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.

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

 ┌─────────────────────────────────────────────────────────────────┐
 │ STANDARD CMOS SETUP            INTEGRATED PERIPHRALS               │
 │ 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               ↑ ↓ → ←  :  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.

```
                    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
Drive B :  None                         Base Memory :     640 K
                                    Extended Memory:   15360 K
Video   :  EGA/VGA                     Other Memory :     384 K
Halt On :  All Errors                Total Memory :   16384 K

  ESC  :  Quit              ↑ ↓ → ← :  Select Item
  F10  :  Save & Exit Setup    (Shift) F2  :  Change Color
```

Standard CMOS→ 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→ 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.

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Standard CMOS→ Primary Master→ Type
Standard CMOS→ Primary Slave→ Type
Standard CMOS→ Secondary Master→ Type
Standard CMOS→ Secondary Slave→ 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→ Primary Master→ Mode
Standard CMOS→ Primary Slave→ Mode
Standard CMOS→ Secondary Master→ Mode
Standard CMOS→ Secondary Slave→ 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.

Standard CMOS→ Drive A
Standard CMOS→ 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→ 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→ 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.

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     ├────────────────────────────────────┤
│ Typematic Rate (Chars/Sec) : 6        │ ESC: Quit        ↑↓→← : Select Item│
│ Typematic Delay (Msec) : 250          │ F1 : Help        PU/PD/+/-  : Modify│
│ Security Option        : Setup        │ F5 : Old Values  (Shift) F2 : Color│
│ PCI/VGA Palette Snoop  : Disabled     │ F6 : Load Setup Defaults           │
│ OS Select for DRAM > 64MB : Non-OS/2  │ F7 : Load Turbo Defaults           │
└──────────────────────────────────────┴────────────────────────────────────┘
```

BIOS Features→ 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.                │
└──────────────────────────────────────────────────┘
```

BIOS Features→ External Cache

External Cache	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.
Enabled	
Disabled	

BIOS Features→ Power-On Self-Test

Quick Power-on Self-test	This parameter speeds up POST by skipping some items that are normally checked.
Enable	
Disabled	

BIOS Features→ Boot Sequence

Boot Sequence	This parameter allows you to specify the system boot up search sequence. The hard disk ID are listed below:
A,C,SCSI	
C,A,SCSI	C: Primary master
C,CDROM,A	D: Primary slave
CDROM,C,A	E: Secondary master
D,A,SCSI	F: Secondary slave
E,A,SCSI	
F,A,SCSI	
SCSI,A,C	
SCSI,C,A	
C only	

BIOS Features→ Swap Floppy Drive

Swap Floppy Drive	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.
Enabled	
Disabled	

BIOS Features→ Boot-up Floppy Seek

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Boot-up Floppy Seek
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→ Boot-up NumLock Status

Boot-up NumLock Status
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→ Boot-up System Speed

Boot-up System Speed
High
Low

Select High or Low system speed after boot.

BIOS Features→ Typematic Rate Setting

Typematic Rate Setting
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.

BIOS Features→ Typematic Rate

Typematic Rate
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→ Typematic Delay

Typematic Delay
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→ Security Option

Security Option
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>.

BIOS Features→ PCI/VGA Palette Snoop

PCI/VGA Palette Snoop
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→ OS Select for DRAM > 64MB

OS Select for DRAM > 64MB
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.

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BIOS Features→ 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→ C800-CBFF Shadow
BIOS Features→ CC00-CFFF Shadow
BIOS Features→ D000-D3FF Shadow
BIOS Features→ D400-D7FF Shadow
BIOS Features→ D800-DBFF Shadow
BIOS Features→ 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.

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

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      ESC: Quit        ↑↓→←   : Select Item
 Memory Hole At 15M-16M   : Disabled  F1 : Help      PU/PD/+/- : Modify
 PCI Passive Release      : Disabled  F5 : Old Values   (Shift) F2 : Color
 PCI Delayed Transaction  : Disabled  F6 : Load Setup Defaults
 Mem. Drive Str.(MA/RAS)  : 16mA/16mA  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.

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Chipset Features→ 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→ 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→ 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→ DRAM Read Burst (EDO/FP)

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→ 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→ 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→ 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→ DRAM Page Idle Timer

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DRAM Page Idle Timer	This item determines the amount of time in CPU clocks that DRAM page will be close after CPU becomes idle.
2 Clks	
4 Clks	
6 Clks	
8 Clks	

Chipset Features→ DRAM Enhance Paging

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

Chipset Features→ SDRAM(CASLat/RAS-to-CAS)

SDRAM(CAS Lat/RAS-to-CAS)	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.
2/2	
3/3	

Chipset Features→ SDRAM Speculative Read

SDRAM Speculative Read	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.
Enabled	
Disabled	

Chipset Features→ System BIOS Cacheable

System BIOS Cacheable	Enabling this item allows you to cache the system BIOS to further enhance system performance.
Enabled	
Disabled	

Chipset Features→ Video BIOS Cacheable

| **Video BIOS Cacheable** |
| Enabled |
| Disabled |

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

Chipset Features→ 8 Bit I/O Recovery Time

| **8 Bit I/O Recovery Time** |
| 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→ 16 Bit I/O Recovery Time

| **16 Bit I/O Recovery Time** |
| 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.

Chipset Features→ Memory Hole At 15M-16M

| **Memory Hole At 15M-16M** |
| 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.

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Chipset Features→ PCI Passive Release

PCI Passive Release
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→ PCI Delayed Transaction

PCI Delayed Transaction
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→ Mem. Drive Str. (MA/RAS)

Mem. Drive Str. (MA/RAS)
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.

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
                                      Secondary IDE 0        :  Disabled
Doze Mode             : Disabled      Secondary IDE 1        :  Disabled
Standby Mode          : Disabled      Floppy Disk            :  Disabled
Suspend Mode          : Disabled      Serial Port            :  Disabled
HDD Power Down        : Disabled      Parallel Port          :  Disabled
Modem WakeUp          : Disabled
Suspend Mode Option   : Power On Suspend
Throttle Duty Cycle   : 62.5%
VGA Active Monitor    : Disabled      ESC: Quit       ↑↓→←    : Select Item
Power Bottom Override : Disabled      F1 : Help       PU/PD/+/- : Modify
RTC WakeUp timer      : Disabled      F5 : Old Values  (Shift) F2 : Color
WakeUp Date (of Month): 0             F6 : Load Setup Defaults
WakeUp Time (hh:mm:ss): 07:00:00      F7 : Load Turbo Defaults

**   Break event From Suspend   **
IRQ 8 Clock Event     : Disabled
```

Power Management→ 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

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Power Management→ 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→ 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→ Video Off After

Video Off After N/A Doze Standby Suspend	To turn off video monitor at which power down mode.

Power Management→ 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.

Power Management→ 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→ 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→ 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→ Modem WakeUp

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Modem WakeUp Disabled Enabled	This mainboard implements AOpen special circuit (patent applied) to detect modem ring signal and wakeup from soft power off. The most possible applications are automatic answering machine and fax send/receive. It does not like traditional green PC suspend mode, the system can be true power off, (identified by the fan of your power supply is off). You can use external box modem or AOpen MP32/F34I internal modem card for modem ring-on, but MP32/F34I is recommended, since MP32/F34I has special circuit to cooperate with this mainboard and the modem power and system power can be off together. For detail of how to use modem ring-on, refer to section 3-17 "Modem Wake Up".

Power Management→ Suspend Mode Option

Suspend Mode Option Power On Suspend Suspennd 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 utility ZVHDD to reserve disk space. Refer to section 3.16 "Suspend to Hard Drive" for more information".

Power Management→ 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→ VGA Active Monitor

VGA Activity Monitor
Enabled
Disabled

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

Power Management→ Power Bottom Override

Power Bottom Override
Disabled
Enabled

This is a specification of ACPI and supported by hardware. When **Enabled**, the soft power switch on the front panel can be used to control power On, Suspend and Off. If the switch is pressed less than 4 sec during power On, the system will go into Suspend mode. If the switch is pressed longer than 4 sec, the system will be turned Off. The default setting is **Disabled**, soft power switch is only used to control On and Off, there is no need to press 4 sec, and there is no Suspend.

Power Management→ RTC WakeUp Timer

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RTC WakeUp Timer Disabled Wake Up Power Off	The RTC WakeUp Timer can be programmed at a specified date/time to wakeup the system. The Date/Time is set by " WakeUp Date (of Month)" and "WakeUp Time (hh:mm:ss)". For automatic power off, you can select the idle timer in "Doze Mode" + "Standby Mode" + "Suspend Mode" to power off after system is detected without any activities.

Power Management→ WakeUp Date (of Month)

Date (of Month) **Alarm** 0 1 2 ...... 30 31	This item selects the date of month to on which to wake up or power off the system. Set to **0** means everyday.

Power Management→ Wake Up Time (hh:mm:ss)

Time (hh:mm:ss) **Alarm** 07:00:00 .. : .. : ..	This item selects the time at which to wake up or power off the system. The format is hour:minute:second, note that hour is in 24 hours form.

Power Management→ IRQ 8 Clock Event

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→ 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→ Primary IDE 0
Power Management→ Primary IDE 1
Power Management→ Secondary IDE 0
Power Management→ Secondary IDE 1
Power Management→ Floppy Disk
Power Management→ Serial Port
Power Management→ 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
                                    Used MEM base addr    :  N/A
IRQ 3 assigned to    :  PCI/ISA PnP Used MEM Length       :  8K
IRQ 4 assigned to    :  PCI/ISA PnP
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 ESC: Quit      ↑↓→←   : Select Item
DMA 3 assigned to    :  PCI/ISA PnP F1 : Help      PU/PD/+/- : Modify
DMA 5 assigned to    :  PCI/ISA PnP F5 : Old Values   (Shift) F2 : Color
DMA 6 assigned to    :  PCI/ISA PnP F6 : Load Setup Defaults
DMA 7 assigned to    :  PCI/ISA PnP F7 : Load Turbo Defaults
```

PNP/PCI Configuration→ PnP OS Installed

PnP OS Installed Yes No	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.

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).

PNP/PCI Configuration→ DMA 0
PNP/PCI Configuration→ DMA 1
PNP/PCI Configuration→ DMA 3
PNP/PCI Configuration→ DMA 5
PNP/PCI Configuration→ DMA 6
PNP/PCI Configuration→ 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→ 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→ Primary IDE INT#
PNP/PCI Configuration→ 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 (pin A6)	Location 2 (pin B7)	Location 3 (pin A7)	Location 4 (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 BaseAddr

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).

AWARD BIOS

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.

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      ECP Mode Use DMA      : 3
   IDE Primary Slave PIO      : Auto
   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       ↑↓→←   : 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→ IDE HDD Block Mode

IDE HDD Block Mode	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.
Enabled	
Disabled	

Integrated Peripherals→ IDE Primary Master PIO
Integrated Peripherals→ IDE Primary Slave PIO
Integrated Peripherals→ IDE Secondary Master PIO
Integrated Peripherals→ IDE Secondary Slave PIO

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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→ IDE Primary Master UDMA
Integrated Peripherals→ IDE Primary Slave UDMA
Integrated Peripherals→ IDE Secondary Master UDMA
Integrated Peripherals→ 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→ On-Chip Primary PCI IDE
Integrated Peripherals→ 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.

Integrated Peripherals→ 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→ 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→ Onboard UART 1
Integrated Peripherals→ 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→ 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.

Integrated Peripherals→ 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→ 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→ Parallel Port Mode

Parallel Port Mode
Normal
SPP
EPP 1.7 + SPP
EPP 1.9 + SPP
ECP
EPP 1.7 + ECP
EPP 1.9 + ECP

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. EPP1.7 and EPP1.9 are protocol difference.

Integrated Peripherals→ ECP Mode Use DMA

ECP Mode Use DMA
3
1

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

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.

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.

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 AWARD BIOS Flash Utility

The AWARD Flash utility allows you to upgrade the system BIOS. To get the AWARD Flash utility and the upgrade BIOS file, contact your local distributor or visit our homepage at **http://www.aopen.com.tw** . The filename of the AWARD Flash utility is AWDFLASH.EXE. Run this program under DOS and follow the instructions on the screen. After running the program, reboot your system for the new BIOS to take effect

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 (AOpen AW32 or MP32) for Suspend to Hard Drive to work properly. Of course, we recommend to use AOpen products for best compatibility.

To use Suspen to Hard Drive:

1. Go into BIOS setup, Power Management → Suspend Mode Option, select Suspend to Drive.
2. Use utility ZVHDD to create a hidden file in your hard disk drive. This file is used to save your system status and memory image. Just type:
   C:>ZVHDD /c /file
3. Push suspend switch 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.
4. Next time you turn on your system, it will resume to your original work automatically.

3.17 Modem Wake Up

The Modem Wake Up discussed here is to wakeup from true power off (identified by fan of power supply is off), This mainboard still supports traditional green PC suspend mode but it is not discussed here.

With the help ATX soft power On/Off, it is possible to have system totally power off (The traditional suspend mode of power management function does not really turn off the system power supply), and wakeup to automatically answer a phone call such as answering machine or to send/receive fax. You may identify the true power off by checking fan of your power supply. Both external box modem and internal modem card can be used to support Modem Wake Up, but if you use external modem, you have to keep the box modem always power-on. AOpen AX5T/AX58 and internal modem card implement special circuit (patent applied) and make sure the modem card works properly

without any power. We recommend you choose AOpen modem card (F34 or MP32) for Modem Wake Up applications.

For Internal Modem Card (AOpen F34/MP32):

1. Go into BIOS setup , Power Management → Modem Wake Up, select Enable.
2. Setup your application, put into Windows 95 StartUp or use Suspend to Hard Drive function.
3. Turn system power off by soft power switch.
4. Connect 4-pin Modem Ring-On cable from F34/MP32 RING connector to AX5T/AX58 connector WKUP.
5. Connect telephone line to F34/MP32. You are now ready to use Modem Ring-On.

For External Box Modem:

1. Go into BIOS setup , Power Management → Modem Wake Up, select Enable.
2. Setup your application, put into Windows 95 StartUp or use Suspend to Hard Drive function.
3. Turn system power off by soft power switch.
4. Connect RS232 cable of external box Modem to COM1 or COM2.
4. Connect telephone line to external box Modem. Turn on Modem power (you must keep Modem power always on). You are now ready to use Modem Ring