration à Secondary IDE INT#

Primary IDE INT#

- A
- B
- C
- D

These two items, in conjunction with item "PCI IDE IRQ Map To", specify the IRQ routing of the primary or secondary channel of the PCI IDE add-on card (not the onboard IDE). Each PCI slot has four PCI interrupts aligned as listed in the table below. You must specify the slot in the "PCI IDE IRQ Map To", and set the PCI interrupt (INTx) here according to the interrupt connection on the card.

PCI Slot	Location 1	Location 2	Location 3	Location 4
----------	------------	------------	------------	------------

AWARD BIOS

	(pin A6)	(pin B7)	(pin A7)	(pin B8)
Slot 1	INTA	INTB	INTC	INTD
Slot 2	INTB	INTC	INTD	INTA
Slot 3	INTC	INTD	INTA	INTB
Slot 4	INTD	INTA	INTB	INTC
Slot 5 (if any)	INTD	INTA	INTB	INTC

PNP/PCI Configuration → Used MEM Base Addr

Used MEM base addr
N/A
C800
CC00
D000
D400
D800
DC00

This item, in conjunction with the "Used MEM Length", lets you set a memory space for non-PnP compatible ISA card. This item specifies the memory base (start address) of the reserved memory space. The memory size is specified in the "Used MEM Length".

PNP/PCI Configuration → Used MEM Length

Used MEM Length
8K
16K
32K
64K

If your ISA card is not PnP compatible and requires special memory space to support its function, specify the memory size in this parameter to inform the PnP BIOS to reserve the specified memory space for installed legacy ISA card.

3.7 Load Setup Defaults

The "Load Setup Defaults" option loads optimized settings for optimum system performance. Optimal settings are relatively safer than the Turbo settings. We recommend you to use the Optimal settings if your system has large memory size and fully loaded with add-on card (for example, a file server using double-sided 8MB SIMM x4 and SCSI plus Network card occupying the PCI and ISA slots).

Optimal is not the slowest setting for this mainboard. If you need to verify a unstable problem, you may manually set the parameter in the "BIOS Features Setup" and "Chipset Features Setup" to get slowest and safer setting.

3.8 Load Turbo Defaults

The "Load Turbo Defaults" option gives better performance than Optimal values. However, Turbo values may not be the best setting of this mainboard but these values are qualified by the AOpen RD and QA department as the reliable settings especially if you have limited loading of add-on card and memory size (for example, a system that contains only a VGA/Sound card and two SIMMs).

To attain the best system performance, you may manually set the parameters in the "Chipset Features Setup" to get proprietary setting. Make sure that you know and understand the functions of every item in Chipset Setup menu. The performance difference of Turbo from Optimal is normally around 3% to 10%, depending on the chipset and the application.

AWARD BIOS

3.9 Integrated Peripherals

The following screen appears if you select the option "Integrated Peripherals" from the main menu. This option allows you to configure the I/O features.

ROM PCI/ISA BIOS (XXXXXXXX)
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

IDE HDD Block Mode:	: Enabled	Parallel Port Mode	: Normal
IDE Primary Master PIO	: Auto	***** Hardware Monitor *****	
IDE Primary Slave PIO	: Auto	CPU Thermal (Temp.)	: Monitor
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI-IDE	: Enabled		
On-Chip Secondary PCI-IDE	: Enabled		
USB Legacy Support	: Disabled		
USB IRQ Released	: No		
Onboard FDC Controller	: Enabled		
Onboard UART 1	: AUTO	ESC: Quit	á â à ß : Select Item
Onboard UART 2	: AUTO	F1 : Help	PU/PD/+/- : Modify
Onboard UART 2 Mode	: Standard	F5 : Old Values	(Shift) F2 : Color
IR Duplex Mode	: Half	F6 : Load Setup Defaults	
Onboard Parallel Port	: 378/IRQ7	F7 : Load Turbo Defaults	

Integrated Peripherals à IDE HDD Block Mode

IDE HDD Block Mode
Enabled
Disabled

This feature enhances disk performance by allowing multisector data transfers and eliminates the interrupt handling time for each sector. Most IDE drives, except with old designs, can support this feature.

Integrated Peripherals à IDE Primary Master PIO

Integrated Peripherals à IDE Primary Slave PIO

Integrated Peripherals à IDE Secondary Master PIO

Integrated Peripherals à IDE Secondary Slave PIO

AWARD BIOS

IDE Primary Master

PIO

Auto
Mode 1
Mode 2
Mode 3
Mode 4

Setting this item to **Auto** activates the HDD speed auto-detect function. The PIO mode specifies the data transfer rate of HDD. For example: mode 0 data transfer rate is 3.3MB/s, mode 1 is 5.2MB/s, mode 2 is 8.3MB/s, mode 3 is 11.1MB/s and mode 4 is 16.6MB/s. If your hard disk performance becomes unstable, you may manually try the slower mode.



Caution: *It is recommended that you connect the first IDE device of each channel to the endmost connector of the IDE cable. Refer to section 2.3 "Connectors" for details on how to connect IDE device(s).*

Integrated Peripherals à IDE Primary Master UDMA

Integrated Peripherals à IDE Primary Slave UDMA

Integrated Peripherals à IDE Secondary Master UDMA

Integrated Peripherals à IDE Secondary Slave UDMA

IDE Primary Master

UDMA

Auto
Disabled

This item allows you to set the Ultra DMA/33 mode supported by the hard disk drive connected to your primary IDE connector.

Integrated Peripherals à On-Chip Primary PCI IDE

Integrated Peripherals à On-Chip Secondary PCI IDE

On-Chip Primary PCI

IDE

Enabled
Disabled

This parameter lets you enable or disable the IDE device connected to the primary IDE connector.

AWARD BIOS

Integrated Peripherals à USB Legacy Support

USB Legacy Support

Enabled
Disabled

This item lets you enable or disable the USB keyboard driver within the onboard BIOS. The keyboard driver simulates legacy keyboard command and let you use USB keyboard during POST or after boot if you don't have USB driver in the operating system.



Caution: You can not use both USB driver and USB legacy keyboard at the same time. Disable "USB Legacy Support" if you have USB driver in the operating system.

USB IRQ Released

Yes
No

USB device is default to use PCI INTD#, the same as PCI slot4. If you installed PCI card on slot4 and require to use INTD#, set this item to Yes. The USB device will then be disabled.



Note: Normally, PCI VGA does not need PCI interrupt, you may put PCI VGA on slot4.

Integrated Peripherals à Onboard FDC Controller

Onboard FDC Controller

Enabled
Disabled

Setting this parameter to **Enabled** allows you to connect your floppy disk drives to the onboard floppy disk connector instead of a separate controller card. Change the setting to Disabled if you want to use a separate controller card.

AWARD BIOS

Integrated Peripherals à Onboard UART 1 Integrated Peripherals à Onboard UART 2

Onboard UART 1

Auto
3F8/IRQ4
2F8/IRQ3
3E8/IRQ4
2E8/IRQ3
Disabled

This item allow you to assign address and interrupt for the board serial port. Default is **Auto**.



Note: If you are using an network card, make sure that the interrupt does not conflict.

Integrated Peripherals à Onboard UART 2 Mode

Onboard UART 2 Mode

Standard
HPSIR
ASKIR

This item is configurable only if the "**Onboard UART 2**" is enabled. This allows you to specify the mode of serial port2. The available mode selections are:

- **Standard** – Sets serial port 2 to operate in normal mode. This is the default setting.
- **HPSIR** – Select this setting if you installed an Infrared module in your system via IrDA connector (refer to section 2.3 "Connectors"). This setting allows infrared serial communication at a maximum baud rate of 115K baud.
- **ASKIR** – Select this setting if you installed an Infrared module via IrDA connector (refer to section 2.32.3 "Connectors"). This setting allows infrared serial communication at a maximum baud rate of 19.2K baud.

AWARD BIOS

Integrated Peripherals à IR Duplex Mode

IR Duplex Mode

Full
Half

This item lets you set the duplex mode for the IR communication. Full - Allows IR communication in bi-directional mode. Half - Allows IR communication in single direction only.



Note: This option appears only if the IR function is activated and the Onboard UART 2 Mode parameter is NOT set to Standard.

Integrated Peripherals à Onboard Parallel Port

Onboard Parallel Port

3BC/IRQ7
378/IRQ7
278/IRQ7
Disabled

This item controls the onboard parallel port address and interrupt.



Note: If you are using an I/O card with a parallel port, make sure that the addresses and IRQ do not conflict.

Integrated Peripherals à Parallel Port Mode

Parallel Port Mode

Normal
EPP
ECP
ECP + EPP

This item lets you set the parallel port mode. The mode options are **Normal** (Standard and Bidirection Parallel Port), EPP (Enhanced Parallel Port) and ECP (Extended Parallel Port). Normal is the IBM AT and PS/2 compatible mode. EPP enhances the parallel port throughput by directly writing/reading data to/from parallel port without latch. ECP supports DMA and RLE (Run Length Encoded) compression and decompression.

Integrated Peripherals à ECP Mode Use DMA

AWARD BIOS

ECP Mode Use DMA

3

1

This item lets you set the DMA channel of ECP mode.

Integrated Peripherals à CPU Thermal (Temp.)

CPU Thermal (Temp.)

Ignore

Monitor

This function lets you control the **Thermal Detection** function. When you set this option to Monitor and the temperature of CPU exceeds predefined value, then:

1. The PC speaker will beep 5 times.
2. The CPU cycle timer will descend about 35%.



Note: The CPU cycle timer won't be restored to the original status until you reset the system.

3.10 Password Setting

Password prevents unauthorized use of your computer. If you set a password, the system prompts for the correct password before boot or access to Setup.

To set a password:

1. At the prompt, type your password. Your password can be up to 8 alphanumeric characters. When you type the characters, they appear as asterisks on the password screen box.
2. After typing the password, press <Enter> key.
3. At the next prompt, re-type your password and press again to confirm the new password. After the password entry, the screen automatically reverts to the main screen.

To disable the password, press when prompted to enter the password. The screen displays a message confirming that the password has been disabled.

AWARD BIOS

3.11 IDE HDD Auto Detection

If your system has an IDE hard drive, you can use this function to detect its parameters and enter them into the "Standard CMOS Setup" automatically.

This routine only detects one set of parameters for your IDE hard drive. Some IDE drives can use more than one set of parameters. If your hard disk is formatted using different parameters than those detected, you have to enter the parameters manually. If the parameters listed do not match the ones used to format the disk, the information on that disk will not be accessible. If the auto-detected parameters displayed do not match those that used for your drive, ignore them. Type N to reject the values and enter the correct ones manually from the Standard CMOS Setup screen.

3.12 Save & Exit Setup

This function automatically saves all CMOS values before leaving Setup.

3.13 Exit without Saving

Use this function to exit Setup without saving the CMOS value changes. Do not use this option if you want to save the new configuration.

3.14 NCR SCSI BIOS and Drivers

The NCR 53C810 SCSI BIOS resides in the same flash memory chip as the system BIOS. The onboard NCR SCSI BIOS is used to support NCR 53C810 SCSI control card without BIOS code.

The NCR SCSI BIOS directly supports DOS, Windows 3.1 and OS/2. For better system performance, you may use the drivers that come with the NCR SCSI card or with your operating system. For details, refer to the installation manual of your NCR 53C810 SCSI card.

3.15 BIOS Flash Utility

The BIOS Flash utility allows you to upgrade the system BIOS. To get the AOpen Flash utility and the upgrade BIOS file, contact your local distributor or

AWARD BIOS

visit our homepage at <http://www.aopen.com.tw>. Please make sure that you have the correct BIOS ready, the BIOS filename is normally like AP5TR110.BIN, which means model AP5T BIOS revision 1.10.

There are two useful programs, Checksum utility CHECKSUM.EXE and AOpen Flash utility AOFLASH.EXE. Follow the procedures below to upgrade your BIOS.

[CHECKSUM.EXE]

This utility will help you to determine if the BIOS has been downloaded correctly or not.

1. Execute
C:> CHECKSUM Biosfile.bin
Biosfile.bin is the filename of the BIOS code.
2. The utility will show "Checksum is ssss".
3. Compare the "ssss" with original checksum posted on Web or BBS. If they are different, please do not proceed any further and try to download the BIOS again.

[AOFLASH.EXE]

This utility will try to check the mainboard model, BIOS version and Super/Ultra IO chip model. To ensure the correct BIOS file for the correct mainboard and IO chip. This utility will permanently replace your original BIOS content after flashing.

1. Bootup the system from DOS prompt without loading any memory manager (HIMEM, EMM386, QEMM386, ...).
2. Execute
C:> AOFLASH Biosfile.bin
Biosfile.bin is the filename of the BIOS code.
3. After loading the new BIOS code, the utility will prompt you to save original BIOS code into your HDD or floppy. Please press "Y" to store it as "BIOS.OLD".
4. After the old BIOS has been successfully saved, press "Y" to replace BIOS.
5. DO NOT turn off the power during "FLASHING".
6. Reboot the system by turn off the power after "FLASHING".
7. Press "DEL" key to enter BIOS setup during POST.

AWARD BIOS

8. Reload the "BIOS SETUP DEFAULT" and reconfigure other items as previous set.
9. Save & Exit. Done!



Warning: DO NOT turn off the power during "FLASHING". If the BIOS programming is not successfully finished, the system will not be boot again, and you may need to physically replace the BIOS chip.



Tip: You may load back original BIOS "BIOS.OLD" by the same procedure.

3.16 Suspend to Hard Drive

Suspend to Hard Drive saves your current work (system status, memory and screen image) into hard disk, and then the system can be totally power off. Next time, when power is on, you can resume your original work directly from hard disk within few second without go through the Win95 booting process and run your application again. If your memory is 16MB, normally, you need to reserve at least 16MB HDD space to save your memory image. Note that you have to use VESA compatible PCI VGA (AOpen PV60/PT60), Sound Blaster compatible sound card and sound driver that supports APM (AOpen AW35 or MP56) for Suspend to Hard Drive to work properly. Of course, we recommend to use AOpen products for best compatibility.

To use Suspend to Hard Drive:

1. Go into BIOS setup, Power Management → Suspend Mode Option, select "Suspend to Disk".

AWARD BIOS

2. Go into BIOS setup, PNP/PCI Configuration → PnP OS Installed, select "No". This can give BIOS the capability to allocate system resources for Suspend to Hard Drive.
3. Bootup your system into DOS command prompt. If you are Win'95 user, Please restart your Windows 95 under "Command Prompt" by pressing "F8" while system shows "Windows 95 Starting ...". Choose "Safe Mode Command Prompt Only" from selection so that system will start in DOS command prompt.
4. Copy AOZVHDD.EXE to the root directory of your C: drive.
5. **Option 1: Use /file switch (applied to FAT16 file system):**

Please use following command to create a hidden file in the root directory of your hard disk for Suspend to Hard Drive to save the system status and memory image.

```
C:>AOZVHDD /c /file
```

Please make sure that you have enough continuous HDD space for creating this hidden file. For example, if you have 32MB of system memory and 4MB of VGA memory, you need at least 36MB (32MB + 4MB) of continuous HDD space. If AOZVHDD failed to allocate the HDD space, you may run "DEFRAG" Utility or "Disk Defragmenter" which come with MS-DOS or Win'95 to free HDD space.

AWARD BIOS

Option2: Use /partiton switch (applied to FAT16/FAT32 file system):

To create a separate partiton for Suspend to Hard Drive, please make sure you have reserved a free partition. We suggest you reserve the free partition which space is appropriate for your future memory expansion. For example, if you have 32MB of system memory and 4MB of VGA memory currently, but you plan to upgrade system memory to 64MB in the near future, then you may reserve a 68MB (64MB+4MB) space by using a disk utility (such as fdisk). Next, use following command to create a suspend partition:

C:>AOZVHDD /c /partition

If there is no extra free partition and you don't want your data lost, please do not use this partition method.

6. After creating above partition or hidden file, please reboot your system.
7. Push suspend switch (momentary mode) or use Win95 Suspend icon to force system goes into Suspend to Hard Drive mode and then turn system power off by power switch of your power supply.
8. Next time when you turn on your system, it will resume to your original work automatically.



Warning: Note that Intel Bus Master and Ultra DMA/33 IDE driver are not fully compatible with Suspend to Hard Drive function, installing these drivers may cause the system unstable. Under this situation, please uninstall the drivers.

AWARD BIOS



Tip: Following VGA card have been tested & recognized as VESA compatible VGA device.

AOpen PV90 (Trident 9680)

AOpen PT60 (S3 Virge/BIOS R1.00-01)

AOpen PV60 (S3 Tiro64V+)

AOpen PT70 (S3 Virge/DX)

ProLink Trident GD-5440

ProLink Cirrus GD-5430

ProLink Cirrus GD-5446

ATI Mach 64 GX

ATI 3D RAGE II

Diamond Stealth64D (S3 868)

Diamond Stealth64V (S3 968)

KuoWei ET-6000.



Tip: Following Sound card have been tested OK for Suspend to Hard Drive.

AOpen AW32

AOpen AW35

AOpen MP56

Creative SB 16 Value PnP

Creative SB AWE32 PnP

ESS 1868 PnP

If your sound card can not work after resume from Suspend to Hard Drive, check your sound card vendor see if there is driver to support APM, and install it again.



Note: The USB function has not been tested for Suspend to Hard Drive. If you find any unstable problem, please go into BIOS, Integrated Peripherals à USB Legacy Support. Disable the USB Legacy function.