



*Single Board Computer*

# **PEAK 715-HT**

User's Manual

*PEAK715-HT Single Board Computer is compatible  
with multi-segmented backplanes and power supplies*

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### Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

#### FCC Compliance Statement for Class A Devices

The product(s) described in this user's guide has been tested and proved to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

#### CE Certification

The product(s) described in this user's guide complies with all applicable European Union (CE) directives if it has a CE marking.

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# **Chapter 1**

## General Information

# 1.1 Features

PEAK 715-HT Series is a member of NEXCOM's P4-based SBC (single board computer) family. The features of this series are as follows:

- o **Socket 478 Intel® Pentium® 4 processor with 400/533MHz system bus up to 3.06 GHz or above, support Hyper-Threading™ technology**
- o **Socket 478 Intel® Celeron® processor with 400 MHz system bus up to 2.0 GHz or above**
- o **Intel® Pentium® 4-M processor with 400 MHz system bus up to 2.2 GHz or above**
- o **Intel® 845GV Chipsets (B stepping)**
- o **Max. 2GB DDR 333 SDRAM, DDR DIMM x 2**
- o **Intel® 82845GV chipset integrated Graphics controller with 64MB system memory**
- o **Intel® 82551QM Ethernet controller x 1 for PEAK 715VL-HT; Dual Intel® 82551QM Ethernet controllers for PEAK 715 VL2-HT; Intel® 82551QM x 1 and Intel®82540EM Gigabit Ethernet controller x1 for PEAK 715VL2G-HT**
- o **USB 2.0 port (480 Mbps) x 4**

# 1.2 Specification

## System Architecture

- Full size SBC with PCI/ISA gold-plated DIMMs
- PCI V2.2 compliant
- PICMG 1.0 (Rev.2.0) compliant

## CPU Support

- Intel® Pentium® 4/Celeron® processor with 256K/512K L2 cache on-die; Intel® Pentium® 4-M processor with 512 KB L2 cache on-die
- Support 400/533MHz system bus, CPU speed up to 3.06GHz or above
- Support Hyper-Threading™ technology

## Main Memory

- DDR DIMM x2 support maximum 2GB (DDR 200/266/333) of memory
- Support single-sided/double-sided (Does not support double-sided x16 DDR DIMMs)
- Support unbuffered non-ECC DIMMs only

## BIOS

- Award System BIOS
- Plug & Play support
- Advanced power management support
- ACPI 1.0b compliant
- 4M bits flash ROM

## Chipsets

- Intel® 845GV (GMCH) chipsets (B stepping)
- Intel® 82801DB x 1 I/O Controller Hub (ICH4)
- Firmware Hub (FWH) 4M bits flash ROM x1
- PCI V2.2 compliant

## On Board LAN

- Intel® 82551QM 10/100 Ethernet controller x1 for PEAK 715VL-HT
- Dual Intel® 82551QM 10/100 Ethernet controllers for PEAK 715VL2-HT
- Intel® 82551QM controller x1 and Intel® 82540EM Gigabit Ethernet controller x1 for PEAK 715VL2G-HT
- Compliant with PCI V2.1/V2.2, IEEE802.3, IEEE 802.3u, IEEE802.3x, IEEE802.3y, IEEE802.3ab
- WfM 2.0 compliant
- Drivers support: DOS/Windows®, Windows® 95/98/2000, Windows® NT, Netware 5.0, Linux
- RJ45 with LED connector x 2

## On Board VGA

- Intel 82845GV (GMCH) chipset integrated with Graphics controller
- Hardware motion compensation assist for software MPEG/DVD decode
- 64MB VGA share Memory
- Fully PC 98 and PC 99 Compliant
- 15-pin CRT connector x1

## On Chip I/O (ICH4)

- On-board USB port (480 Mbps) x 4 (via NEXCOM's proprietary USB cable)
- Ultra ATA100/66/33 support, 40-pin connector x 2.

## On Board I/O

- ITE 8712F-A Super I/O
- SIO x 2, with 2 x 16C550 UARTs, 10-pin header x 2
- PIO x 1, bi-directional, EPP/ECP support, 26-pin connector x 1
- Floppy Disk controller: 34-pin connector x 1
- 6-pin mini DIN connector x1, for PS/2 keyboard/mouse, 5-pin connector x 1 (for external keyboard)
- Optional on-board compact flash socket
- On-board buzzer x1
- GPIO (4-in/4-out)



- On-board 2-pin header for I<sup>2</sup>C
- On-board 2-pin header for reset SW / 2-pin for IDE active LED / 2 pin ATX power SW
- One 3-pin power header for 3-pin power cable to connect to Backplane board and support ATX power-on function
- On-board 4-pin additional power source input
- AC97 output, 10-pin header x 1
- Optional Compact Flash Socket x 1

## System Monitor

- Derived from Super IO ITE 8712F-A to support system monitor
- 8 voltage (For +1.5V, +3.3V, +5V, -5V, +12V, -12V, Vcore and Vcc5V Stand-By)
- Monitoring CPU fan speed
- Monitoring CPU & system temperatures

## ACPI Function

( Only when 3-pin power cable is connected to backplane and thus connected to ATX power source. )

- Soft power-off
- Power-on by LAN
- Power-on by Keyboard
- Power-on by Ring

## Real Time Clock

- On-chip RTC with one back-up external Li battery

## Watchdog Timer

- Watchdog timeout programmable from 1, 2, 4, 8, ...to 128 seconds

## PCI to ISA Bridge & ISAMAX Support

- ITE 8888F x1 PCI to ISA Bridge
- Provide 64mA driving capability to maximize expansion of ISA cards up to 20 ISA slots

## Dimensions

- 338.58mm(L) x 122mm(W)

## Power Requirements

Voltage	Maximum
+5V	12A
+12V	8A

## Environments

- Operating temperature: 0°C to 60°C
- Storage temperature: -20°C to 80°C
- Relative humidity: 10% to 90% (Non-condensing)

## Certification

- CE approval
- FCC Class A

## 1.3 PEAK 715-HT Series Models

The PEAK 715-HT single board computer series come in 3 models. The following table compares their main features:

	Chipsets	Memory	Chipsets Intergrated VGA	Intel 82551QM 10/100 Ethernet	Intel 82540EM Gigabit Ethernet
<b>PEAK 715VL2G-HT</b>	Intel 845GV (B Stepping)	DDR 333	Yes	1 port	1 port
<b>PEAK 715VL2-HT</b>	Intel 845GV (B Stepping)	DDR 333	Yes	2 ports	-
<b>PEAK 715VL-HT</b>	Intel 845GV (B Stepping)	DDR 333	Yes	1 port	-

**Table 1-1 : PEAK 715-HT Series Models**

## 1.4 Checklist

After opening the package of PEAK 715-HT Series, please check and make sure you have all of the following items:

- ☐ One PEAK 715-HT series SBC  
(An example of PEAK 715VL2G-HT is given below; please carefully examine every component of the board in case it lacks any.)
- ☐ One PEAK 715-HT Quick Reference Guide (the sticker printed with jumper info attached on the white box which packs the mainboard)
- ☐ One 50CM Cable JST 2.5mm 3 pin to 3 pin (5V standby ATX Power-on Cable)
- ☐ One Y Cable for Keyboard and Mouse
- ☐ One 180 mm AUX Power Cable (for J2)
- ☐ One Cable Set (FDD x1, SIO+PIO x1, SIO x1/Keyboard x1/IDE66 x1)
- ☐ One USB Cable with Bracket
- ☐ One Driver / Manual CD

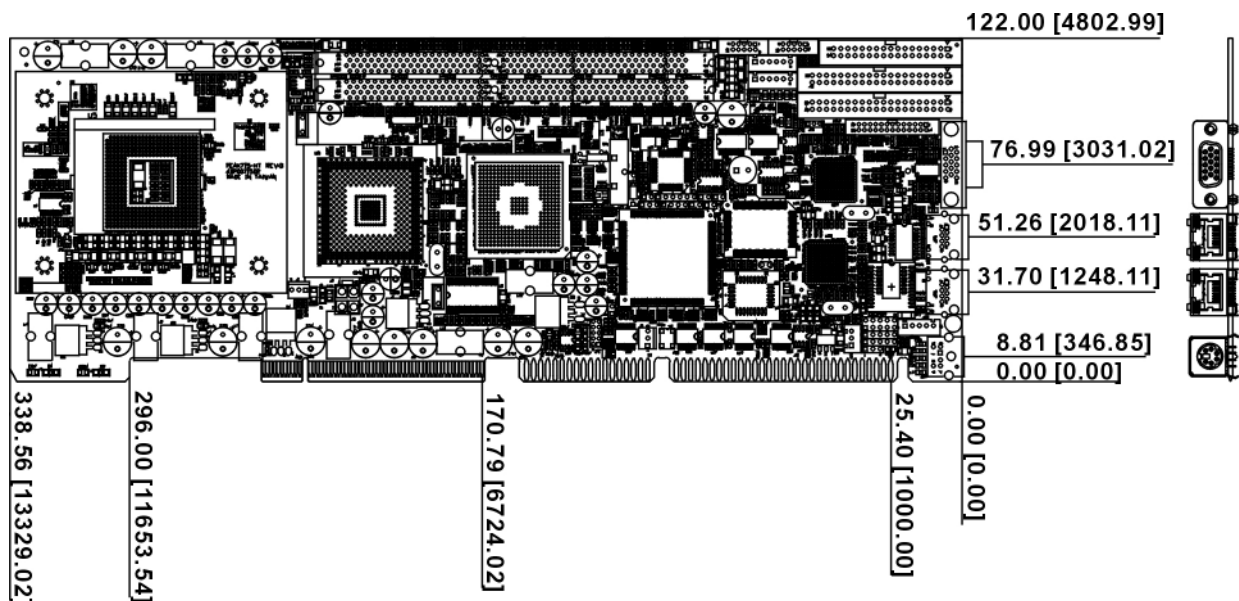


Figure 1-1 : PEAK 715VL2G-HT Board Layout

# **Chapter 2**

## Jumper Setting

## 2.1 Functions of Jumpers

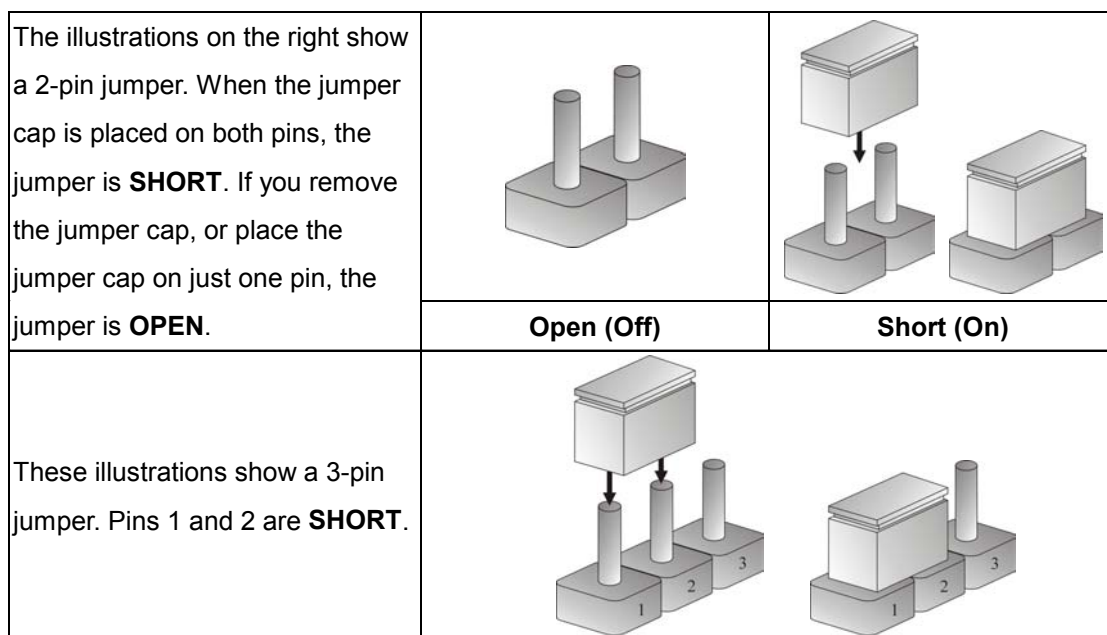
You can use jumpers to set configuration options. The table below defines function of each jumper:

Connector	Function
JP1	AC'97
JP2	CMOS CLEAR
JP3	CPU Type Switch
J1	FAN Connector
J2	AUX +12V Power Connector
J4	IDE Active LED
J5	FAN Connector
J6	GAL JTEC Connector
J7	Speaker
J8	ATX Push button
J9	SMBUS Connector
J11	Hardware Reset
J12	COM2
J13	COM1
J14	USB Connector
J15	Compact Flash Type
J16	ATX Power Connector
J17	Power Mode
J18	GPIO Port (Super IO)
J19	Keylock
J20	IR Connector
J21	Floppy Connector
J22	PIO Port
J23	External Keyboard Connector
J24	Keyboard/Mouse Connector
J25	LAN1 Connector
J26	LAN2 Connector
J27	(Optional) Compact Flash Socket
J28	Power Mode
J29	USB Connector
IDE1	Secondary IDE Connector
IDE2	Primary IDE Connector
VGA1	VGA Connector

**Table 2-1: Functions of Jumpers**

## 2.2 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**. Please see the following illustrations:



**Figure 2-1 : How to Set Jumpers**

## 2.3 Locating Jumpers

The illustration below shows the location of the mainboard jumpers:

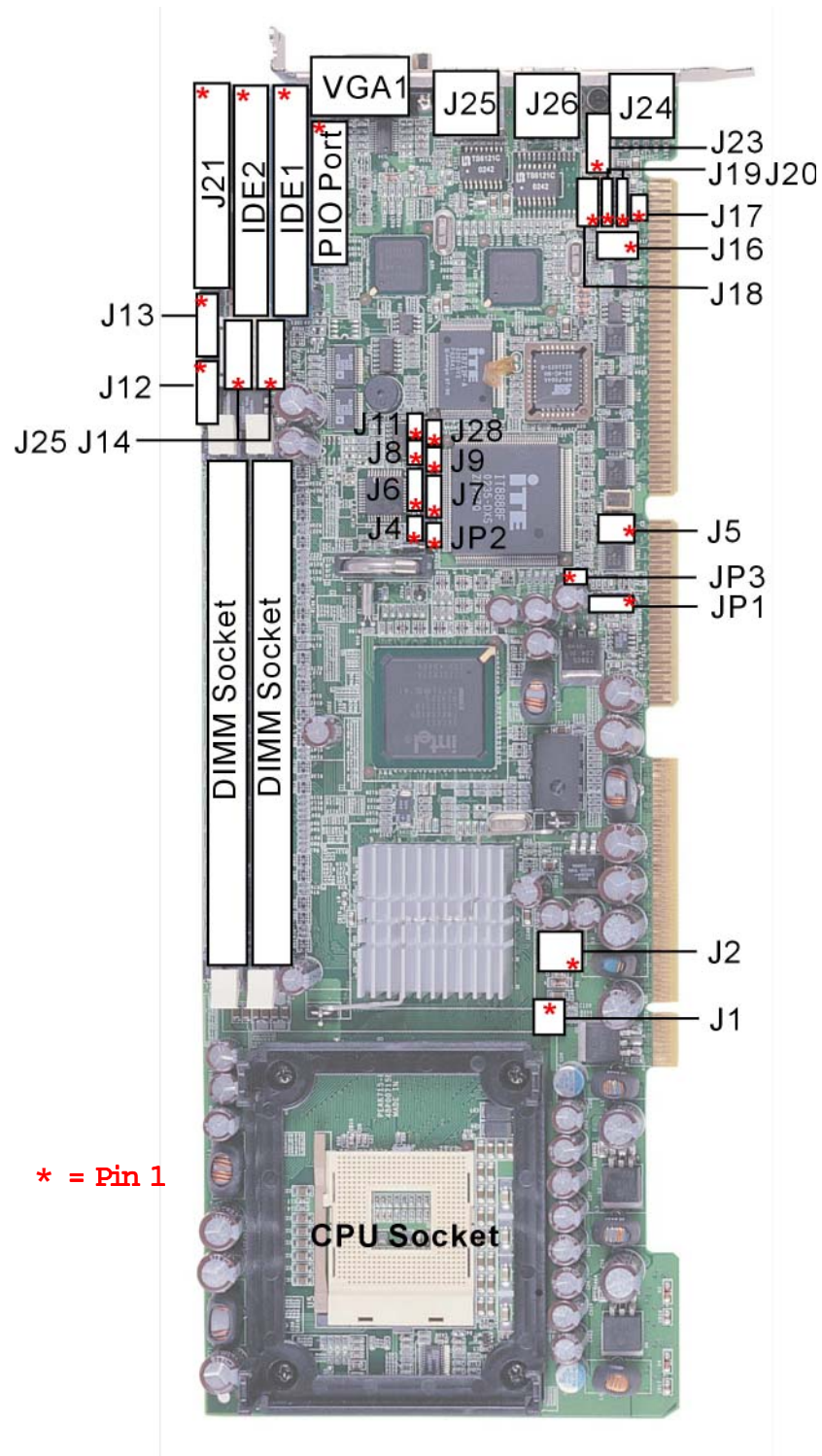


Figure 2-2 : Jumper Locations

## 2.4 Setting CMOS CLEAR (JP2)

PIN NO.	Description
*1-2	Normal
2-3	Clear

\* Default

**Note:** *Clear CMOS procedure:*

1. *Turn off the power.*
2. *Short pin 2 and pin 3 of Jumper JP2. Wait 1~2 seconds.*
3. *Put the jumper cap back to pin 1 and pin 2.*
4. *After turning on the power, clear procedure is completed.*

## 2.5 Setting CPU Type (JP3)

PIN No.	Description
*N.C.	P4/Celeron
1-2	P4-M

\* Default

**Note:** *Please turn off the power and change CPU before setting this jumper.*

## 2.6 Setting Compact Flash Type (J15)

PIN No.	Description
*1-2	Slave
2-3	Master

\* Default

## 2.7 Setting Power Mode (J28, J17)

PIN No.	Description
*1-2	AT Power (Short)
2-3	ATX Power (Open)

\* Default



# **Chapter 3**

## Capability Expanding

## 3.1 System Memory

Your system memory is provided by DIMM's (Dual In-line Memory Modules) on the CPU board. The CPU board contains two memory banks: Bank 0 and 1, corresponds to connector DIMM1, DIMM2.

The table below shows possible DIMM configurations for the memory banks. Please be noted that the PEAK 715-HT Series support Double Data (DDR333) SDRAM. Configurations using different brands of memory modules are not recommended.

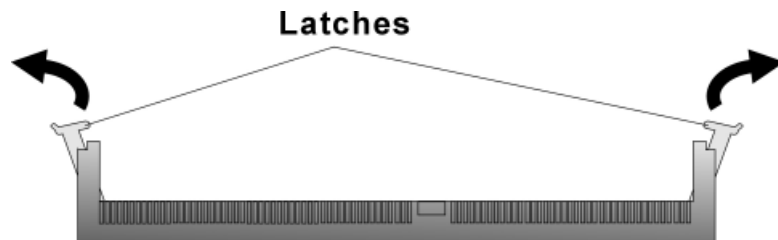
<b>DIMM 1</b>	<b>DIMM2</b>	<b>Total Memory</b>
128MB	Empty	128MB
Empty	128MB	128MB
128MB	128MB	256MB
256MB	Empty	256MB
Empty	256MB	256MB
256MB	256MB	512MB
512MB	Empty	512MB
Empty	512MB	512MB
512MB	512MB	1024MB
1024MB	Empty	1024MB
Empty	1024MB	1024MB
1024MB	1024MB	2048MB

**Table 3-1 : PEAK 715-HT Series DIMM Configurations**

## 3.2 Installing DIMM

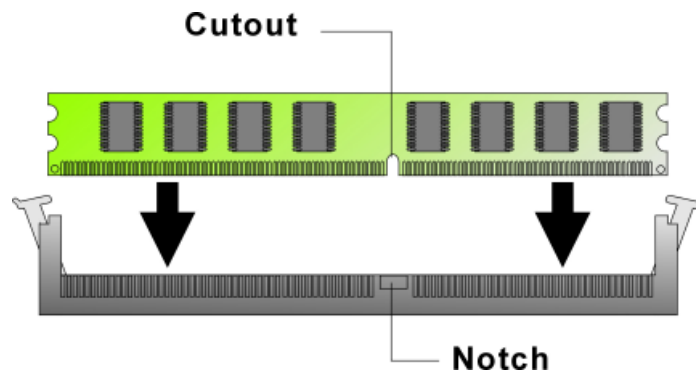
To install DIMM:

1. Make sure the two handles of the DIMM sockets are in the “open” position, i.e. the handles stay outward.



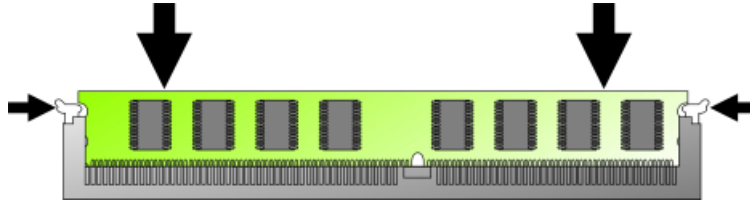
**Figure 3-1 : How to Install DIMM (1)**

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.



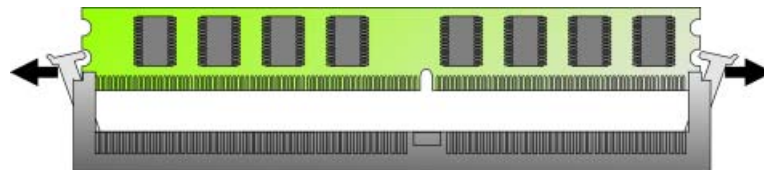
**Figure 3-2 : How to Install DIMM (2)**

3. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.



**Figure 3-3 : How to Install DIMM (3)**

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

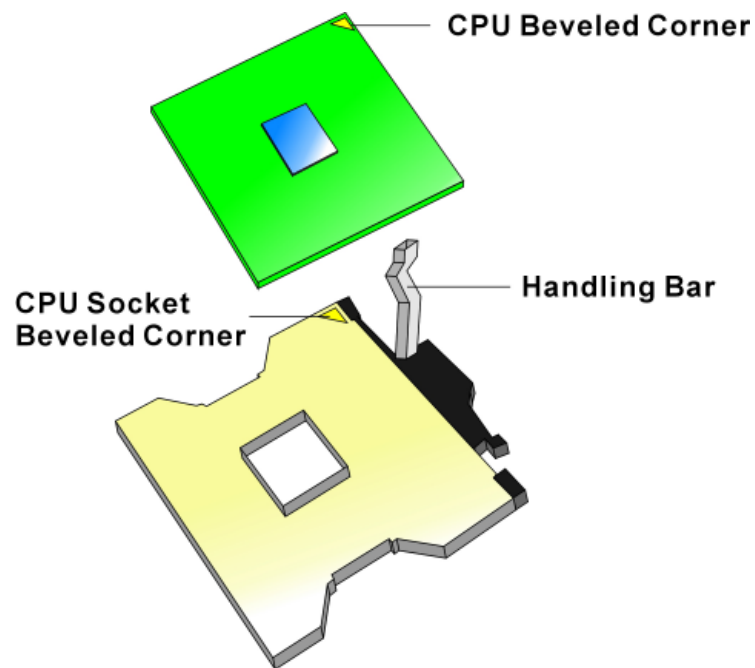


**Figure 3-4 : How to Install DIMM (4)**

## 3.3 Change CPU

To change the CPU:

1. Pull the handling bar of the socket upward to the other end to loosen the socket's openings. Carefully lift the existing CPU up to remove it from the socket.
2. Place the new CPU on the middle of the socket, orienting its beveled corner to line up with the socket's beveled corner. Make sure the pins of the CPU fit evenly to the socket openings. Replace the handling bar to fasten the CPU to the socket.



**Figure 3-5 : How to Change CPU**

## 3.4 Installing the Fan Heatsink

Use the following instructions for installing the fan heatsink:

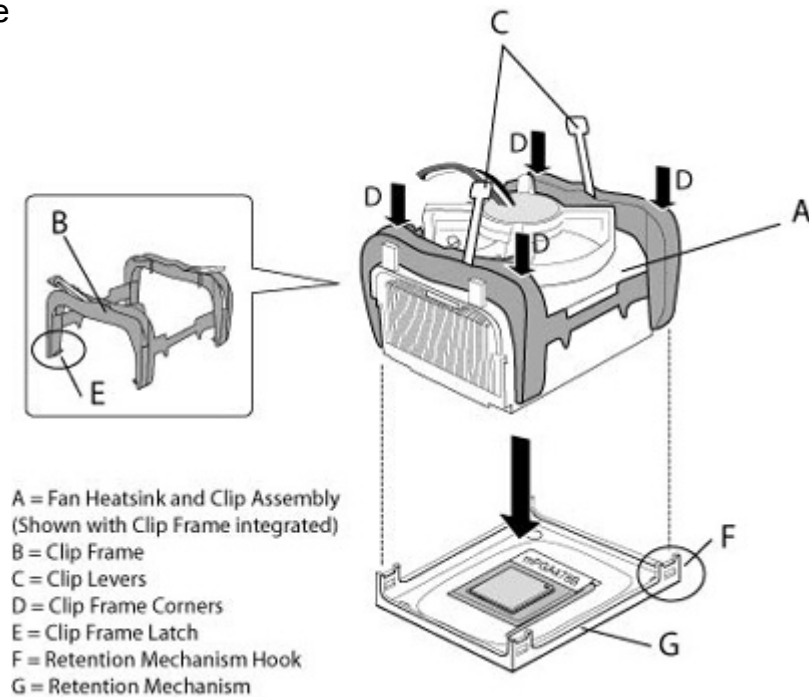
1. The heatsink has thermal interface material attached to the bottom, shown in Figure 3-7. Be careful not to damage the thermal interface material.
2. Align the fan heatsink and clip assembly (A in Figure 3-6) with the retention mechanism (the fan heatsink is symmetrical) and place it on the processor (as shown in Figure 3-7). Allow the heatsink base to compress (without rotating or twisting) the thermal interface material over the surface of the processor's integrated heat spreader.
3. With the clip levers (C in Figure 3-6) in the upward position, push down on all four clip frame corners (D in Figure 3-6) to secure the clip frame latches (E in Figure 3-6) to the retention mechanism hooks (F in Figure 3-6), as shown in Figure 3-8.

Note: Make sure the processor fan cable is free from any obstruction and is not trapped under clip frame (B in Figure 3-6).

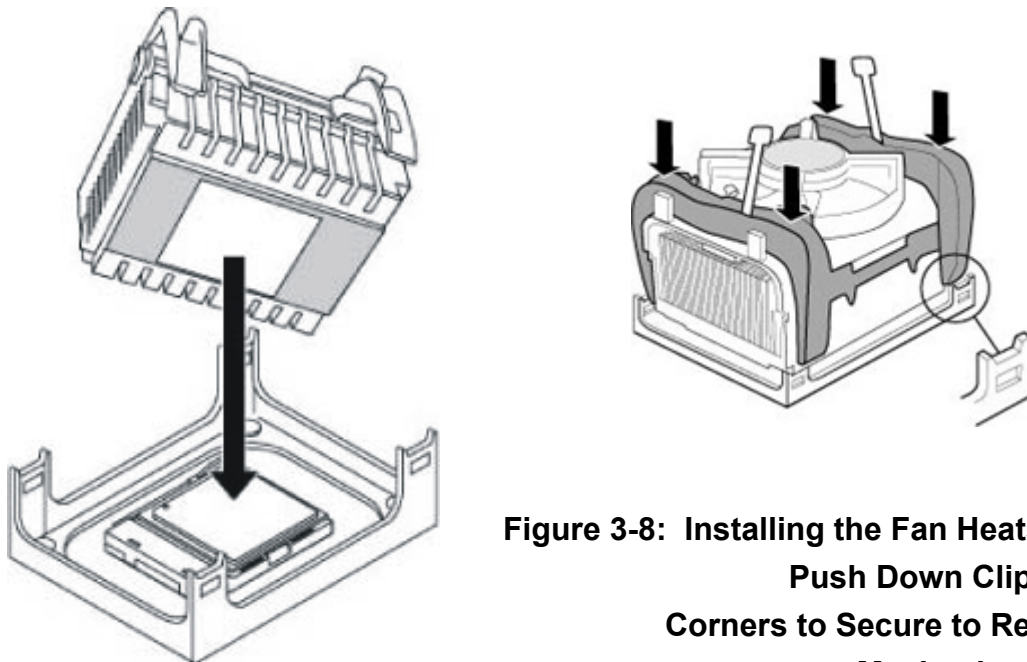
4. Note: It is important to not allow the heatsink to rotate or twist on the processor's integrated heat spreader. Securing the fan heatsink while closing the clip levers will ensure the thermal interface material is not damaged and the processor will operate correctly. Follow these steps, for closing the clip levers and ensuring the thermal interface material is not damaged:
  - a. ) Make sure to close the clips levers in opposing directions, one at a time (levers require force to be completely closed), as shown in Figure 3-9a. First, close the clip lever (1 in Figure 3-9b), while holding the topside of the fan heatsink with your other hand (A in Figure 3-9b).
  - b. ) Then, close the clip lever (2 in Figure 3-9c), while holding the topside of the fan heatsink with your other hand (B in Figure 3-9c).
5. Once the clip levers are closed, verify that the heatsink is securely retained and that the clip frame latches are properly engaged with the retention mechanism hooks.

Note: When installed, the fan heatsink and clip assembly may cause the motherboard to slightly bend or flex. This provides the proper mechanical support for the processor (with attached fan heatsink and clip assembly) and helps prevent against damage during system shipment.

6. Lastly, connect the processor fan cable to the motherboard fan power header (Figure 3-10). Consult the motherboard manual to determine the correct fan header to use

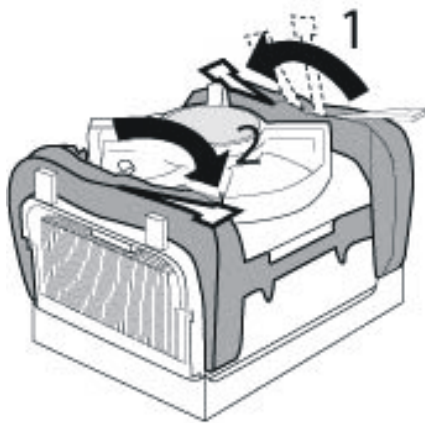


**Figure 3-6: Installing the Fan Heatsink (1)**  
**Fan Heatsink and Clip Assembly Terminology**

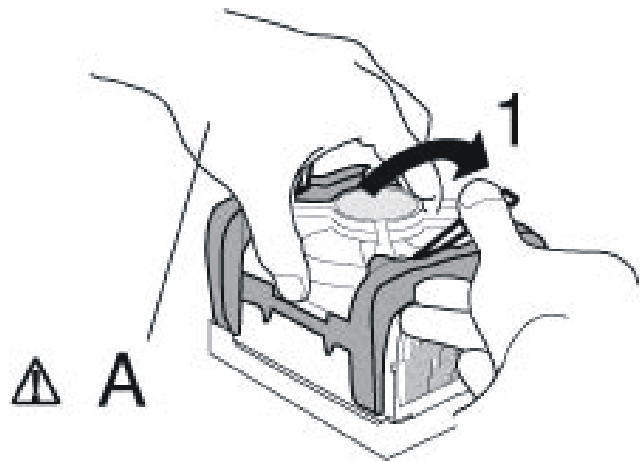


**Figure 3-8: Installing the Fan Heatsink (3)**  
**Push Down Clip Frame Corners to Secure to Retention Mechanism Hooks**

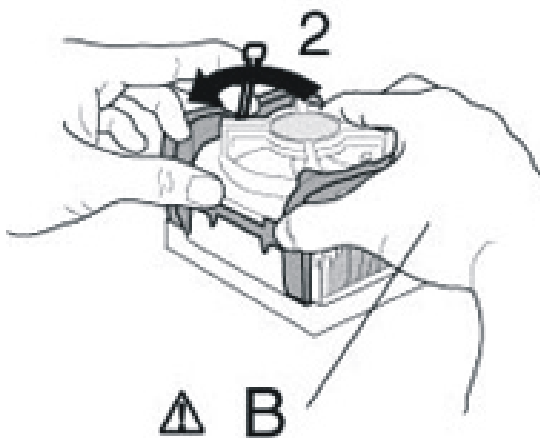
**Figure 3-7: Installing the Fan Heatsink (2)**  
**Align Fan Heatsink and Clip Assembly**



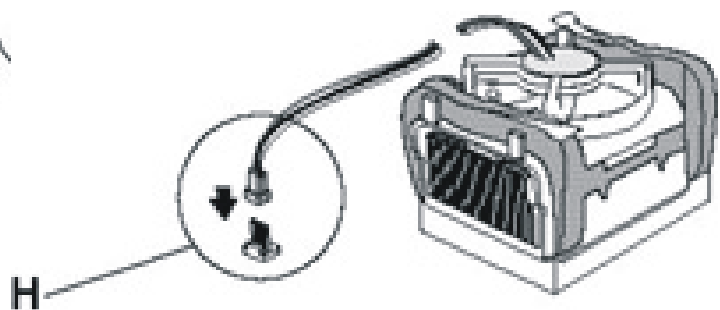
**Figure 3-9a: Installing the Fan Heatsink (4)**  
**Close Clip Levers,**  
**One at a Time**



**Figure 3-9b: Installing the Fan Heatsink (5)**  
**Close Clip Lever (1),**  
**While Holding the Topside**  
**of Fan Heatsink (A)**



**Figure 3-9c: Installing the Fan Heatsink (6)**  
**Close Clip Lever (2),**  
**While Holding the Topside**  
**of Fan Heatsink (B)**



**Figure 3-10: Installing the Fan Heatsink (7)**  
**Connect Fan Cable to Motherboard**



# Chapter 4

## Award BIOS Setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

## 4.1 Entering setup

Power on the computer and press **<Del>** immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press **<Del>** key or simultaneously press **<Ctrl>**, **<Alt>**, and **<Esc>** keys.

**TO ENTER SETUP BEFORE BOOT PRESS <CTRL-ALT-ESC> OR <DEL> KEY**

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it Off then On or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing **<Ctrl>**, **<Alt>**, and **<Delete>** keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to:

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

## 4.2 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The main menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press **<Enter>** to accept or enter the sub-menu.

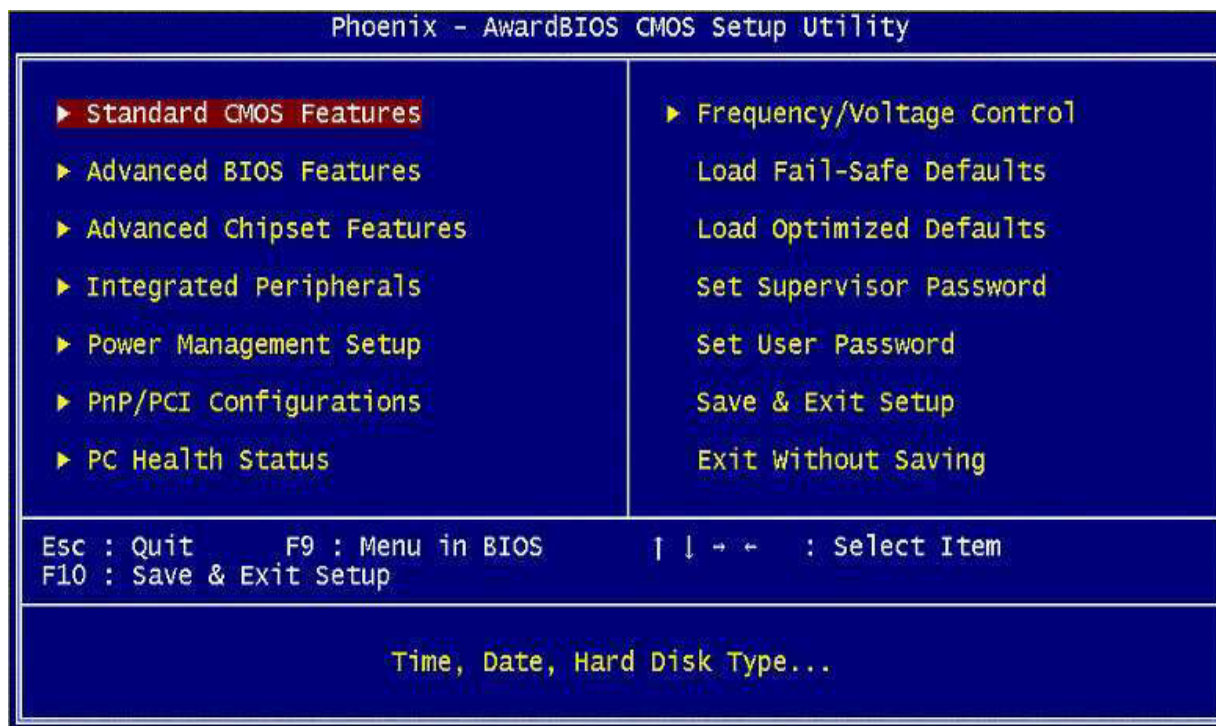


Figure 4-1 : BIOS Main Menu

### Standard CMOS Features

Use this menu for basic system configuration.

### Advanced BIOS Features

Use this menu to set the Advanced Features available on the system.

### Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize the system's performance.

### Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

## **Power Management Setup**

Use this menu to specify your settings for power management.

## **PnP/PCI Configurations**

This entry appears if your system supports Plug and Play and PCI Configuration.

## **PC Health Status**

Displays CPU, System Temperature, Fan Speed, and System Volt-ages Value.

## **Frequency/Voltage Control**

Use this menu to specify CPU and memory frequency, and voltage control settings.

## **Load Fail-Safe Defaults**

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

## **Load Optimized Defaults**

Use this menu to load the BIOS default values, i.e., factory settings for optimal performance system operations. While Award has de-signed the custom BIOS to maximize performance, the factory has the option to change these defaults to meet their needs.

## **Set Supervisor/User Password**

Enables you to change, set, or disable the supervisor or user pass-word.

## **Save & Exit Setup**

Saves CMOS value changes to CMOS and exits setup.

## **Exit Without Saving**

Ignores all CMOS value changes and exits setup.

## **4.3.1 Getting Help**

### **Main Menu**

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

### **Status Page Setup Menu/ Option Page Setup Menu**

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <F1> or <Esc>.

## 4.3.2 Control Keys

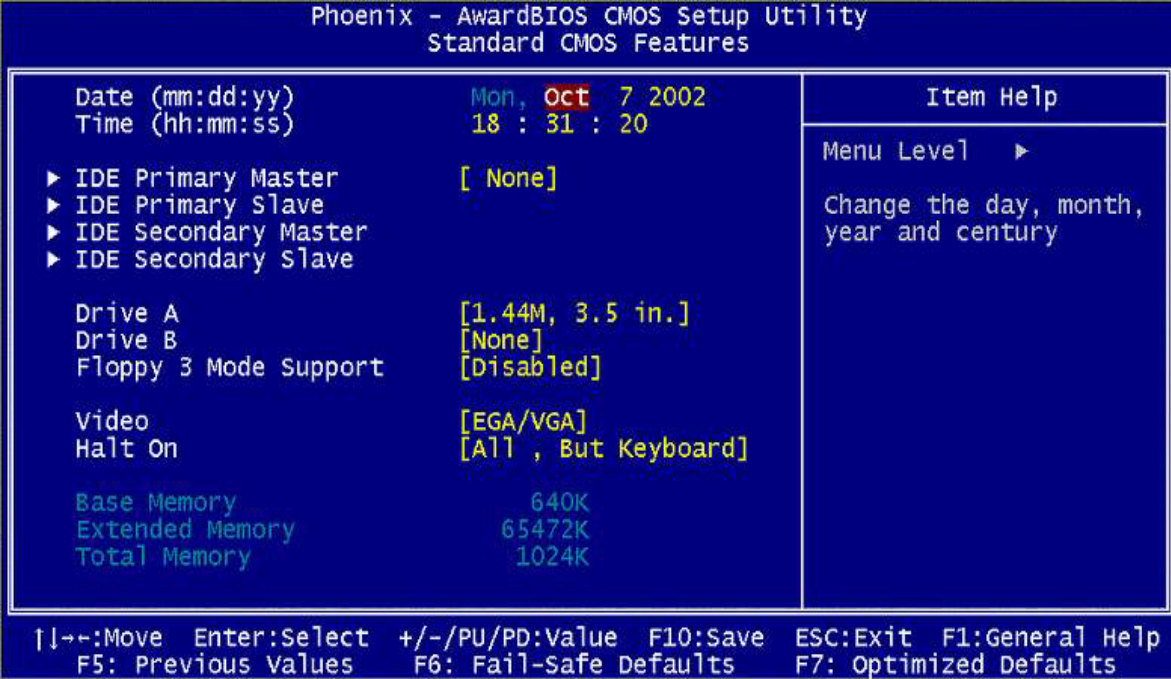
The table below lists the keys that help you navigate the setup program.

<b>Up arrow</b>	<b>Move to previous item</b>
<b>Down arrow</b>	<b>Move to next item</b>
<b>Left arrow</b>	<b>Move to the item in the left hand</b>
<b>Right arrow</b>	<b>Move to the item in the right hand</b>
<b>Esc key</b>	<b>Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu</b>
<b>PgUp / “+” key</b>	<b>Increase the numeric value or make changes</b>
<b>PgDn / “-“ key</b>	<b>Decrease the numeric value or make changes</b>
<b>F1 key</b>	<b>General help, only for Status Page Setup Menu and Option Page Setup Menu</b>
<b>(Shift) F2 key</b>	<b>Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward</b>
<b>F3 key</b>	<b>Reserved</b>
<b>F4 key</b>	<b>Reserved</b>
<b>F5 key</b>	<b>Restore the previous CMOS value from CMOS, only for Option Page Setup Menu</b>
<b>F6 key</b>	<b>Load the default CMOS value from BIOS default table, only for Option Page Setup Menu</b>
<b>F7 key</b>	<b>Load the Setup default , only for Option Page Setup Menu</b>
<b>F8 key</b>	<b>Reserved</b>
<b>F9 key</b>	<b>Reserved</b>
<b>F10 key</b>	<b>Save all the CMOS changes, only for Main Menu</b>

**Table 4-1 : BIOS Control Keys**

# 4.4 Standard CMOS Features

Selecting Standard CMOS Features on the main program screen displays the following menu:



**Figure 4-2 : BIOS- Standard CMOS Features**

The Standard CMOS Setup utility is used to configure the following features:

## Date

The date format is <week>, <month>, <day>, <year>.

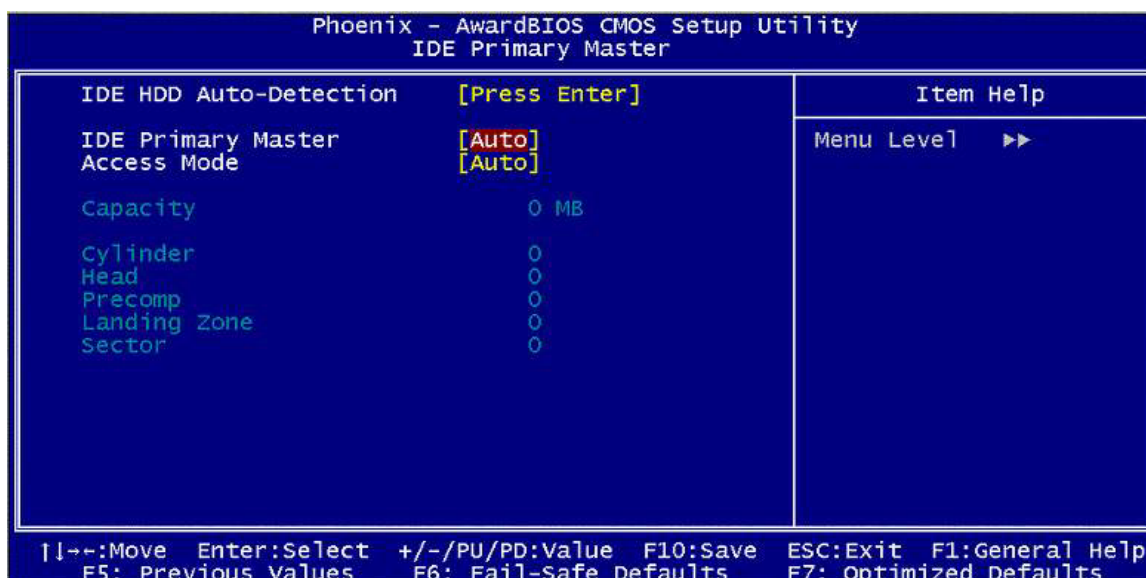
Day	The week, from Sun to Sat, determined by the BIOS and is display only
Month	The month, Jan. through Dec.
Date	The day, from 1 to 31 (or the maximum allowed in the month)
Year	The year, depend on the year of BIOS

## Time

The times format in <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

## IDE Devices

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel. Press <Enter> to display the IDE submenu:



**Figure 4-3 : BIOS- IDE Primary Master**

### IDD HDD Auto-Detection

If you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel, press **<Enter>** while this item is highlighted.

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

If the auto-detected parameters displayed do not match the ones that should be used for your hard drive, do not accept them. Press the **<N>** key to reject the values and enter the correct ones manually in the Standard CMOS Setup screen.

**(Note:** If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists *LBA* for an LBA drive.)

Do not choose **Large** or **Normal** if the hard disk drive is already fully formatted when you installed it. Select the mode that was used to format it.

### IDE Primary/Secondary Master/Slave

If you leave this item at **Auto**, the system will automatically detect and configure any IDE devices it finds. If it fails to find a hard disk, change the value to **Manual** and then manually configure the drive by entering the characteristics of the drive in the items below:

<b>Capacity</b>	<b>approximate hard disk drive capacity</b>
<b>Cylinder</b>	<b>number of cylinders</b>
<b>Head</b>	<b>number of heads</b>
<b>Precomp</b>	<b>write precompensation cylinder</b>
<b>Landing Zone</b>	<b>landing zone</b>
<b>Sector</b>	<b>number of sectors</b>



Refer to your drive's documentation or look on the drive if you need to obtain this information. If no device is installed, change the value to **None**.

### Access Mode

This item defines some special ways that can be used to access IDE hard disks such as LBA (Logical Block Addressing). Leave this value at **Auto** and the system will automatically decide the fastest way to access the hard disk drive.

Press **<Esc>** to close the IDE device submenu and return to the Standard CMOS Features page.

### Floppy Drive A and Floppy Drive B

Options for these fields are:

<b>None</b>	<b>No floppy drive installed</b>
<b>360K, 5.25 in</b>	<b>5-1/4 inch PC-type standard drive; 360 kilobyte capacity</b>
<b>1.2M, 5.25 in</b>	<b>5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity</b>
<b>720K, 3.5 in</b>	<b>3-1/2 inch double-sided drive; 720 kilobyte capacity</b>
<b>1.44M, 3.5 in</b>	<b>3-1/2 inch double-sided drive; 1.44 megabyte capacity</b>
<b>2.88M, 3.5 in</b>	<b>3-1/2 inch double-sided drive; 2.88 megabyte capacity</b>

The **None** option could be used for diskless workstations.

### Floppy 3 Mode Support

Floppy 3 mode refers to a 3.5" diskette with a capacity of 1.2 MB. This mode is sometimes used in Japan.

### Video

Set this field to the type of graphics card installed in your system. If you are using a VGA or higher resolution card, choose the **EGA/VGA** option. The options are:

<b>EGA/VGA</b>	<b>Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters.</b>
<b>CGA 40</b>	<b>Color Graphics Adapter, power up in 40 column mode</b>
<b>CGA 80</b>	<b>Color Graphics Adapter, power up in 40 column mode</b>
<b>Mono</b>	<b>Monochrome adapter, includes high resolution monochrome adapters</b>

## **Halt On**

This setting determines which type of errors will cause the system to halt during boot. The options are:

<b>All Errors</b>	<b>Whenever the BIOS detects a non-fatal error, the system</b>
	<b>will be stopped and you will be prompted.</b>
<b>No Errors</b>	<b>The system boot will not be stopped for any error that may</b>
	<b>be detected.</b>
<b>All, But Keyboard</b>	<b>The system boot will not stop for a keyboard error; it will</b>
	<b>stop for all other errors.</b>
<b>All, But Diskette</b>	<b>The system boot will not stop for a disk error; it will stop</b>
	<b>for all other errors.</b>
<b>All, But Disk/Key</b>	<b>The system boot will not stop for a keyboard or disk error; it</b>
	<b>will stop for all other errors.</b>

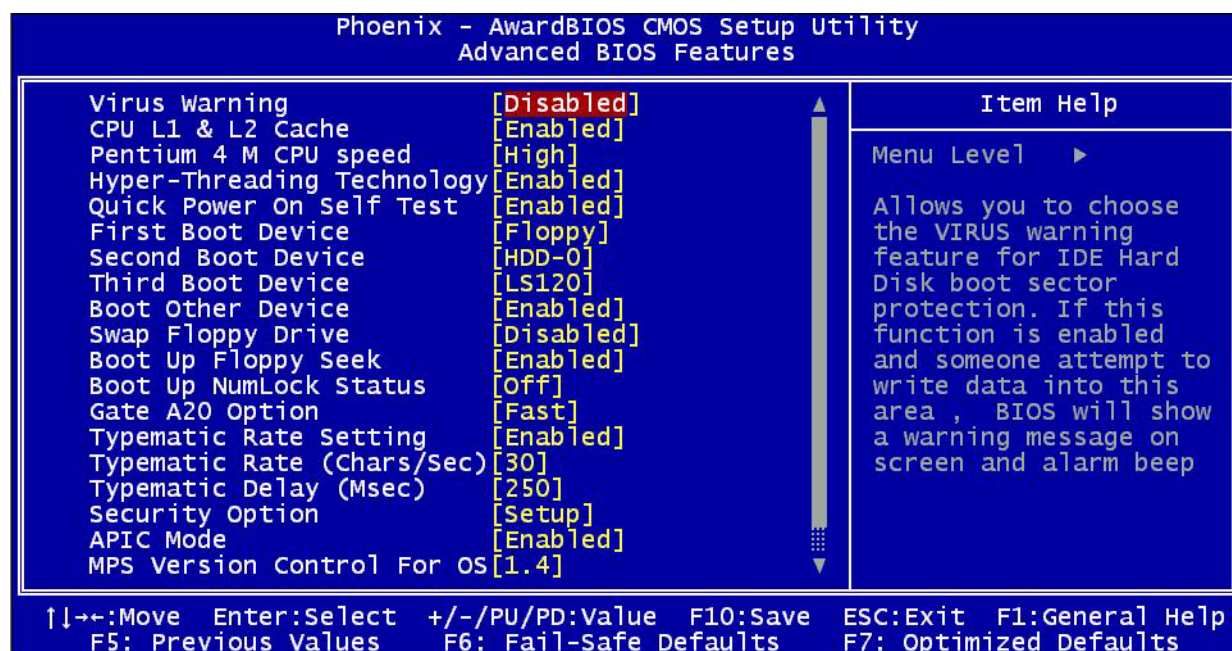
## **Base/Extended/Total Memory**

These items are automatically detected by the system at start up. These are display-only fields. You cannot make changes to these fields.

After you have made your selections in the Standard CMOS Setup screen, press **<ESC>** to go back to the main screen.

## 4.5 Advanced BIOS Features

Selecting Advanced BIOS Features on the main program screen displays this menu, which allows you to define advanced information about your system. You can make modifications to most of these items without causing fatal errors to your system.



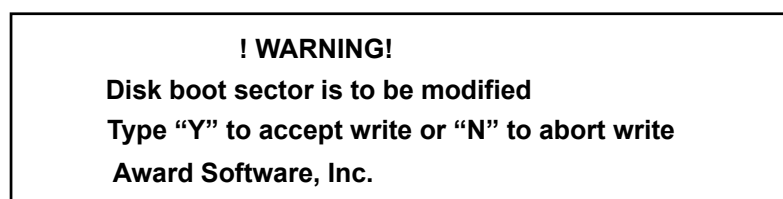
**Figure 4-4 : BIOS- Advanced BIOS Features**

The following explains the options for each feature:

### Virus Warning

Allows you to choose the Virus Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and an alarm will beep.

- **Enabled:** Activates automatically when the system boots up causing the following warning message to appear when anything attempts to access the boot sector or hard disk partition table:



- **Disabled:** No warning message will appear when an attempt is made to access the boot sector or hard disk partition table.

### **CPU L1 & L2 Cache**

The choices are: Enabled, Disabled.

### **Pentium 4 M CPU Speed**

This item allows user to choose the CPU speed to Low or High. The default is High.

### **Hyper Threading Technology**

The Intel Hyper-Threading Technology allows a single processor to execute *two or more* separate threads concurrently. When hyper-threading is enabled, multi-threaded software applications can execute their threads in parallel, thereby improving the processor's performance.

### **Quick Power On Self Test**

This item speeds up the Power On Self Test (POST) when you turn on the computer. If it is set to Enabled, BIOS will shorten or skip some check items during the POST.

### **First/Second/Third Boot Device**

BIOS attempts to load the operating system from the devices in the sequence selected in these items. The available choices are Floppy, LS120, HDD-0, SCSI, CDROM, HDD-1, HDD-2, HDD-3, ZIP100, USB-FDD, USB-ZIP, USB-CDROM, USB-HDD, LAN, Disabled.

### **Boot Other Device**

If the selected boot devices fail to boot, selecting Enabled for this item allows the BIOS to boot from other boot devices (in a predefined sequence) which are present but not selected as boot devices in the setup.

### **Swap Floppy drive**

If the system has two floppy drives, use this item to swap the logical drive name assignments.

### **Boot Up Floppy Seek**

Enable this to allow the system to search for floppy drives during the POST. Disable this item to boot faster.

### **Boot Up NumLock Status**

Selects the power on state for NumLock. The available choices are Off and On.

### Gate A20 Option

Enables you to select whether the chipset or the keyboard controller should control Gate A20. The options are:

- **Normal:** A pin in the keyboard controller controls Gate A20.
- **Fast:** Lets chipset control Gate A20.

### Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay.

#### Typematic Rate (Chars/Sec)

This setting controls the speed at which the system registers held-down key-strokes. The choices range from 6 to 30 Chars/Sec.

#### Typematic Delay (Msec)

This setting controls the time between the display of the first character and successive characters. There are four delay choices: 250ms, 500ms, 750ms and 1000ms.

### Security Option

Enables you to select whether the password is required every time the system boots or only when you enter Setup.

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

**Setup:** The system will boot, but access to Setup will be denied if the correct password is not entered at setup.

### APIC Mode

The APIC Mode BIOS feature is used to enable or disable the motherboard's APIC (Advanced Programmable Interrupt Controller). If your single-processor motherboard supports APIC and you are using a Win32 operating system (Windows NT, 2000 and XP), it's recommended that you enable this feature to allow faster and better IRQ handling. If you are using a multiprocessor motherboard, you must enable this feature because it's required for IRQ handling in multiprocessor systems.

**MPS Version Control for OS**

This feature is only applicable to multiprocessor motherboards as it specifies the version of the Multi-Processor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.

MPS version 1.4 is required for a motherboard to support a bridgeless secondary PCI bus.

**OS Select for DRAM > 64MB**

Set to OS2 if the system memory size is greater than 64 MB and the operating system is OS/2.

**HDD S.M.A.R.T Capability**

Built in problem-detection capability (Self-Monitoring Analysis and Reporting Technology) of hard disk drives signals warning of any foreseen problem.

The choices are: Enabled, Disabled.

## 4.6 Advanced Chipset Features

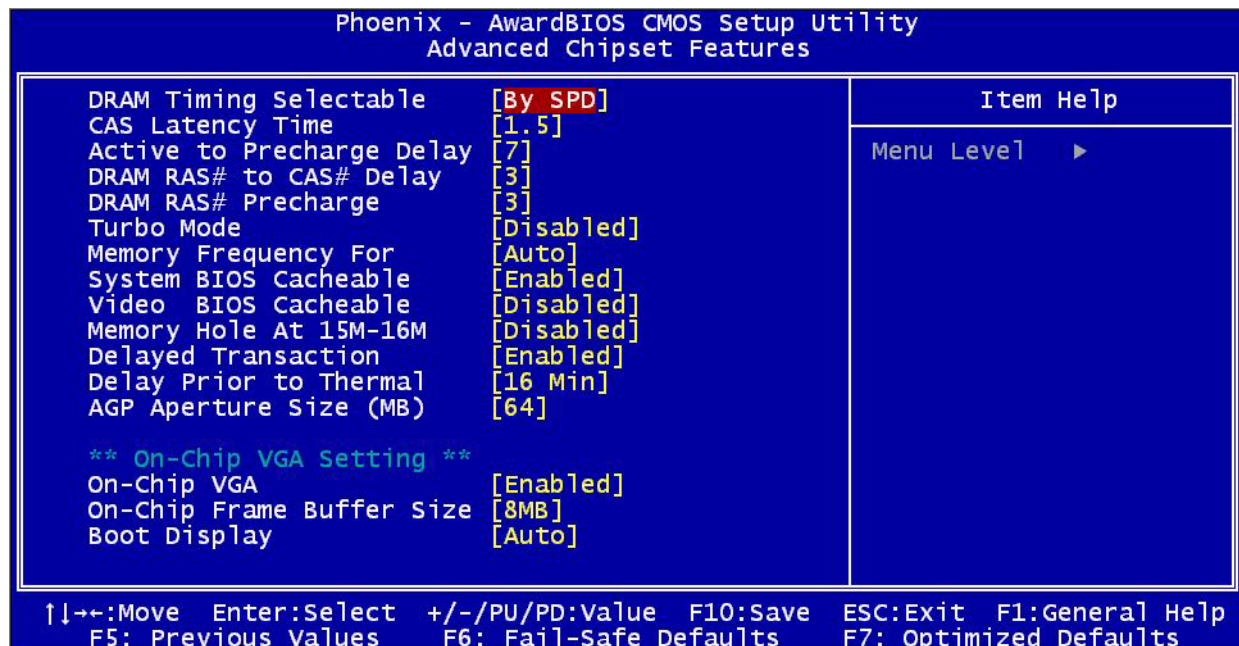


Figure 4-5 : BIOS- Advanced Chipset Features

### DRAM Timing Selectable

The Choices are: Manual, By SPD. Set the latter to enable the system to automatically set the SDRAM timing by SPD (Serial Presence Detect). SPD is an EEPROM chip on the DIMM module that stores information about the memory chips it contains, including size, speed, voltage, row and column addresses, and manufacturer.

### CAS Latency Time

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

### Active to Precharge Delay

The choices: 5,6,7

### DRAM RAS# to CAS# Delay

The choices: 2, 3.

### DRAM RAS# Percharge

The choices are 2 and 3.

**Turbo Mode**

This item allows you to enable or disable the memory turbo mode.  
The choices : Enabled and Disabled.

**Memory Frequency For**

The choices are DDR266, DDR333, and Auto.

**System BIOS Cacheable**

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

**Video BIOS Cacheable**

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

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

In order to improve performance, certain space in memory is reserved for ISA cards. This memory must be mapped into the memory.  
The choices : Enabled, Disabled.

**Delayed Transaction**

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

**Delay Prior to Thermal**

The choices: 4,8,16,32 Mins.

**AGP Aperture Size(MB)**

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The choices are from 4 in doubles up to 256.



On-Chip VGA Setting includes:

**On-chip VGA**

The choices are Enabled, Disabled.

**On-chip Frame Buffer Size**

The choices are 1MB, 8 MB.

**Boot Display**

The choices are Auto, CRT, TV, EFP.

## 4.7 Integrated Peripherals

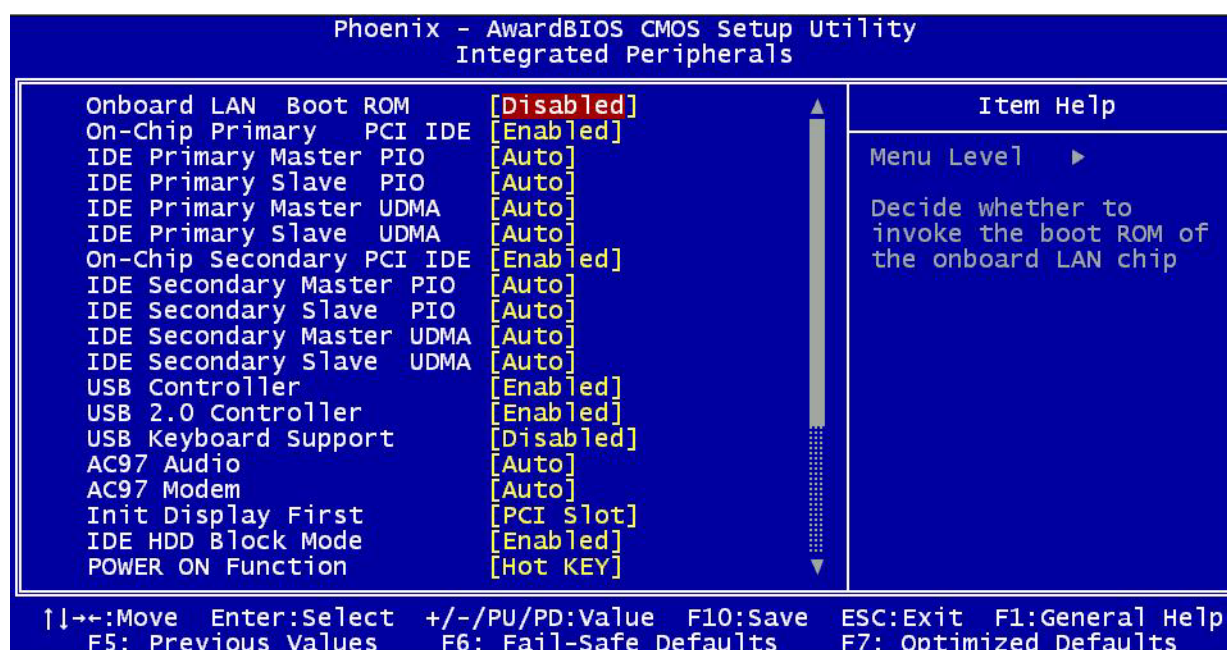


Figure 4-6 : BIOS- Integrated Peripherals

### Onboard LAN Boot ROM

Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, and Disabled.

### On-Chip Primary/Secondary PCI IDE

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

### IDE Primary/Secondary Master/Slave PIO

The four IDE PIO (Programmable Input/Output) fields let you set a PIO mode (0-1) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device. The choices are: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

### IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support. The choices are: Auto, Disabled.

**USB Controller**

Select Enabled if your system contains a Universal Serial Bus controller and you have USB peripherals.

**USB 2.0 Connector**

Select Enable if your system contains a Universal Serial Bus 2.0 controller and you have USB peripherals.

**USB Keyboard Support**

Select Enabled if your USB controller is enabled and it needs USB keyboard support in legacy (old) OS operating systems such as DOS.

**AC97 Audio**

Selecting Auto will enable the AC97 audio if it is detected onboard.

**AC97 Modem**

Selecting Auto will enable the AC97 modem, if it is detected onboard.

**Init Display First**

This item allows you to active PCI slot or onboard display first. The choices are: PCI slot, Onboard/AGP.

**IDE HDD Block Mode**

Block Mode transfers can improve the access to IDE devices. Enable this item if your IDE devices support block mode transfers.

**Power ON Function**

Select the different manners for powering on the system. The choices: Keyboard 98, Password, Any KEY, Hot KEY, BUTTON ONLY, Mouse Click, Mouse Move.

**KB Power ON Password**

The system will ask for a password. After entering the correct password, the keyboard starts running.

**Hot Key Power ON**

The choices are: Ctrl+F1, Ctrl+F2, ..... Ctrl+F12.

### **Onboard FDC Controller**

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

### **Onboard Serial Ports (1, 2)**

Select an address and corresponding interrupt for the first and second serial ports. The choices: Auto, 3F8/IRQ4, 3E8/IRQ4, 2F8/IRQ3, 2E8/IRQ3, Disabled.

### **UART Mode Select**

This item allows you to select UART mode.

The choices: Normal, IrDA, ASKIR, SCR.

### **UR2 Duplex Mode**

The choices: Half, Full.

### **Onboard Parallel Port**

This item allows you to determine access On-Board parallel port controller with which I/O address.

The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, Disabled.

### **Parallel Port Mode**

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

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

### **ECP Mode Use DMA**

Select a DMA channel for the port.

The choices: 1, 3.

## 4.8 Power Management Setup

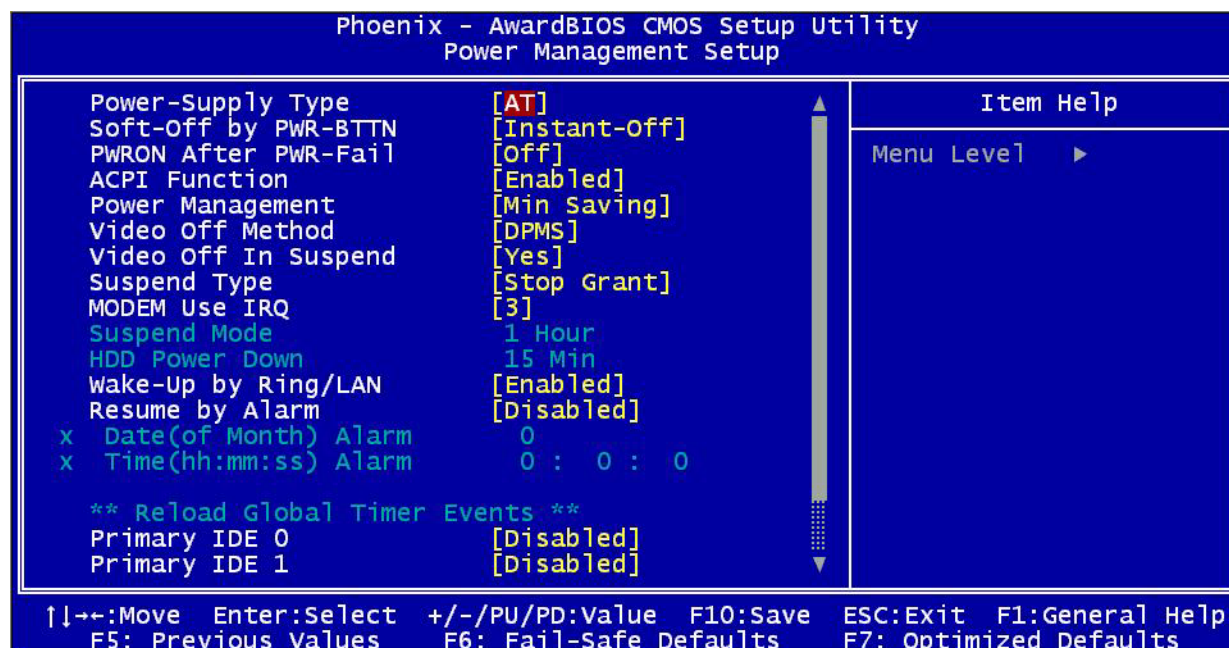


Figure 4-7 : BIOS- Power Management Setup

### Power Supply Type

The choices: AT, ATX.

### Soft-Off by PWRBTN (Power Button)

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system “hangs”. The available choices are Delay 4 Seconds, Instant-Off

### PWRON After PWR-Fail

This setting specifies whether your system reboots after a power failure.

There are three selections:

Off: The system will remain off when power comes back after a power failure.

On: The system will switch on when power comes back after a power failure.

Former-Sts: The system will return to the last state before the power failure when power returns.

### ACPI Function

This item allows you to Enable/Disable the Advanced Configuration and Power Interface (ACPI). The Choice: Enabled, Disabled.

## **Power Management**

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

1. HDD Power Down
2. Suspend Mode

There are three selections for Power Management; three of them have fixed mode settings.

Min. Power Saving: Minimum power management. Suspend Mode = 1 hr., and HDD Power Down = 15 min.

Max. Power Saving: Suspend Mode = 1 min., and HDD Power Down = 1 min.

User Define: Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and Disabled.

## **Video Off Method**

This determines the manner in which the monitor is blanked. There are three choices:

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

## **Video Off In Suspend**

This determines the manner in which the monitor is blanked.

The Choices: Yes, No.

## **Suspend Type**

Select the Suspend Type.

The Choices: PwrON Suspend, Stop Grant.

## **MODEM Use IRQ**

This determines the IRQ in which the MODEM can use.

The Choice: 3, 4, 5, 7, 9, 10, 11, NA.

## **Suspend Mode**

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. The choices are: 1~2 min, 2~3 min,... up to 1 hour.

### **HDD Power Down**

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

### **Wake-Up by Ring/LAN**

The choices: Enabled, Disabled.

### **Resume by Alarm**

When Enabled, you can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The choice: Enabled, Disabled.

### ***Reload Global Timer Events***

**Primary IDE 0**

**Primary IDE 1**

**Secondary IDE 0**

**Secondary IDE 1**

**FDD, COM, LPT Port**

**PCI PIRQ[A-D] #**

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

## 4.9 PnP/PCI Configurations

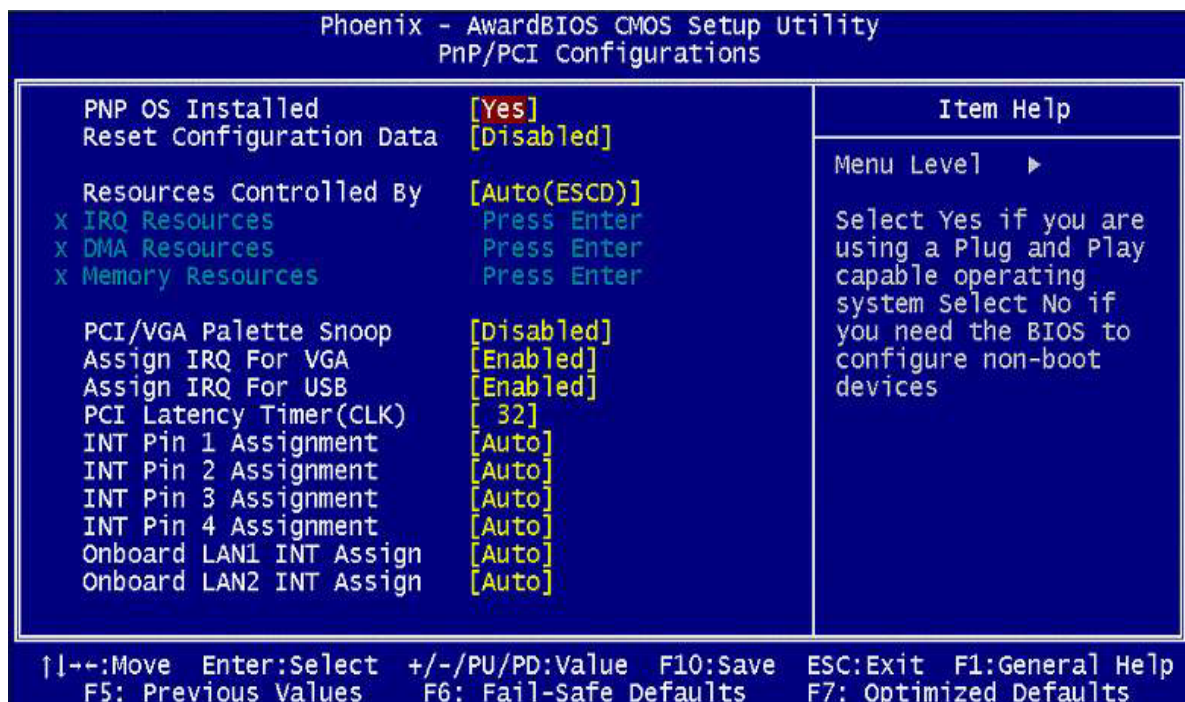


Figure 4-8 : BIOS- PnP/PCI Configurations

### PNP OS Installed

Select Yes if the system operating environment is Plug-and-Play aware (e.g. Windows 95).

The Choices: Yes, No.

### Reset Configuration Data

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

The choices: Enabled, Disabled .

### Resources Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows95. If you set this field to Manual, then choose specific resources by going into each of the submenus that follows this field.

The Choice: Auto (ESCD), Manual.



**PCI/VGA Palette Snoop**

Leave this field at Disabled.

The Choices: Enabled, Disabled.

**Assign IRQ for VGA**

Assign an IRQ for VGA.

The Choices: Enabled, Disabled.

**Assign IRQ for USB**

Assign an IRQ for USB.

The Choices: Enabled, Disabled.

**PCI Latency Timer (CLK)**

This item controls how long each PCI device can hold the bus before another takes over.

**INT Pin 1~4 Assignment**

Name the interrupt request (IRQ) line assigned to PCI 1 through PCI 4 on your system. Activity of the selected PCI slot awakens the system.

The choices: Auto, 3, 4, 5, 7, 9, 10, 11

**Onboard LAN 1, 2 INT Assign**

The choices: Auto, 3, 4, 5, 7, 9, 10, 11

## 4.10 PC Health Status

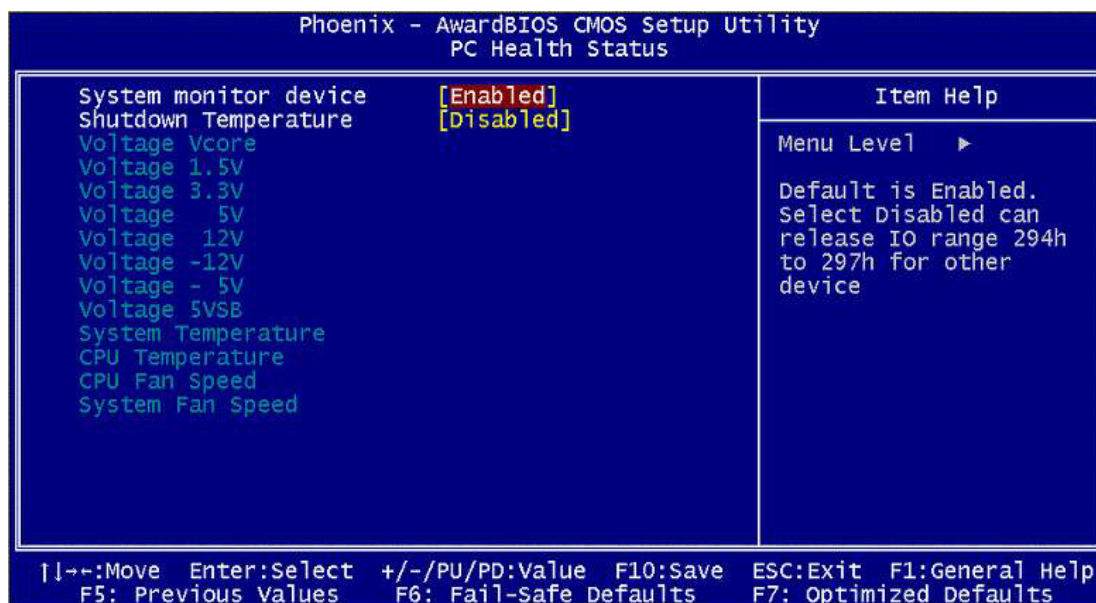


Figure 4-9 : BIOS- PC Health Status

### System Monitor Device

Default is Enabled. Select Disabled can release IO range 294h to 297h for other device.

The choices: Enabled, Disabled.

### Shutdown Temperature

This item allows you to set up the CPU shutdown temperature. This item is only effective under Windows 98 ACPI mode.

The Choices: Disabled, 60 °C/140 °F, 65 °C/149 °F, 70 °C/158 °F.

# 4.11 Frequency/Voltage Control

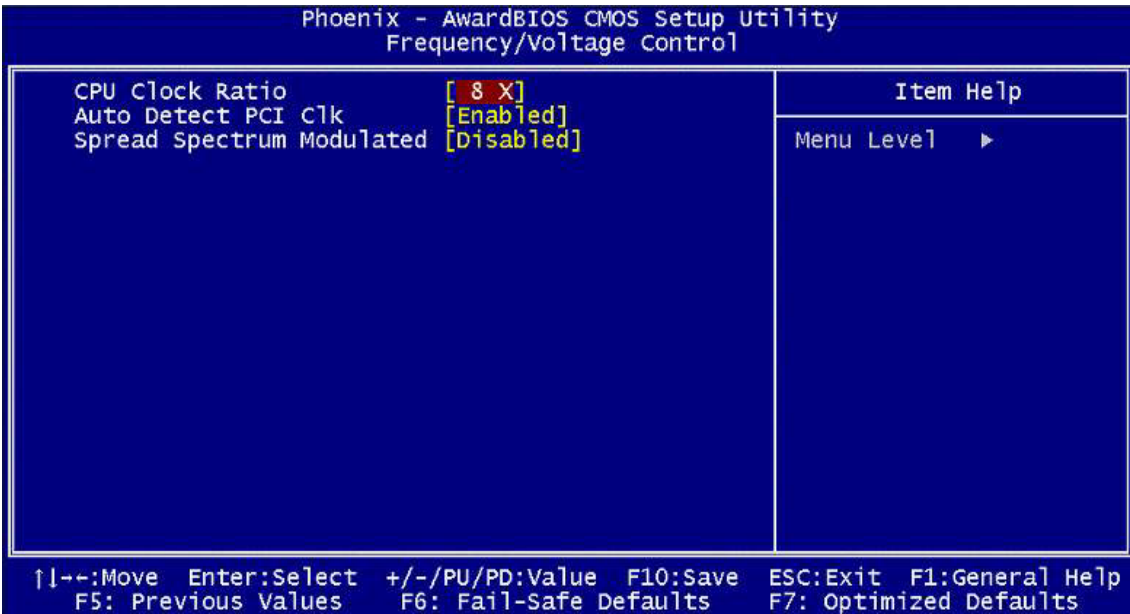


Figure 4-10 : BIOS- Frequency/Voltage Control

## CPU Clock Ratio

This item allows you to set up the CPU clock ratio, but this function depends on different CPU performance. It is only effective for those clock ratio that have not been locked.

## Auto Detect PCI Clk

When enabled, this item will auto detect if the PCI sockets have devices and will send clock signal to PCI devices. When disabled, it will send the clock signal to all PCI sockets.

The choices: Enabled, Disabled.

## Spread Spectrum Modulated

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

The choices: Enabled, Disabled.

## 4.12 Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility.

Use this option if you have changed your system and it does not operate correctly or does not power up.

## 4.13 Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the whole Setup Utility. Press the <Y> key and then <Enter> to install the defaults. Press the <N> key and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press the <F7> key.

## 4.14 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The mainboard is shipped with the password disabled. If you want to change the password, you must first enter the current password, then at the prompt enter your new password. The password is case sensitive. You can use up to eight alphanumeric characters. Press <Enter> after entering the password. At the next prompt, confirm the new password by retyping it and pressing <Enter> again.

To disable the password, press <Enter> instead of entering a new password when the Enter Password dialog box appears. A message appears confirming that the password has been disabled.

If you have set supervisor and user passwords, only the supervisor password allows you to enter the BIOS Setup Program.

**Note:** If you forget your password, the only way to solve this problem is to discharge the CMOS memory by turning power off and placing a shunt (jumper cap) on jumper JP2 to short pin 2 and pin 3 for five seconds, then putting the shunt back to pin 1 and pin 2 of JP2.

## **4.15 Save & Exit Setup**

Selecting this option and pressing <Enter> will save the new setting information in the CMOS memory and continue with the booting process.

## **4.16 Exit Without Saving**

Selecting this option and pressing <Enter> will exit the Setup Utility without recording any new values or changing old ones.

# Chapter 5

## Driver Installation

PEAK 715-HT Series come with a driver installation CD-ROM that enables you to install VGA driver software, INF(Intel Chipset Software Installation Utility) and IAA (Intel Application Accelerator).

## 5.1 Find the Main Menu of Driver CD

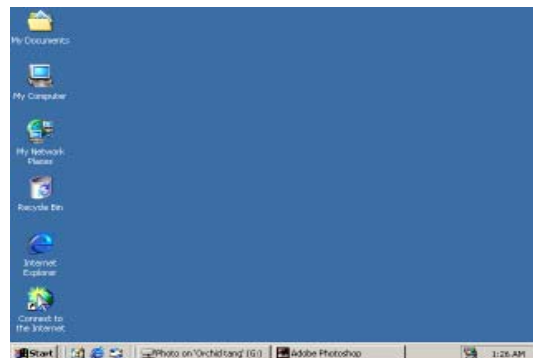
Please follow the following steps to find VGA driver, INF and IAA in the driver CD-ROM to implement installation.

**Note:** In this manual, Windows 2000 is the model for OS operation system.

### Step 5.1.1

Place the driver installation CD-ROM in your CD-ROM driver.

Then click **My Computer** on your desktop items.



### Step 5.1.2

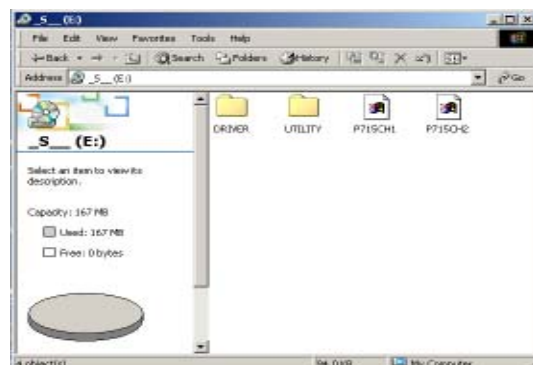
The menu of **My Computer** will display.

Find your drive which supports CD-ROM and click that item.



### Step 5.1.3

Select **DRIVER** folder.



### Step 5.1.4

The menu of the driver installation CD will display.

You can see the folders of **VGA**, **INF** and **IAA** installation driver.



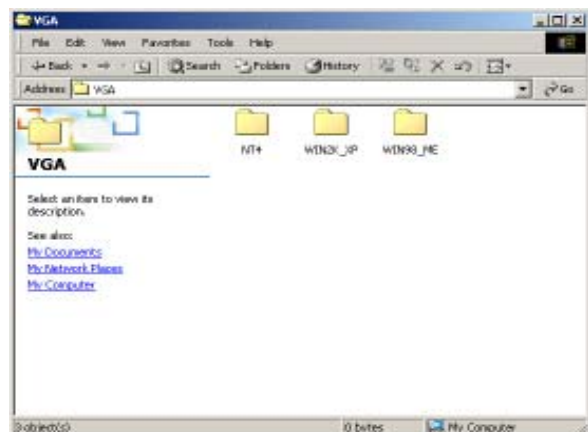
## 5.2 Installing VGA Driver

### Step 5.2.1

Double click the folder of **VGA**.

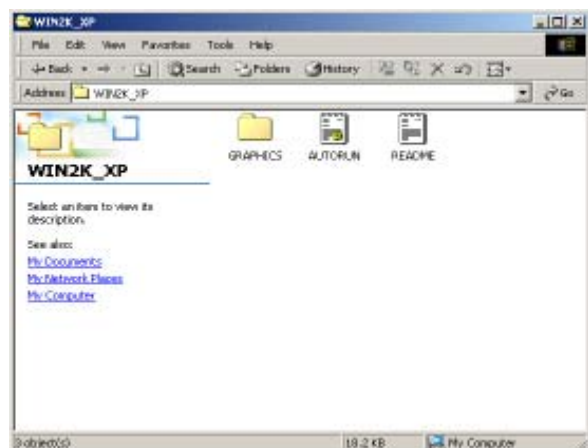
The menu will display.

Select the folder of **WIN2K\_XP** for Windows 2000 operating system.



### Step 5.2.2

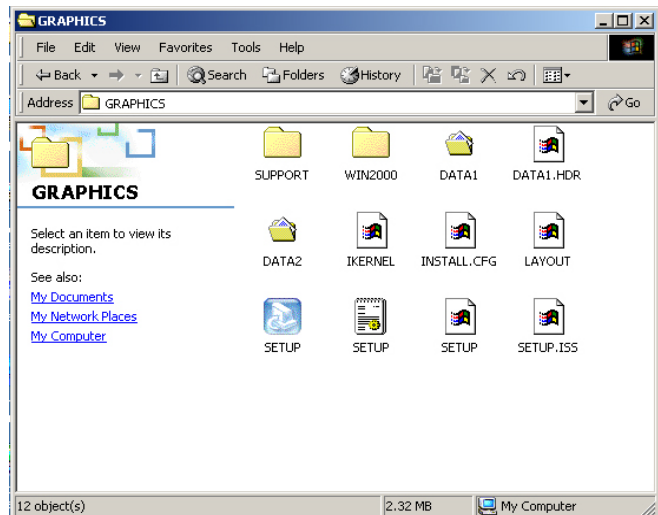
After the menu displays, select the folder of **GRAPHICS**.





### Step 5.2.3

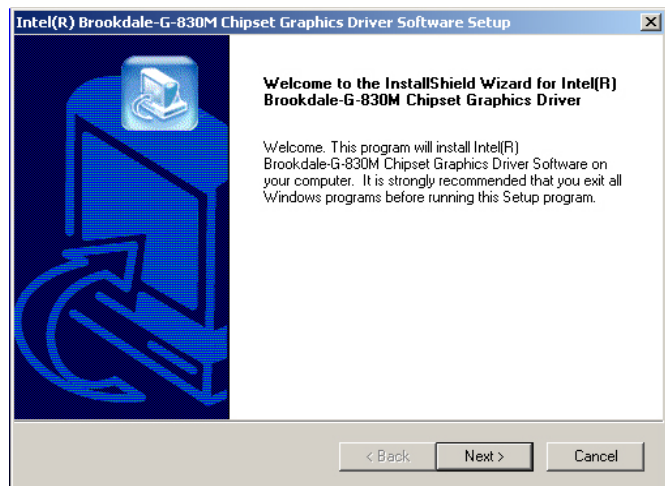
After this screen displays, double click the blue sign **SETUP**.



### Step 5.2.4

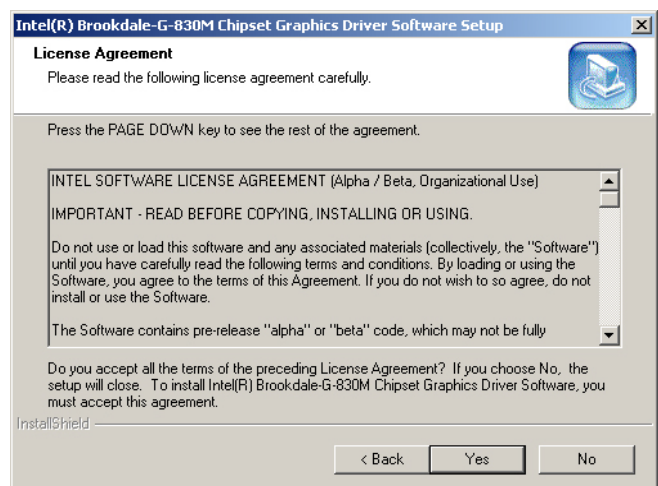
After a sequence of system processing, you will see a static screen instructing the installation process.

Click **Next** to continue setup.



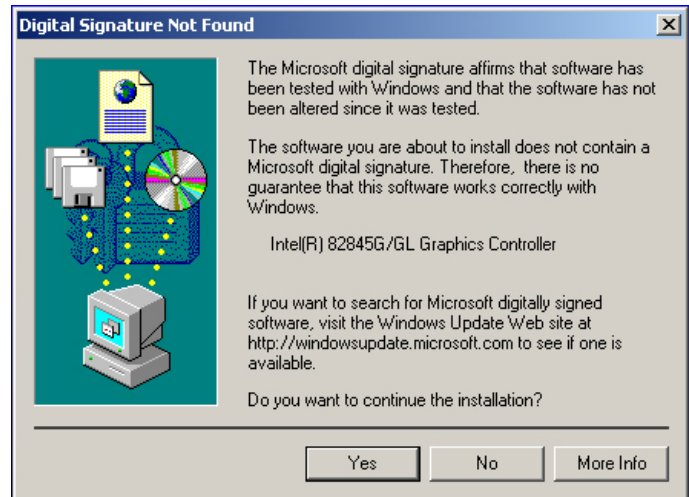
### Step 5.2.5

If you accept License Agreement, click **Yes** to continue.



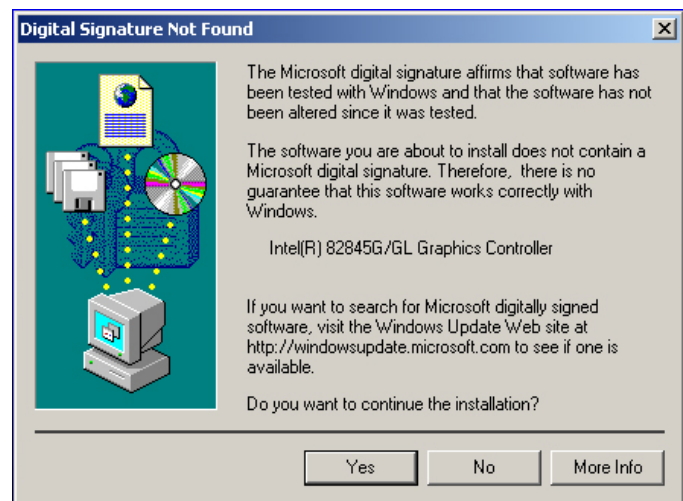
### Step 5.2.6

Select **Yes** to continue.



### Step 5.2.7

Click **Yes**.

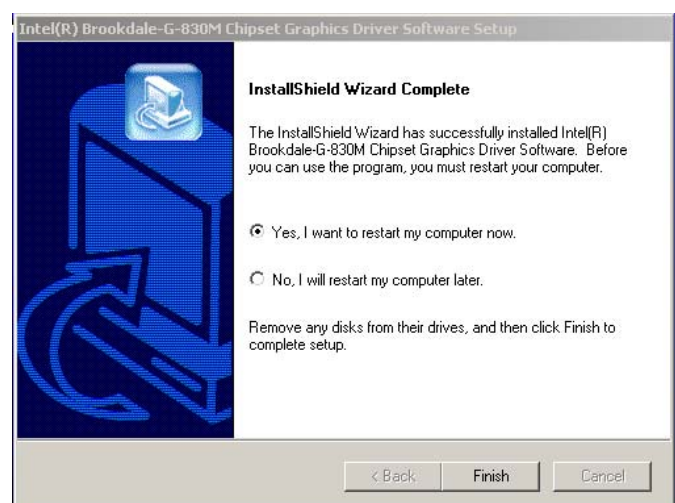


### Step 5.2.8

An installation wizard will inform successful completion of driver software installation and ask you to restart your computer.

Select **"Yes, I want to restart my computer now,"** and then click **Finish**.

After your computer reboots, VGA driver is already setup in your computer.

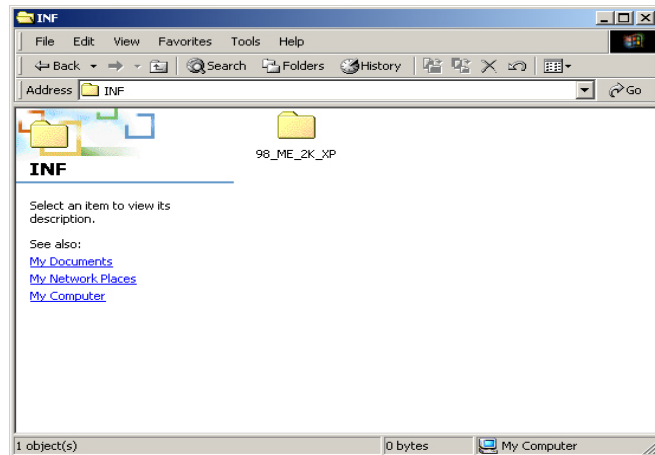


## 5.3 Installing INF

After installing VGA driver, go back to 5.1. Go through step 5.11 to step 5.14 again, and open the folder of INF to start installing INF.

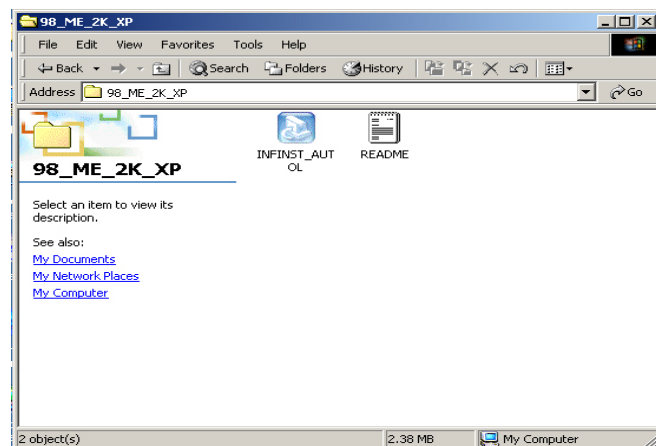
### Step 5.3.1

Open the folder of  
**98\_ME\_2K\_XP.**



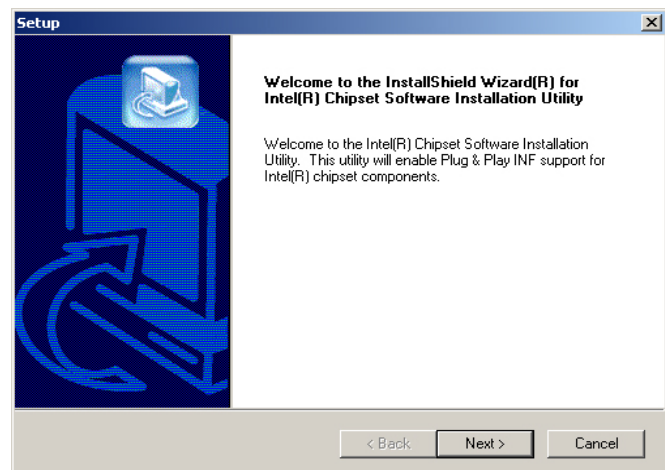
### Step 5.3.2

Double click the blue sign  
**INFINST\_AUT OL.**



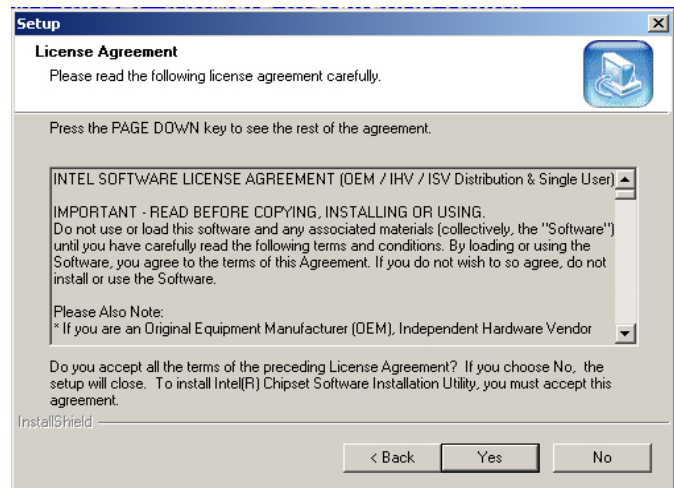
### Step 5.3.3

Click **Next** to install INF.



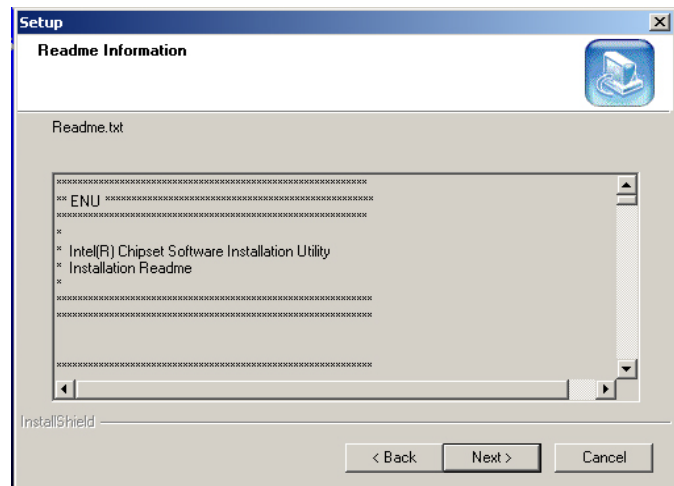
### Step 5.3.4

Click **Yes** to continue.



### Step 5.3.5

Click **Yes**.

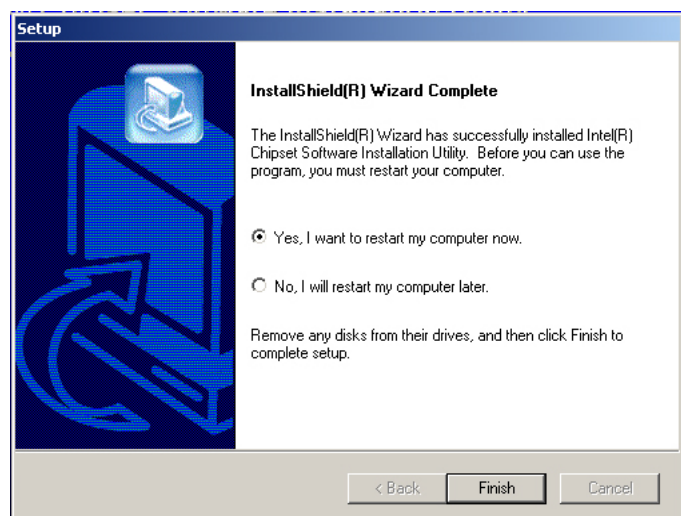


### Step 5.3.6

Select **Yes, I want to restart my computer now**.

Then click **Finish**.

INF is installed.

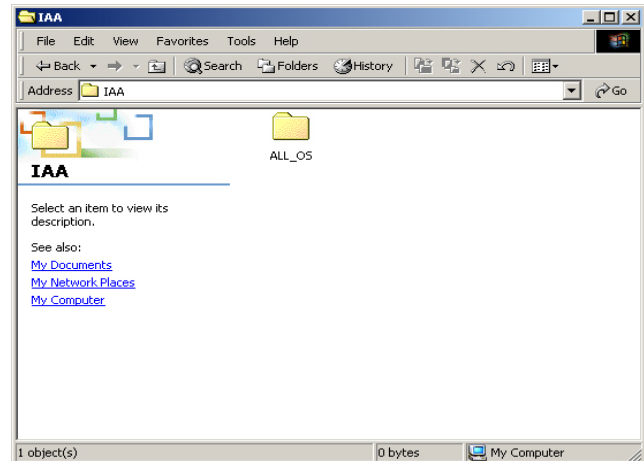


## 5.4 Installing IAA

After installing INF, go back to 5.1. Go through step 5.11 to step 5.14 again, and open the folder of IAA to start installing INF.

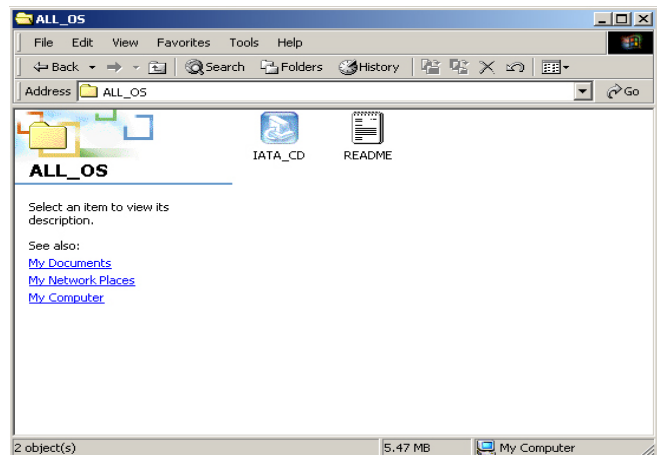
### Step 5.4.1

After the folder of **ALL\_OS** displays, click it..



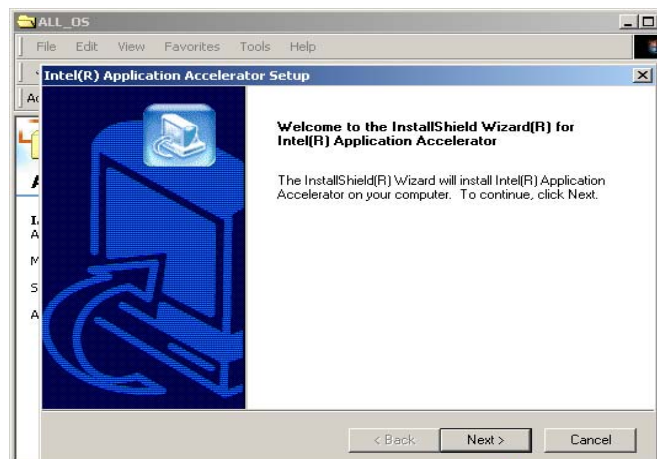
### Step 5.4.2

Double click the blue sign **IATA\_CD**.



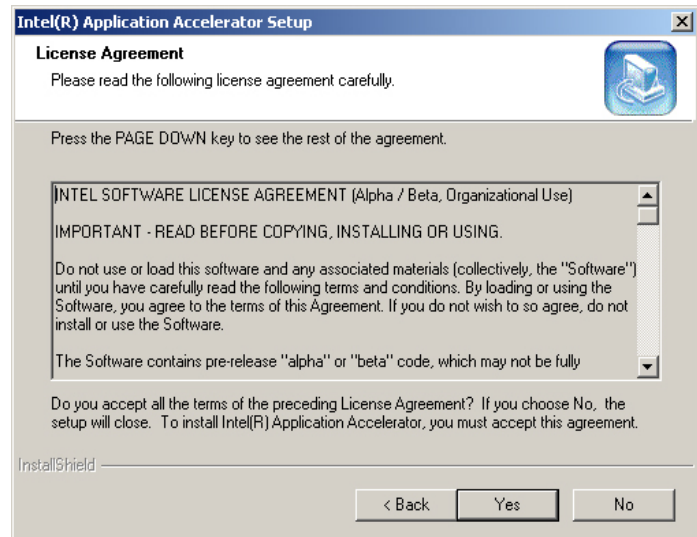
### Step 5.4.3

Click **Next** to install.



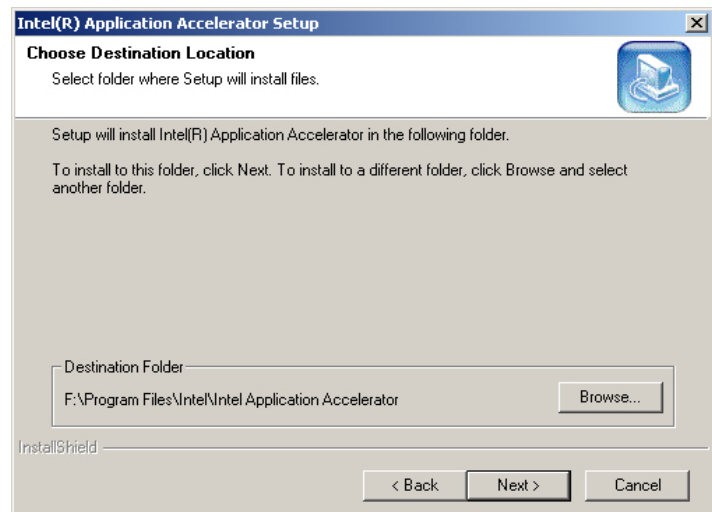
#### Step 5.4.4

Click **Yes**.



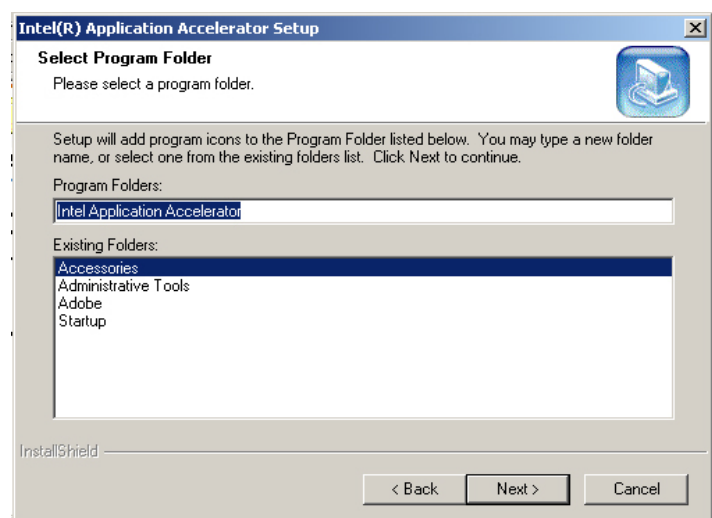
#### Step 5.4.5

Click **Next**.



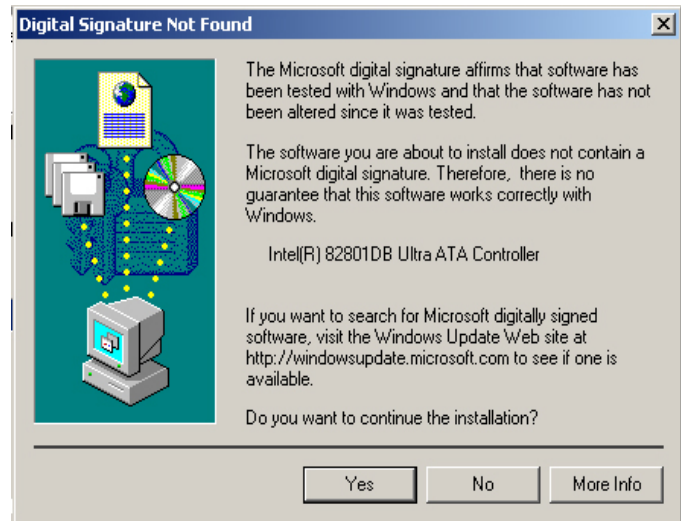
#### Step 5.4.6

Select **Next**.



#### Step 5.4.7

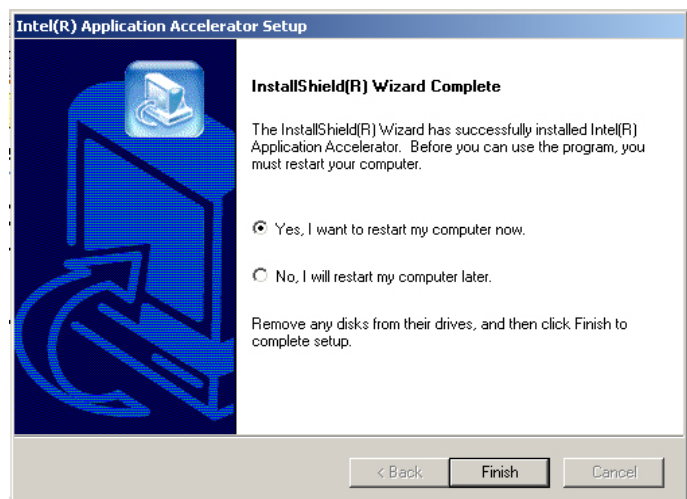
Click **Yes**.



#### Step 5.4.8

Select **Yes, I want to restart my computer now**, then click **Finish**.

Your computer is installed with IAA.



## Appendix A : Pin Assignments of Connectors

### JP1 : AC97'

PIN No.	Description	PIN No.	Description
1	AC_SDOOUT	2	VCC3
3	AC_RST#	4	GND
5	AC_SYNC	6	+12V
7	AC_SDIN0	8	AC_SDIN1
9	AC_BTCLK	10	AC_SDIN2

### J14 : USB Connector

PIN No.	Description
1	VCC5
2	USBP0N
3	USBP0P
4	USBP1N
5	USBP1P
6	GND

### J19 : Keylock

PIN No.	Description
1	VCC5
2	N.C
3	GND
4	Keylock
5	GND

### J18 : GPIO PORT (Super IO)

PIN No.	Description	PIN No.	Description
1	GP20 (PIN27)	2	GP24 (PIN23)
3	GP21 (PIN26)	4	GP25 (PIN22)
5	GP22 (PIN25)	6	GP26 (PIN21)
7	GP23 (PIN24)	8	GP27 (PIN20)
9	GND	10	GND



**J 20 : IR Connector**

PIN No.	Description
1	VCC5
2	CIRRX
3	IRRX
4	GND
5	IRTX

**J 23 : External Keyboard Connector**

PIN No.	Description
1	Keyclk
2	Keydata
3	N.C
4	GND
5	VCC5

**J 9 : SMBUS Connector**

PIN No.	Description
1	SMBDATA
2	SMBCLK

**J 8 : ATX Push Button**

PIN No.	Description
1	GND
2	Plus Signal

**J 11 : Hardware Reset**

PIN No.	Description
1	GND
2	Reset #

**J 16 : ATX Power Connector**

PIN No.	Description
1	5VSBY
2	GND
3	PSON #

**J 7 : Speaker**

PIN No.	Description
1	Speaker Out
2	GND
3	GND
4	VCC5

**J 4 : IDE Active LED**

PIN No.	Description
1	VCC5
2	IDE_ACT#

**J 2 : AUX +12 V Power Connector**

PIN No.	Description
1	GND
2	GND
3	+12V
4	+12V

## Appendix B : Watchdog Timer Setting

### B.1 Watchdog Timer Working Procedure

Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. WDT has a clock circuit that times down from a set number to zero. If a monitored item occurs before the timer reaches zero, WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, WDT performs an action, such as a diagnostic operation (rebooting the computer).

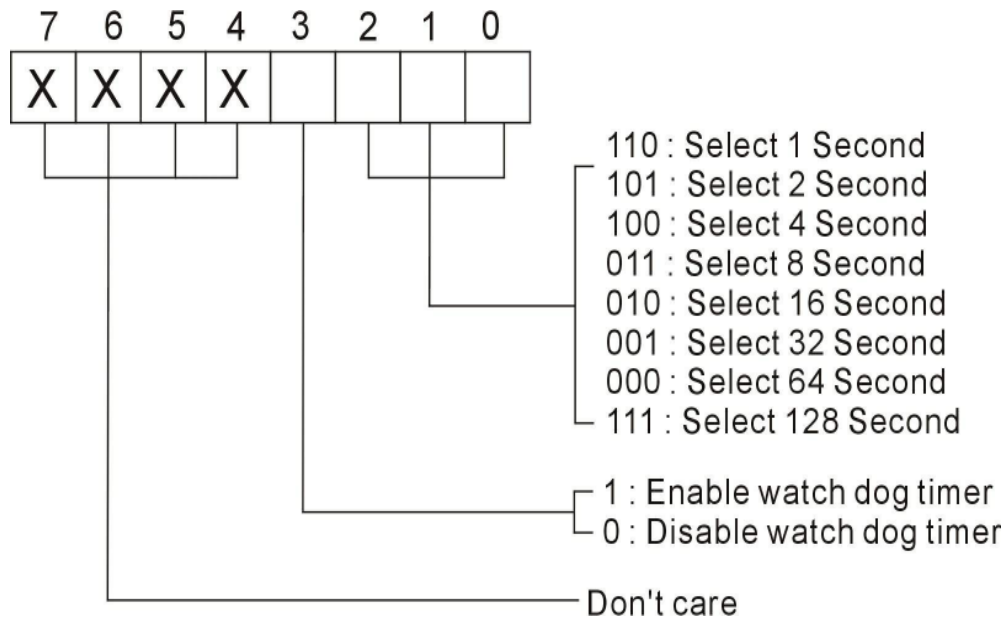
You must enter timer values into WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled	1. Default at disabled
	Enabled	2. Enabled for user's programming
WDT Active Time	1 sec 2 sec 4 sec 8 sec 16 sec 32 sec 64 sec 128 sec	Default at 64 sec

**Table B-1 : Watchdog Timer Character and Function**

## B.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the WDT working mode. Write the value to the WDT Configuration Port. The following table describes the Control Register bit definition:



**Table B-2 : WDT Control Register Bit Definition**

## B.3 Watchdog Timer Programming Procedure

### B.3.1 Power On or Reset the System

The initial value of WDT Control Register (D3~D0) is zero (0), when power is on or the system has been reset. The following table indicates the initial value of WDT ( 00000000b ) :

Bit	Value	Mean
3	0	Disable Watchdog Timer
2, 1, 0	0 0 0	Select 64 second

**Table B-3 : WDT Control Register Initial Value**

### B.3.2 Clear the WDT

WDT counter interval cannot be longer than the preset time, otherwise, WDT sends a reset signal to the system.

The following is an example of clearing the WDT program in Intel 8086 assembly language.

```
; ( Clear the WDT)
Mov  dx, F2h ;Setting the WDT configuration port
In   al, dx
```

**Note:** Before running WDT, you must clear WDT to ensure that the initial value is zero.

### B.3.3 WDT Control Register

**Note:** This register writes to WDT configuration port.

Set WDT Control Register to control the WDT working mode. The initial value of WDT Control Register is shown as follows:

```
; (Setting the WDT Control Register as AL)
Mov  al, 0h ; Setting initial value = 0 for the WDT Control Register
```

Follow these instructions to set the register:

1. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2 )

**Example:** If D2~D0 = 0, the time-out interval is 64 seconds.

```
AND    al, 11111000b ; Setting the time-out interval as 64 sec.
```

2. Enable or Disable WDT ( decide D3 value in F2)

i.e. D3=0, Disables WDT

```
AND    al, 11110111b ; Disable the WDT
```

i.e. D3=1, Enables WDT

OR      al, 00001000b ; Enable the WDT
--

After finishing the above settings, you must output the Control Register's value to WDT Configuration Port. Then WDT will start according to the above settings.

MOV    dx, F2h    ; Setting WDT Configuration Port
OUT    dx, al      ; Output the Control Register Value



# The Digital Infrastructure