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Acknowledgements

EBC575 is a trademark of NEXCOM international CO., LTD. All other product names mentioned herein are registered trademarks of their respective owners.

Regulatory Compliance Statements

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

FEDERAL COMMUNICATIONS COMMISSION (FCC) FOR CLASS A DEVICES

This equipment has been tested and verified 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 instructions, 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 manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

WARNINGS

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory

CAUTION

Electrostatic discharge (ESD) can damage EBC components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

Safety Information

Before installing and using the EBC575, note the following precautions:

◆ Read all instructions carefully.

◆ Do not place the unit on an unstable surface, cart, or stand.

◆ Follow all warnings and cautions in this manual.

◆ When replacing parts, ensure that your service technician uses parts specified by the manufacturer.

◆ Avoid using the system near water, in direct sunlight, or near a hearing device.

Table of Contents

Chapter 1
General Information

1.1 Features

EBC575 Series is a member of NEXCOM's P4-based Industrial Embedded Main Board Computer family. The features of this series are as follows:

♦ Intel® Pentium® 4 processor, Intel® Celeron® processor, or Intel® Pentium® -M processor, up to 3.06 GHz, with Hyper-Threading Technology

♦ Intel® 845GV Chipset, supporting 400/533 MHz FSB, 266 MHz DDR SDRAM

♦ DDR 266 memory, up to 2GB, DIMM Socket x 2

♦ Built-in fast Ethernet LAN port x 3

1.2 Specification

System Architecture

♦ 5.25" drive form factor

♦ PCI V2.2 compliant

♦ ACPI 1.0b compliant

CPU support

♦ Socket 478 for Intel® Pentium® 4 processor, Intel® Celeron® processor, or Intel® Pentium® -M processor, up to 3.06 GHz, with Hyper-Threading Technology

♦ 400/533 MHz FSB

♦ 512K L2 cache on-die

Memory

♦ On-board two 184-pin DIMM socket support up to 2GB PC2100/PC1600 DDR ECC/Non Ecc momory

BIOS

♦ Award system BIOS

♦ Plug & Play

♦ ACPI 1.0b compliant

♦ 4M bits flash ROM

Chipset

♦ Intel® 845GV

♦ Intel® 82801DBx I/O controller Hub (ICH4)

♦ Firmware Hub (FWH) 4M bits flash ROM x 1

On-board LAN

♦ Intel® 82551 QM x 2 + ICH4 integrated LAN

♦ Compliant with PCI V2.1/V2.2

On-board VGA

◆ Intel® 82845GV chipset integrated with graphics controller

◆ Hardware motion compensation assist for software MPEG/DVD decode

◆ 64MB VGA share memory

◆ AGP 4X interface (1.5V)

◆ Fully PC98 and PC99 compliant

◆ On-board LVDS transmitters

I/O ports

◆ VGA: 15-pin CRT connector x 1 / 2.0mm box header 8 x 2 CRT connector / RHS FD 14-pin connector for LVDS panel output

◆ LAN: RJ45 with LED connector x 3

◆ USB port x 2, JST 2.0mm 6 pin Connector x 1

◆ SMBus 2.0 controller: 2.0mm 4-pin pin-header connector x 1

◆ Audio: on-board AC'97 2.2 interface connector, 10-pin header x 1

◆ HDD: Ultra ATA support, 40-pin connector x 1, Compact Flash connector x 1

◆ Serial port: 16C550 UARTs, 10-pin box-header x 1, D-Sub connector x 1

◆ Parallel port: Bi-directional, EPP/ECP support, 26-pin connector x 1

◆ FDD: Slim type connector x 1

◆ PS/2 KB/Mouse: 6-pin mini-DIN connector x 1

◆ External KB/Mouse: 8-pin connector x 1

◆ On-board buzzer x 1

◆ GPIO (4 bit TTL input/output with Power & GND), 10-pin pin-header connector x 1

◆ Standard 32-bit PCI slot

◆ ATX Power: 12V power 4-pin connector x 1, 20-pin connector x 1

System Monitor

◆ Derived from Super I/O ITE 8712F-A to support system monitor

◆ Monitor voltage, fan speed, and temperature

Real time clock

◆ On-chip RTC with Lithiom battery for data retention

Power Source

◆ ATX Power Connector x 1

◆ 12V Power 4 pin connector x 1

Watchdog Timer

♦ Watchdog timeout can be programmable by software from 1 ~ 128 seconds

Dimensions

♦ 203mm (L) x 146mm (W)

Power Requirements

♦ +5V / +12V / +3.3V / +3.3VSB / 5VSB

Note: *Make sure that your ATX 12V power supply can provide at least 8 mA on the 12V lead and at least 1 mA on the +5 volt standby lead (+5VSB).*

The system may become unstable and may experience difficulty powering up if the power supply in inadequate.

Environment

♦ Operating temperatures: 0ºC to 60ºC

♦ Storage temperatures: -20ºC to 80ºC

♦ Relative humidity: 10% to 90% (Non-condensing)

Certification

♦ CE

♦ FCC

1.3 Checklist

❑ One EBC575 Embedded CPU Board

❑ One EBC575 Quick Reference Guide

❑ One Printer Cable

❑ One 9-pin COM Cable

❑ One FFC Cable

❑ One IDE Cable

❑ One PS/2 Keyboard/Mouse Y-Cable

❑ One EBC575 Driver/Manual CD

1.4 Board Layout

1.4.1 Front Layout
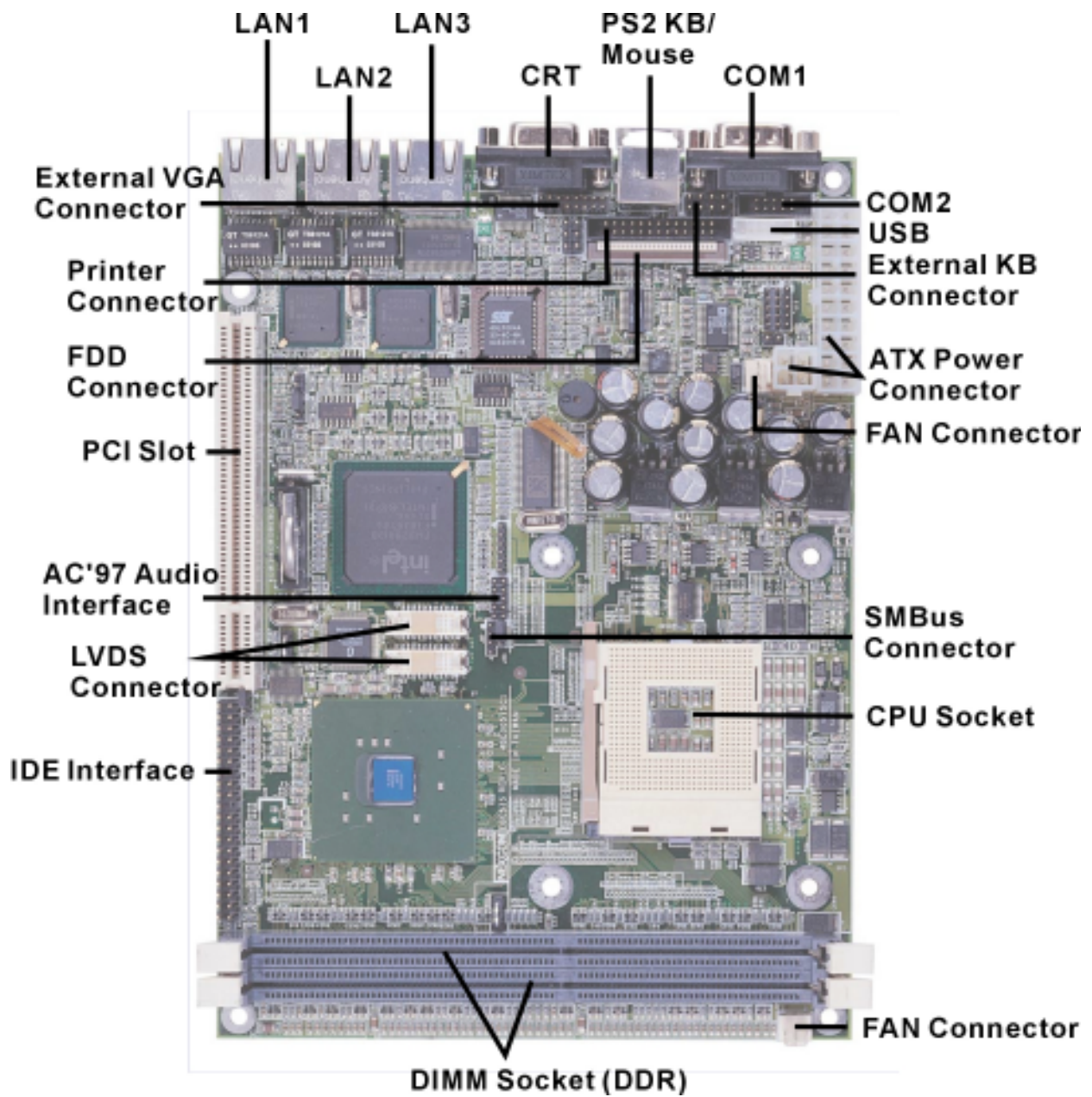
Figure 1-1: EBC575 Front Layout

1.4.2 Rear Layout
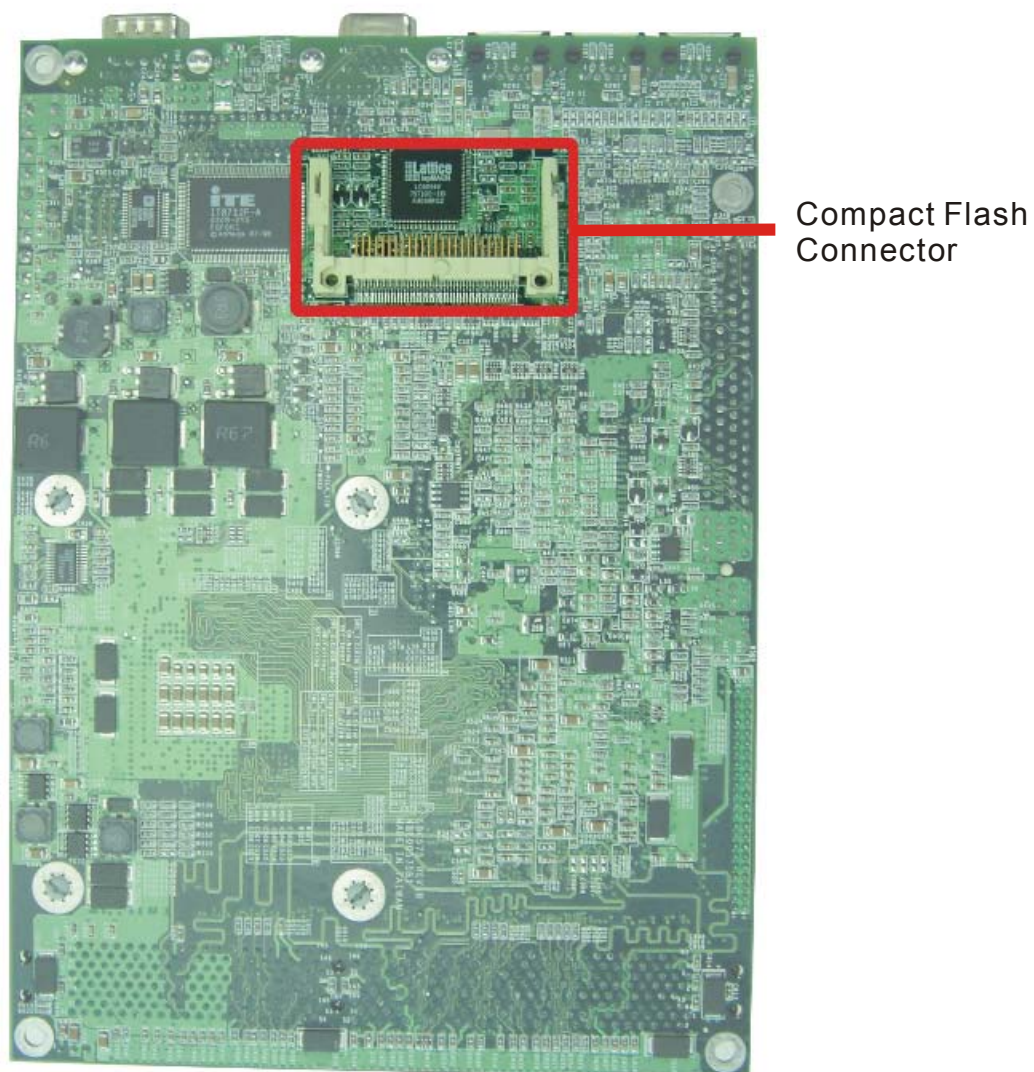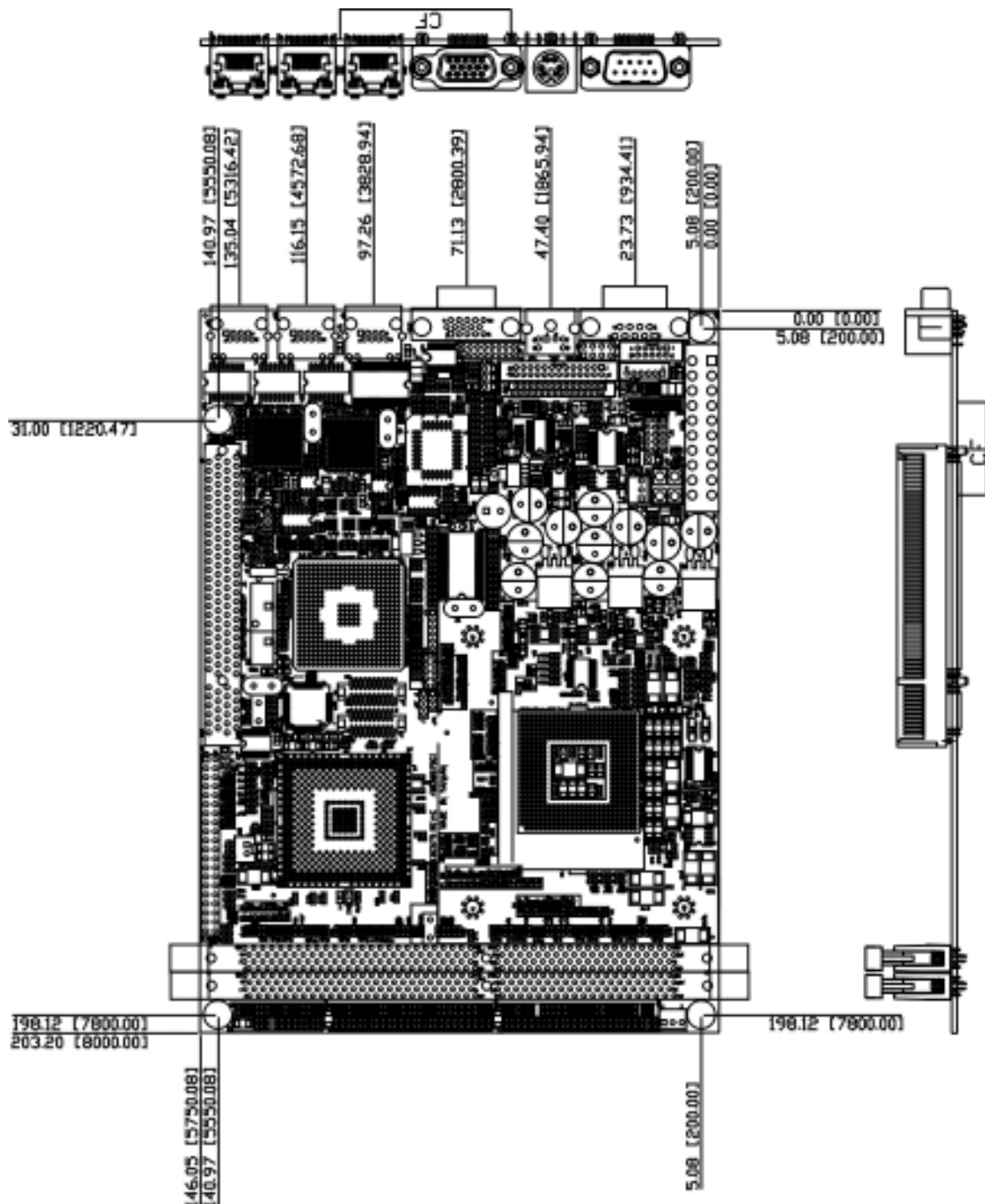

Compact Flash Connector

Figure 1-2: EBC575 Rear Layout

1.5 Board Dimensions

Physical Dimensions: 203mm (L) x 146mm (W)

This concludes Chapter 1. The next chapter covers setting up the EBC575.

Chapter 2
Jumper Setting

This chapter of the User's Manual describes how to set jumpers.

2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A set of jewelers screwdrivers
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- Always disconnect the unit from the power outlet whenever you are working inside the case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards (such as the EBC575 board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- Use correct screws and do not over tighten screws.

2.3 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:
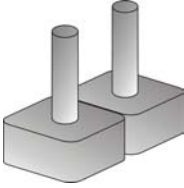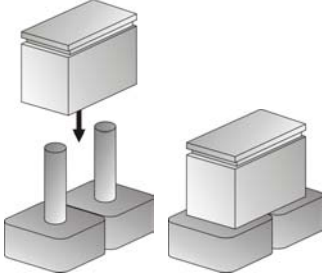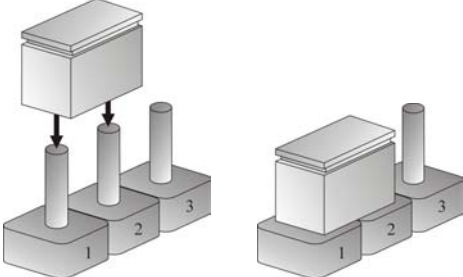
The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**.	**Open (Off)**	**Short (On)**
These illustrations show a 3-pin jumper. Pins 1 and 2 are **SHORT**.		

Table 2-1: Setting Jumpers

2.4 Functions of Jumpers

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

Connector	Function
J1	Panel Volt Select Connector
J2	LVDS Panel
J3	LVDS Panel
J4	AC'97 Connector
J6	PCI Slot
J7	IDE Active LED
J8	12V ATX Power Connector
J9	Fan Connector
J10	GPI/O
J11	ASK IR Connector
J12	Printer Connector
J14	USB 2.0
J15	Floppy Disk Connector
J16	COM2
J17	External VGA Connector
J22	Keyboard/Mouse Connector
J23	COM1
J25	CPU Type
J26	External KB/MouseConnector
J27	SMBus Connector
J28	Fan connector
J29	IDE Connector
CON1	ATX Power Connector
JP1	CMOS Clear
JP2	Reset Button
JP3	Power LED
JP4	CF Card
JP5	Power Button

Table 2-2: Function of Jumpers

2.5 Locating Jumpers and Switches

This and the following pages show the location of the main board jumpers and switches:
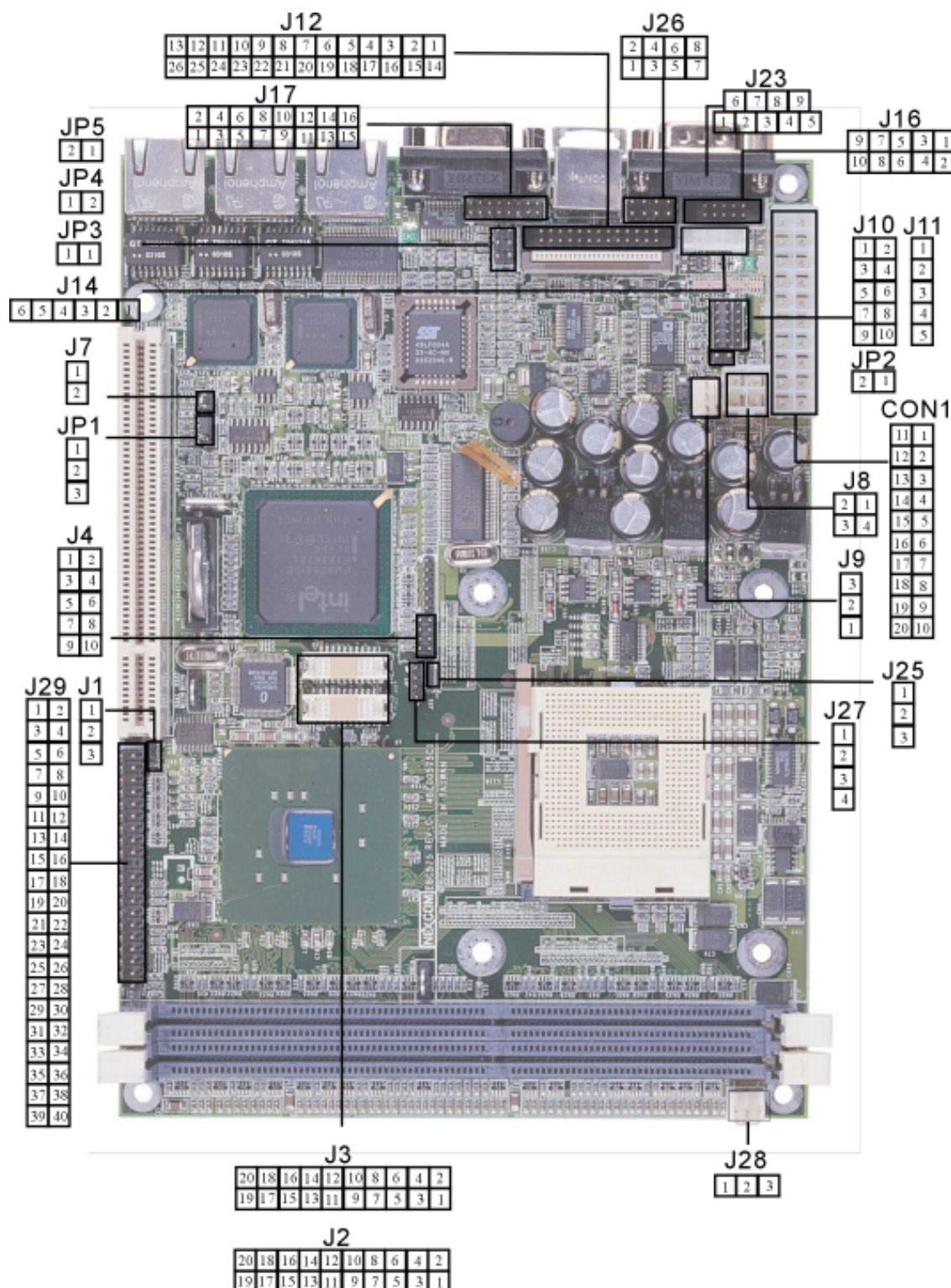
Figure 2-1: EBC575 Board Main Jumpers and Switchs

2.6 Panel Power Select (J1)

PIN No.	Description
*1-2	3.3 V
2-3	5 V

* Default

2.7 CPU Type Select (J25)

Pin No.	Description
*1-2	P4 Processor
2-3	P4-M Processor

* Default

2.8 CMOS clear (JP1)

PIN No.	Description
*1-2	Normal
2-3	Clear CMOS

* Default

Note: *Clear CMOS procedure:*
1. Turn off the system power
2. Short pin 2 and pin 3 on Jumper JP1. Wait 1~2 seconds.
3. Return the jumper back to the normal setting (short pin 1 and 2)
4. Turn the system on. The BIOS is returned to the default settings.

2.9 H/W Reset (JP2)

PIN No.	Description
1	Ground
2	H/W Reset

J1: LVDS Panel

Pin No.	Description	Pin No.	Description
1	PANEL CLK	2	PANEL DATA
3	LCD_VDD	4	A4P
5	A7P	6	A4M
7	A7M	8	LCD_VDD
9	GND	10	A5P
11	CLK1P	12	A5M
13	CLK1M	14	GND
15	GND	16	BKL_Power
17	A6P	18	BKL_Power
19	A6M	20	GND

J2: LVDS Panel

Pin No.	Description	Pin No.	Description
1	PANEL CLK	2	PANEL DATA
3	LCD_VDD	4	A0P
5	A3P	6	A0M
7	A3M	8	LCD_VDD
9	GND	10	A1P
11	CLK1P	12	A1M
13	CLK1M	14	GND
15	GND	16	BKL_Power
17	A2P	18	BKL_Power
19	A2M	20	GND

2.10 Power LED (JP3)

PIN No.	Description
1	5 V
2	Ground

2.11 CF Card Master/Slave Select (JP4)

PIN No.	Description
1 - 2 Short	Master
1 - 2 Open	Slave

2.12 Power Connector (JP5)

PIN No.	Description
1	Ground
2	Power On/Off

For detail jumper setting information, please refer to Appendix A.

This ends Chapter 2. The next chapter covers EBC575 expending capabilities.

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 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 notice that the EBC575 support Double Data Rate Ram (DDR266). Configurations using different brands of memory modules are not recommended.

DIMM1	DIMM2	Total Memory
128 MB	Empty	128 MB
Empty	128 MB	128 MB
128 MB	128 MB	256 MB
256 MB	Empty	256 MB
Empty	256 MB	256 MB
256 MB	256 MB	512 MB
512 MB	Empty	512 MB
Empty	512 MB	512 MB
512 MB	512 MB	1024 MB
1024 MB	Empty	1024 MB
Empty	1024 MB	1024 MB
1024 MB	1024 MB	2048 MB

Table 3-1: EBC575 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.
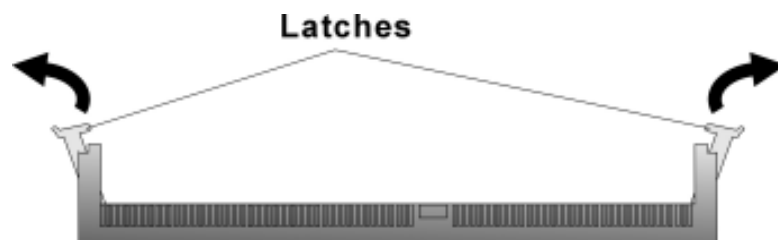

Figure 3-1: How to Install DIMM (1)

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.
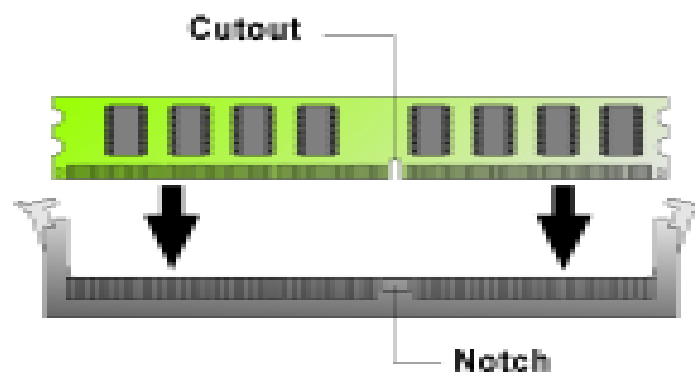
Figure 3-2: How to Install DIMM (2)

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.
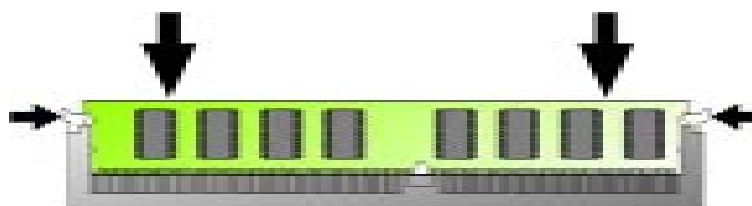

Figure 3-3: How to Install DIMM (3)

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 Installing Compact Flash

1. To install a Compact Flash memory card into EBC575, reverse the main board. Align the notches on the Compact Flash memory card with the Compact Flash socket in the EBC575. Firmly insert the card into the socket until it is completely seated.
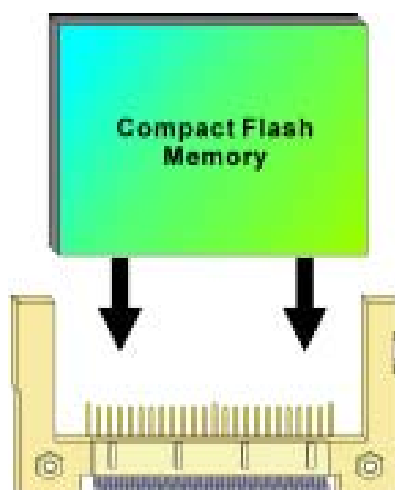
Figure 3-5: How to Install Compact Flash Memory (1)

2. To remove the Compact Flash memory card from EBC575, pull out the memory card from the Compact Flash socket.
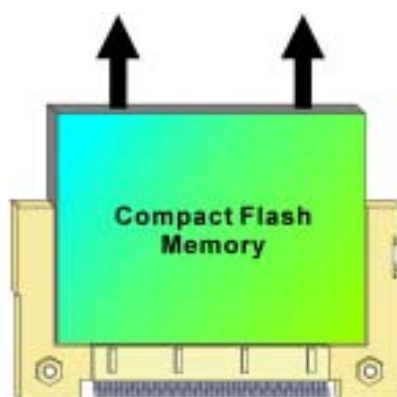
Figure 3-6: How to Install Compact Flash Memory (2)

3.4 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 3-7: How to Change CPU

3.5 Installing the Fan Heatsink

Use the following instructions for installing the fan heatsink:

1. The heatsink has a thermal interface material attached to the bottom, shown in Figure 3-10. Do not damage the thermal interface material while installing.

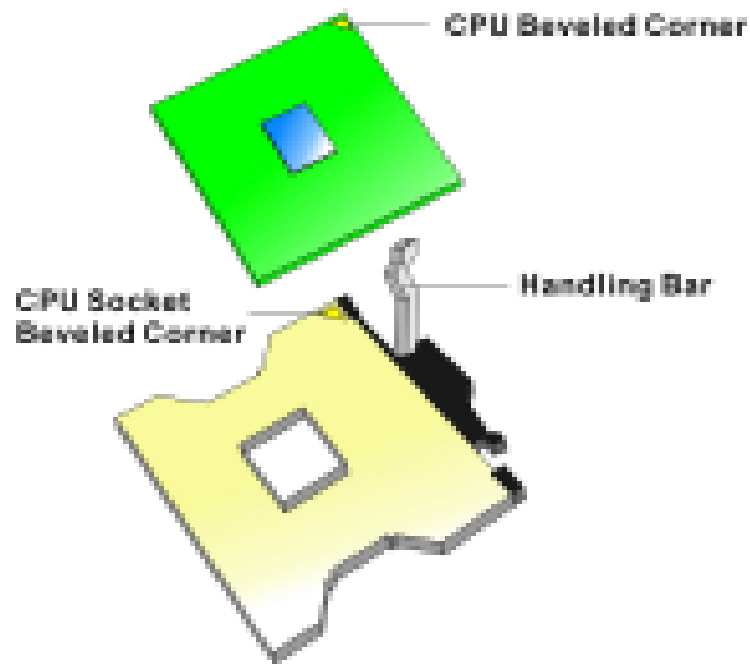2. Align the fan heatsink and slip assembly (A in Figure 3-9) with the retention mechanism (the fan heatsink is symmetrical) and place it on the processor (as shown in Figure 3-10). Allow the heatsink base to compress (without rotating or twisting) the thermal interface material over the surface of the processor's integrated heat spreader.

3. With the clip levers (C in Figure 3-9) in the upward position, push down on all four clip frame corners (D in Figure 3-9) to secure the clip frame latches (E in Figure 3-9) to the retention mechanism hooks (F in Figure 3-9), as shown in Figure 3-11.

>   *Note:*   ***Make sure the processor fan cable is free from any obstruction and is not trapped under slip frame (B in Figure 3-9)***

4. Close the clips levers in the opposite direction, one at a time (levers require force to be completely closed), as shown in Figure 3-12a, in the same time, hold the topside of th fan heatsink with your other hand, please refer to Figure 3-12b.

>   *Note:*   ***It is important to prohibit the heatsink from rotate or twist on the processor's integrated heat spreader. Securing the fan heatsink while closing the clip levers will prevent the thermal interface material from damage and the processor will operate correctly.***

5. Close the clip lever (2 in Figure 3-12c), while holding the topside of the fan heatsink with your other hand (B in Figure 3-12c).

6. 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.

7. Lastly, connect the processor fan cable to the motherboard fan power header (Figure 3-13). Consult the motherboard manual to determine the correct fan header to use.

A = Fan Heatsink and Clip Assembly
(Shown with Clip Frame integrated)
B = Clip Frame
C = Clip Levers
D = Clip Frame Corners
E = Clip Frame Latch
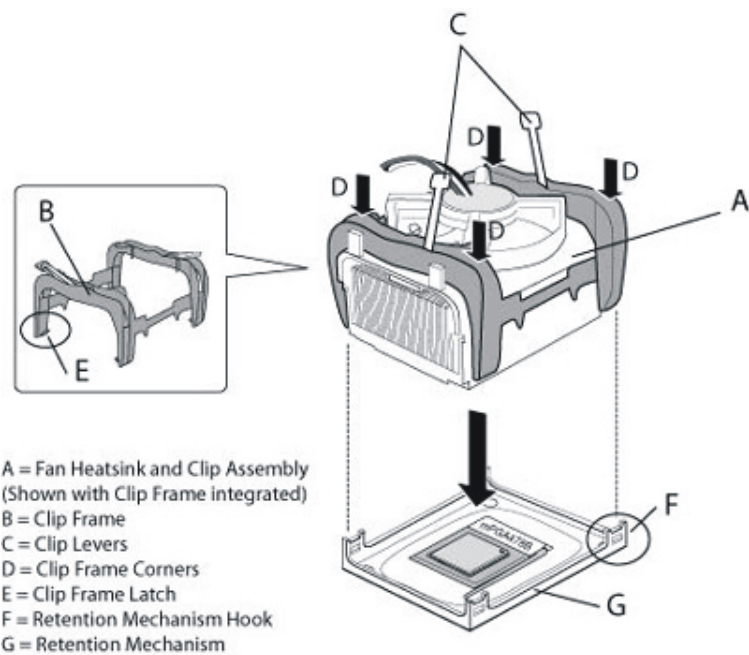F = Retention Mechanism Hook
G = Retention Mechanism

Figure 3-9: Installing the Fan Heatsink (1)
Fan Heatsink and Clip Assembly Terminology
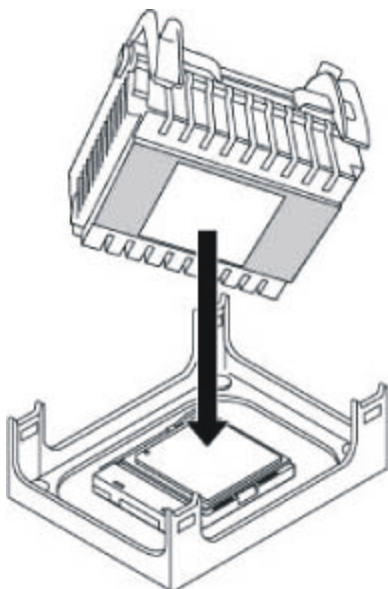
Figure 3-10: Installing the Fan Heatsink (2)
Align Fan Heatsink and Clip Assembly
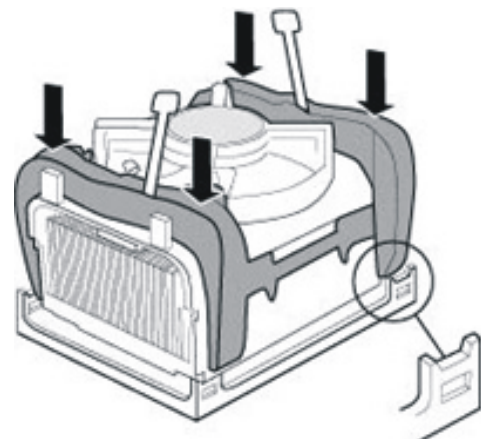
Figure 3-11: Installing the Fan Heatsink (3)
Push Down Clip Frame Corners to
Secure the Retention Mechanism Hooks

**Figure 3-12a: Installing the Fan Heatsink (4)
Close Clip Levers. One at a Time**
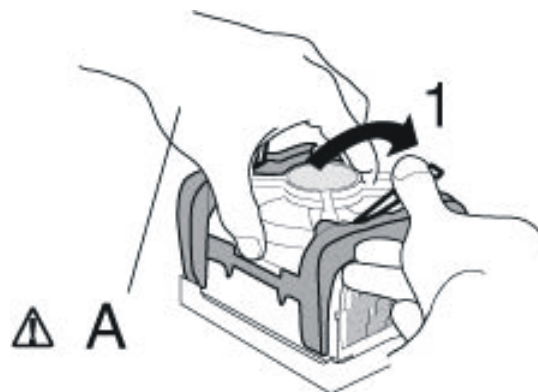
**Figure 3-12b: Installing the Fan Heatsink (5)
Close Clip Lever (1). While Holding
the Topside of Fan Heatsink (A)**
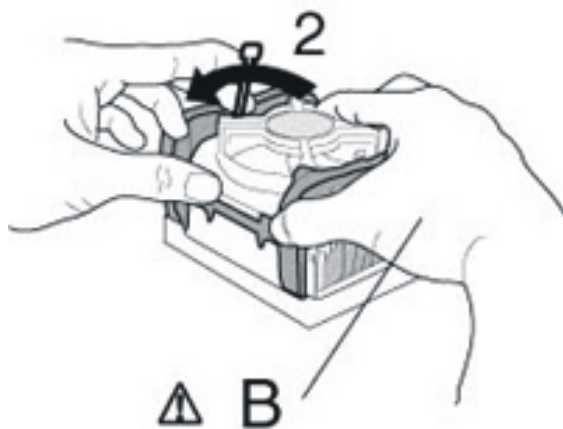
**Figure 3-12c: Installing the Fan Heatsink (6)
Close Clip Lever (2), while Holding
the Topside of Fan Heatsink (B)**
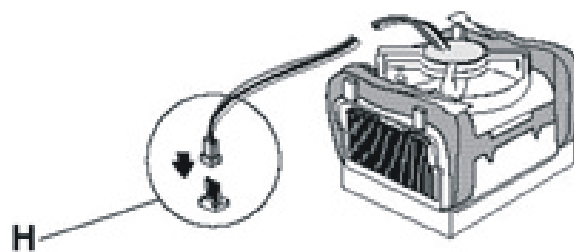
**Figure 3-13: Installing the Fan Heatsink (7)
Connect Fan Cable to the Main board**

This concludes chapter 3. The next chapter covers Award BIOS Setup.

Chapter 4
Award BIOS Setup

This chapter explains how to use the BIOS Setup program for the EBC 575. The current BIOS setup pictures in the chapter is for reference only, which may change by the BIOS modification in the future. User can download any major updated items or reversion from NEXCOM web site http://www.nexcom.com.tw. If any unclear message occurs, please contact NEXCOM customer service representative for help or log onto http://www.nexcom.com.tw/contact/contact.htm.

4.1 About the BIOS

The BIOS (Basic Input and Output System) Setup program is a menu driven utility that enables you to make changes to the system configuration and tailor your system to suit your individual work needs. It is a ROM-based configuration utility that displays the system's configuration status and provides you with a tool to set system parameters. These parameters are stored in non-volatile battery-backed-up CMOS RAM that saves this information even when the power is turned off. When the system is turned back on, the system is configured with the values found in CMOS.

With easy-to-use pull down menus, you can configure such items as:

♦ Hard drives, diskette drives, and peripherals

♦ Video display type and display options

♦ Password protection from unauthorized use

♦ Power management features

The settings made in the Setup program intimately affect how the computer performs. It is important, therefore, first try to understand all the Setup options, and second, to make settings appropriate for the way you use the computer.

4.2 When to Run BIOS

This program should be executed under the following conditions:

♦ When changing the system configuration

♦ When a configuration error is detected by the system and you are prompted to make changes to the Setup program

♦ When resetting the system clock

♦ When setting the CPU clock speed so that it automatically runs either fast or slow

♦ When redefining the communication ports to prevent any conflicts

♦ When making changes to the Power Management configuration

♦ When changing the password or making other changes to the security setup

Normally, CMOS setup is needed when the system hardware is not consistent with the information contained in the CMOS RAM, whenever the CMOS RAM has lost power, or the system features need to be changed.

4.3 Entering Setup

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines. These routines perform various diagnostic checks; if an error is encountered, the error will be reported in one of two different ways:

♦   If the error occurs before the display device is initialized, a series of beeps will be transmitted.

♦   If the error occurs after the display device is initialized, the screen will display the error message.

Powering on the computer and immediately pressing <**Del**> allows you to enter Setup. Another way to enter Setup is to power on the computer and wait for the following message during the POST:

<div align="center">

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

</div>

Press the <**Del**> key or press the <**Ctrl**>, <**Alt**>, and <**Esc**> keys to enter Setup:

4.4 The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 4-1) 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.
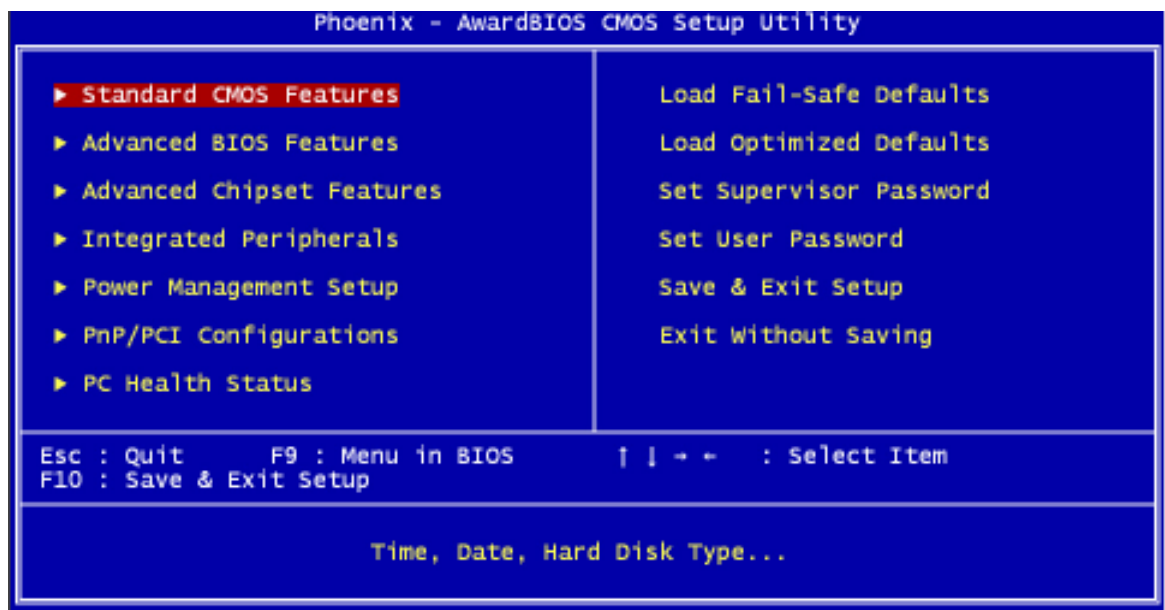

Figure 4-1: BIOS Setup Utility Main Menu

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 Voltages Value.

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 designed 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 password.

Save & Exit Setup

Saves CMOS value changes to CMOS and exits setup

Exit Without Saving

Ignores all CMOS value changes and exits setup.

4.5 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**>.

4.6 Control Keys

The table below lists the keys that help you navigate the setup program.
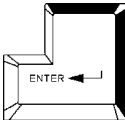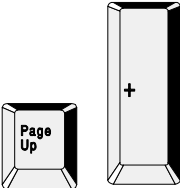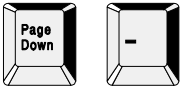
Up arrow	↑	Move to previous item
Down arrow	↓	Move to next item
Left arrow	←	Move to the item to the left
Right arrow	→	Move to the item to the right
Esc key	Esc	*Main Menu:* Quit without saving changes to CMOS *Status/Option Page Setup Menus*: Exit current page and return to Main Menu.
Enter Key	ENTER	Select or Accept an Item
PgUp/plus key	Page Up / +	Increase the numeric value or make changes
PgDn/minus key	Page Down / –	Decrease the numeric value or make changes
F1 key	F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2/Shift + F2 key	Shift / F2	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F5 key	F5	Restore the previous CMOS value from CMOS (only for Option Page Setup Menu)
F6 key	F6	Load the default CMOS value from BIOS default table (only for Option Page Setup Menu)
F7 key	F7	Load the Setup default value (only for Option Page Setup Menu)
F9 Key	F9	Menu in BIOS
F10 key	F10	Save all the CMOS changes (only for Main Menu)

Table 4-1: BIOS Control Keys

4.7 Standard CMOS Features

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

```
             Phoenix - AwardBIOS CMOS Setup Utility
                     Standard CMOS Features

   Date (mm:dd:yy)          Mon, Apr 14 2003        Item Help
   Time (hh:mm:ss)          12 : 29 : 10
                                                 Menu Level    ▶
 ▶ IDE Primary Master
 ▶ IDE Primary Slave       [ None]               Change the day, month,
 ▶ IDE Secondary Master                          year and century
 ▶ IDE Secondary Slave

   Drive A                 [1.44M, 3.5 in.]
   Floppy 3 Mode Support   [Disabled]

   Video                   [EGA/VGA]
   Halt On                 [All , But Keyboard]

   Base Memory                  640K
   Extended Memory            65472K
   Total Memory                1024K


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

Figure 4-2: BIOS - Standard CMOS Features

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

Date (mm:dd:yy)

The BIOS determines the day of the week from the other data information. This field is for information only. Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss)

The time format is based on the 24-hour military time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to the desired field. Press the PgUp or Pg Dn key to increment the setting, or type the desired value into the field.

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:

```
                Phoenix - AwardBIOS CMOS Setup Utility
                          IDE Primary Slave

    IDE HDD Auto-Detection      [Press Enter]          Item Help

    IDE Primary Slave           [Auto]           Menu Level    ▶▶
    Access Mode                 [Auto]
                                                 To auto-detect the
    Capacity                    0 MB             HDD's size, head... on
                                                 this channel
    Cylinder                    0
    Head                        0
    Precomp                     0
    Landing Zone                0
    Sector                      0



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

Figure 4-3: BIOS – IDE Primary Master

IDD HDD Auto Detection

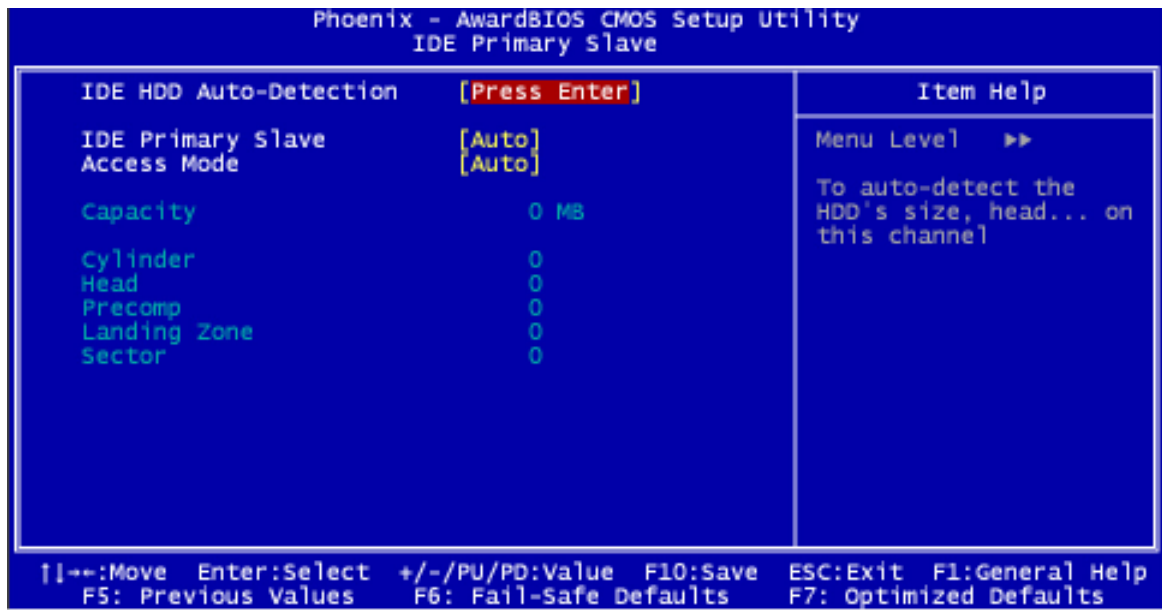Press <**Enter**> while this item is highlighted if you want the Setup Utility to automatically detect and configure a hard disk drive on the IDE channel.

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 one that should be used for your hard drive, do not accept them. Press <**N**> key to reject the values and enter the correct one 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:

- ♦   Capacity   Approximate hard disk drive capacity
- ♦   Cylinder   Number of cylinders
- ♦   Head   Number of heads
- ♦   Precomp   Write pre-compensation cylinder
- ♦   Landing Zone   Landing zone
- ♦   Sector   Number of sectors

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

Select this field to the type of floppy disk drive installed in your system. The choices are:

♦ None   No floppy drive installed

♦ 360K, 5.25 in   5-1/4 inch PC type standard drive; 360 kilobyte capacity

♦ 1. 2M, 5.25 in   5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity

♦ 720K, 3.5 in   3-1/2 inch double-sided drive; 720 kilobyte capacity

♦ 1.44M, 3.5 in   3-1/2 inch double-sided drive; 1.44 megabyte capacity

♦ 2. 88M, 3.5 in   3-1/2 inch double-sided drive; 2.88 megabyte capacity

Note: The None option could be used for diskless workstations.

Floppy 3 Mode Support

Floppy 3 mode refers to 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 BGA or higher resolution card, choose the EGA/VGA option. The options are:

♦ EGA/VGA   Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA or PGA monitor adapters

♦ CGA40   Color Graphics Adapter, power up in 40 column mode

♦ CGA80   Color Graphics Adapter, power up in 80 column mode

♦ MONO   Monochrome adapter, includes high resolution monochrome adapters

Halt On

During the Power-On Self-Test (POST), the computer stops if the BIOS detect a hardware error. This setting determines which type of error will cause the system to halt during boot. The options are:

♦ All Error: Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.

♦ No Errors: The system boot will not stop for any error that may be detected.

♦ All, But Keyboard: The system boot will not stop for a keyboard error, but it will stop for all others.

♦ All, But Diskette: The system boot will not stop for a disk error, but it will stop for all others.

♦ All, But Disk/Key: The system boot will not stop for a keyboard or disk error, but it will stop for all others.

Base/Extended/Total Memory

This category is display-only. The contents are determined by the POST (Power-On Self-Test) of the BIOS. You cannot make changes to these fields.

♦ Base Memory: Also called conventional memory. The DOS operating system and conventional applications use this area.

♦ Extended Memory: The POST of the BIOS will determine the amount of extended memory installed in the system.

♦ Total Memory: This option shows system memory capacity.

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

4.8 Advanced BIOS Features

Selecting Advanced BIOS Feature 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 to improve your system performance or set up system features according to your preference, without causing fatal errors to your system.
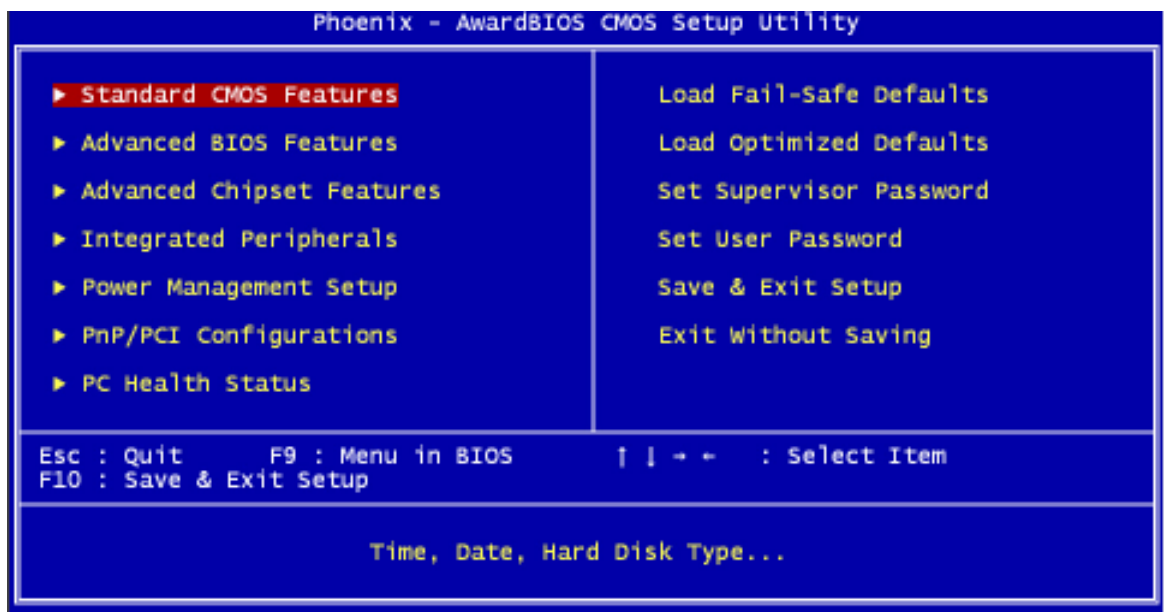

Figure 4-4: BIOS – Advanced BIOS Features

The following explains the options for each feature:

Virus Warning
Allow 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:

> **! WARNING !**
> **Disk boot sector is to be modified**
> **Type "Y" to accept write or "N" to abort write**
> **Award Software, Inc.**

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

Note: *This function is available only for DOS and other operating systems that do not trap INT13. For complete protection against viruses, install virus software in your operating system and update the virus definitions regularly.*
Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU L1 & L2 Cache
Cache memory is additional memory that is much faster than conventional DRAM (system memory). This BIOS feature is used to enable or disable the processor's Level 1 and Level 2 cache. Naturally, the default and recommended setting is Enabled.

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
Select Enabled to reduce the amount of time required to run the Power-On Self-Test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third Boot Device
BIOS attempts to load the operating system from the devices in the sequence selected. 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, and 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.

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
Toggle between On or Off to control the state of the NumLock key when the system boot. If On, the numeric keypad is in numeric mode. If Off, the numeric keypad is in cursor control mode.

Gate A20 Option

Gate A20 refers to the way the system addresses memory above 1MB (extended memory). This feature 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: Let system chipsets control Gate A20. The fast setting improves system speed, particularly with OS/2 and windows.

Typematic Rate Setting

If set to Enabled, enables you to set the Typematic Rate and Typematic Delay. When Disabled, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.

- Typematic Rate (Chars/Sec): When the typematic rate setting is Enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.

- Typematic Delay (Msec): 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, otherwise select Non-OS2 option.

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: Enable, Disable.

For using the S.M.A.R.T. feature you would require an operating system that supports the S.M.A.R.T. feature i.e. Windows 95 or higher.

Summary Screen Show

This item allows you to enable/ disable the summary screen. Summary screen means system configuration and PCI device listing. The Choices: Enabled, Disabled.

Spread Spectrum Modulated

This item allows you to enable/disable the spread spectrum modulate to reduce EMI. The choices are Enabled and Disabled.

After you have made your selections in the Advanced BIOS Features setup, press <**ESC**> to go back to the main screen.

4.9 Advanced Chipset Features

Since the features in this section are related to the chipset in the CPU board and all are optimized, you are not recommended to change the default settings in the setup table, unless you understand the chipset features.

This section allows you to configure the system based on the specific features of the installed   chipset. This chipset manage bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

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

Selecting Advanced Chipset Features on the main program screen displays this menu:
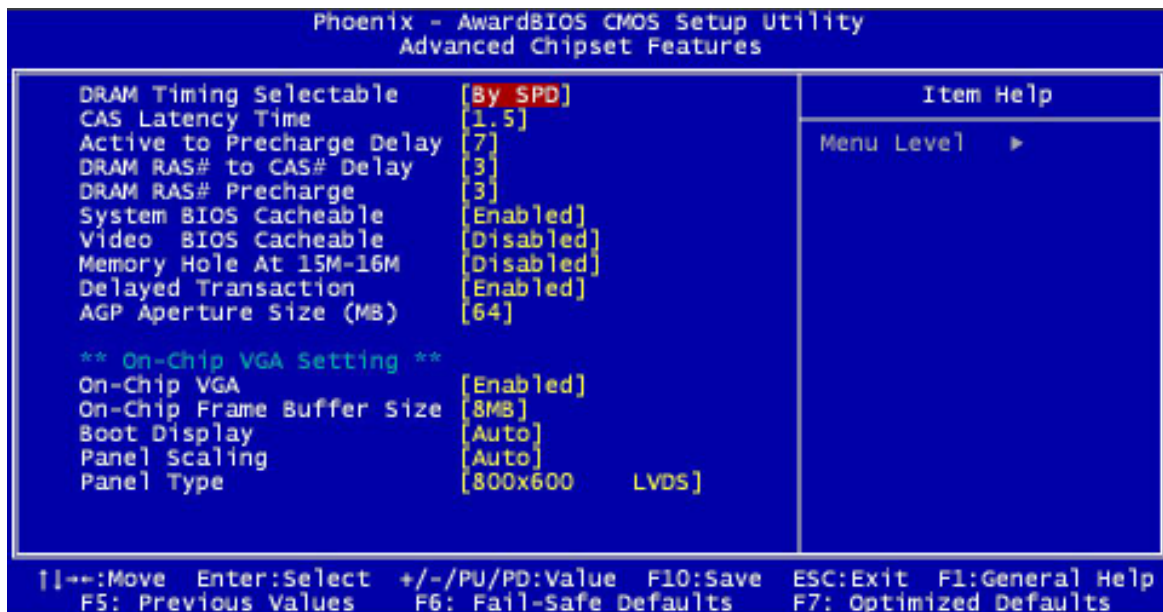
Figure 4-5: BIOS – Advanced Chipset Features

DRAM Timing Selectable

The choices are: Manual, and By SPD. The option "By SPD" enables the system to automatically set the SDRAM timing by Serial Presence Detect (SPD). 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. Select "Manual" allows users manually set the following four timing parameters for the system memory.

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. The choices are: 1.5, 2, 2.5, 3.

Active to Precharge Delay

This item controls the number of DRAM clocks for TRAS. The choices: 5, 6, 7.

DRAM RAS# to CAS# Delay

This field let you insert a timing delay between the CAS and RAS strobe signals, used when DRAM is written to, read from, or refreshed. Fast gives faster performance; and slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The choices are: 2, 3.

DRAM RAS# Precharge

If an insufficient number of cycles is allowed for the RAS to accumulate its charge before DRAM refresh, the refresh may be incomplete and the DRAM may fail to retain data. Fast gives faster performance; and Slow gives more stable performance. This field applies only when synchronous DRAM is installed in the system. The choices are 2 and 3.

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.

AGP Aperture Size (MB)

This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. The available choices are: 4MB, 8MB, 16MB, 32MB, 64MB, 128MB and 256MB.

On-Chip VGA

By default, the On-Chip VGA or chipset-integrated VGA is Enabled.

On-Chip Frame Buffer Size

The On-Chip Frame Buffer Size can be set as 1MB or 8MB. This memory is shared with the system memory.

Boot Display

Boot Display determines the display output device where the system boots. The options are Auto, CRT and LVDS.

Panel Scaling

This field allows user to decide the panel scaling. The available choices are: Auto, on and off.

Panel Type

This field allows user to decide the LVDS panel resolution. The available choices are: 800 x 600, 1024 x 768, 1280 x 1024, 1400 x 1050, and 1600 x 1200

After you have made your selections in the Advanced Chipset Features setup, press <**ESC**> to go back to the main screen.
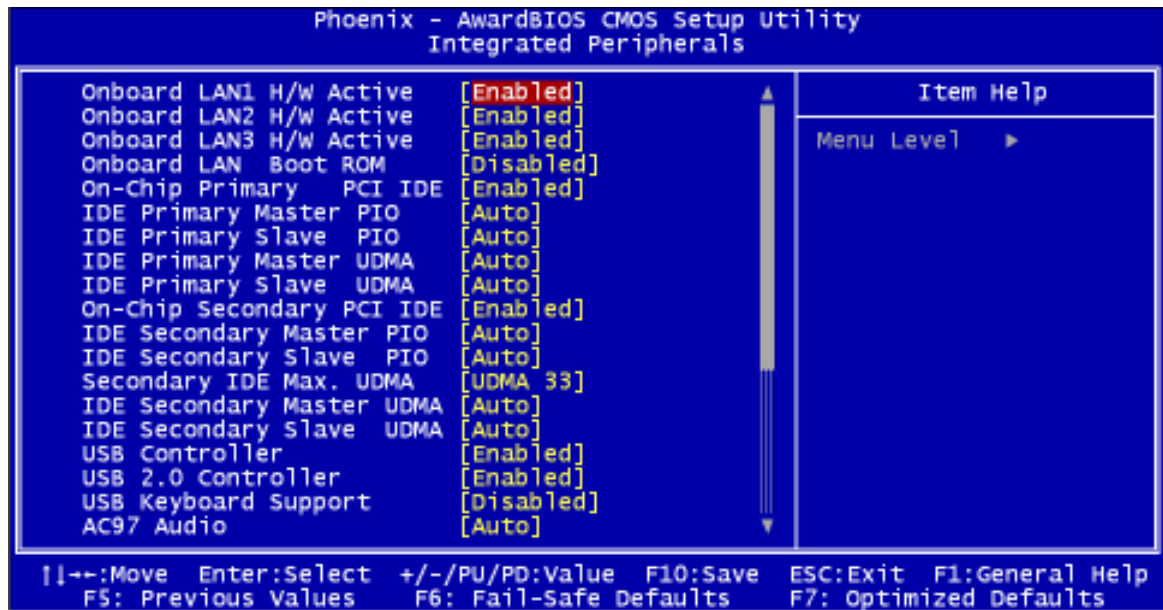
4.10 Integrated Peripherals

```
              Phoenix - AwardBIOS CMOS Setup Utility
                      Integrated Peripherals

   Onboard LAN1 H/W Active    [Enabled]      ▲   │    Item Help
   Onboard LAN2 H/W Active    [Enabled]          │
   Onboard LAN3 H/W Active    [Enabled]          │ Menu Level    ▶
   Onboard LAN  Boot ROM      [Disabled]         │
   On-Chip Primary   PCI IDE  [Enabled]          │
   IDE Primary Master PIO     [Auto]             │
   IDE Primary Slave  PIO     [Auto]             │
   IDE Primary Master UDMA    [Auto]             │
   IDE Primary Slave  UDMA    [Auto]             │
   On-Chip Secondary PCI IDE  [Enabled]          │
   IDE Secondary Master PIO   [Auto]             │
   IDE Secondary Slave  PIO   [Auto]             │
   Secondary IDE Max. UDMA    [UDMA 33]          │
   IDE Secondary Master UDMA  [Auto]             │
   IDE Secondary Slave  UDMA  [Auto]             │
   USB Controller             [Enabled]          │
   USB 2.0 Controller         [Enabled]          │
   USB Keyboard Support       [Disabled]         │
   AC97 Audio                 [Auto]         ▼   │

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

Figure 4-6: BIOS – Integrated Peripherals

Onboard LAN1/2/3 H/W Active
Enables and disables the onboard LAN modules.

Onboard LAN Boot ROM
Decides whether to invoke the boot ROM of the onboard LAN chip. The available choices are LAN1, LAN2, LAN3 and Disabled.

On-Chip Primary/Secondary PCI IDE
The system chipset contains a PCI IDE interface with support for an IDE channel. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface.

IDE Primary/Secondary Master/Slave PIO
The four IDE PIC (Programmable Input/Output) fields let you set a PIC 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, and Mode 4.

IDE Primary/Secondary Master/Slave UDMA
Ultra DMA 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, select Auto to enable BIOS support. The choices are Auto, and Disabled.

USB Controller

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

USB 2.0 Controller

Select Enabled 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 OS operating systems such as DOS.

AC'97 Audio

Selecting Auto will enable the AC'97 audio if it is detected on-board.

AC'97 Modem

Selecting Auto will enable the AC'97 modem, if it is detected on-board.

Init Display First

This feature allows you to select whether to boot the system using the on-board AGP graphics card or the PCI graphics card.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optional number of block read/write per sector the drive can support. The available choices are Enabled, Disabled.

Power ON Function

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

KB Power ON Password

Set a desired password here if user selects "Password" for the power on function. When the system is in soft-off mode, suspend to RAM or suspend to HDD, entering the correct password to start the system.

Hot Key Power ON

Select a desired hot key if user selects "Hot KEY" for the power on function. When the system is in soft-off mode, suspend to RAM or suspend to HDD, entering the correct hot key to start the system. The choices are: Ctrl + F1, Ctrl + F2, ….. Ctrl + F12.

Onboard FDC Controller

This feature allows you to enable or disable the onboard floppy drive controller. If you are using a floppy drive connected to the motherboard's built-in floppy drive controller, leave it at the default setting of Enabled. But if you are using an add-on floppy drive controller card or if you are not using any floppy drives at all, set it to Disabled to save an IRQ. Other devices can then use the free IRQ.

Onboard Serial Ports (1, 2)

This feature allows you to manually select the I/O address and IRQ for the first and second serial ports. It is recommended that you leave it as Auto so that the BIOS can select the best settings for it. But if you need a particular I/O port or IRQ that's been taken up by this serial port, you can manually select an alternative I/O port or IRQ for it. You can also disable this serial port if you do not need to use it. Doing so frees up the I/O port and IRQ used by this serial port. Those resources can then be reallocated for other devices to use.

UART Mode Select

Select an operating mode for the serial port.
The choices are: Normal, IrDA, ASKIR, SCR.

UR2 Duplex Mode

In an infrared port mode, this field appears. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time. Select the value required by the IR device connected to the IR port.

Onboard Parallel Port

This feature allows you to select the I/O address and IRQ for the onboard parallel port. The default I/O address of 378h and IRQ of 7 should work well in most cases. Unless you have a problem with the parallel port, you should leave it at the default settings. The choices: 378/IRQ7, 278/IRQ5, 3BC/IRQ7, and Disabled.

Parallel Port Mode

Select an operating mode for the onboard parallel (printer) port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port) and ECP+EPP.

ECP Mode Use DMA

When the on-board parallel port is set to ECP mode, the parallel port can use DMA3 or DMA1.

After you have made your selections in the Integrated Peripherals setup, press the <**ESC**> key to go back to the main program screen.

4.11 Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

The power-saving modes can be controlled by timeouts. If the system is inactive for a time, the timeouts begin counting. If the inactivity continues so that the timeout period elapses, the system enters a power-saving mode. If any item in the list of Reload Global Timer Events is enabled, then any activity on that item will reset the timeout counters to zero.

If the system is suspended or has been powered down by software, it can be resumed by a wake up call that is generated by incoming traffic to a modem, a LAN card, a PCI card, or a fixed alarm on the system real-time clock.

Selecting Power Management Setup on the main program screen displays this menu:

Figure 4-7: BIOS – Power Management Setup

```
          Phoenix - AwardBIOS CMOS Setup Utility
                   Power Management Setup

   Soft-Off by PWR-BTTN     [Instant-Off]    ▲        Item Help
   PWRON After PwR-Fail      [Off]
   ACPI Function            [Enabled]             Menu Level    ►
   Power Management         [Min Saving]
   Video Off Method         [DPMS]
   Video Off In Suspend     [Yes]
   Suspend Type             [Stop Grant]
   MODEM Use IRQ            [NA]
   Suspend Mode              1 Hour
   HDD Power Down           15 Min
   Wake-Up by Onboard LAN/PCI[Enabled]
   Power On by Ring         [Enabled]
   Resume by Alarm          [Enabled]
    Date(of Month) Alarm    [ 0]
    Time(hh:mm:ss) Alarm      0 : 0 : 0

   ** Reload Global Timer Events **
   Primary IDE 0            [Disabled]
   Primary IDE 1            [Disabled]    ▼

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

Soft-Off by PWR-BTTN

This function can turn the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity. The choices are Delay 4 seconds, and Instant-Off.

PWRON After PWR-Fail

This setting specifies whether your system reboots after a power failure, when using ATX power supply. 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

The ACPI standard (Advanced Configuration and Interface power) allows the operating system directly to check the functions of energy saving and the PnP (Plug and Play) functionality. The ACPI functions are normally activated by the BIOS. The choices are: Enabled and Disabled.

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes: HDD Power Down, Doze Mode and Suspend Mode

♦ Min. Saving: Minimum power management.

♦ Max. Saving: Maximum power savings. Only Available for SL CPUs.

♦ User Define: Allows you to set each mode individually.

Video Off Method

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

♦ V/H SYNC+Blank: This selection will cause the system to turn off the vertical and horizontal synchro nization port and write blanks to the video buffer.

♦ Blank Screen: This option only writes blanks to the video buffer.

♦ DPMS Support: Select this option if your monitor supports the Display Power Management signaling (DPMS) standard of the Video Electronics Standard to select video power management values.

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 choices are 3, 4, 5, 7, 9, 10, 11, and NA.

Suspend Mode

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off. After the selected period of system inactivity, the chipset enters hardware suspend mode. Stopping the CPU clock will possibly cause other system devices to enter power management modes.

♦ Disabled: The system will never enter Suspend mode

♦ 1 Min ~ 1 Hour: Defines the continuous idle time before the system entering Suspend mode.

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.

♦ Disabled: HDD's motor will not be off.

♦ I Min ~ 15 Mins: Defines the continuous HDD idle time before the HDD entering power saving mode (motor off).

Power Supply Type

ATX supports a smarter power supply, which can turn on and off in response to port activity and software control. Select ATX mode enable you to set soft off type and state after power failure.

State After Power Failure

This field determines the state that your PC returns to after a power failure. If set to Off, the PC will not boot after a power failure. If set to On, the PC will restart after a power failure.

PM Control by APM

Power Management Control by Advanced Power Management. Enables and disables APM. When enabled, an APM device activate enhanced maximum Power Saving mode and stop the CPU internal clock.

Video Off Option

This option defines if the video is powered down when the system turns into suspend mode.

♦   Always on: System BIOS will never turn off the screen

♦   Suspend => Off: Screen off when system is in SUSPEND mode

♦   All mode => Off: Screen off when system is in DOZE, STANDBY or SUSPEND mode

HDD Power Down

After the selected period of drive inactivity, the hard disk drive powers down while all other devices remain active.

Wake-Up by Onboard LAN/PCI

When the system enters a Soft-off mode (Standby power exist but system is not working), it will wake up system when specific signals occurred. The BIOS monitors the system for "activity" to determine when to enable power management.

If you enable this feature, the computer specifies that any signal noticed on the LAN and PCI (Peripheral Component Interconnect) bus channel must make go out from the hibernation state. The choices: Enabled, Disabled.

Power On by Ring

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state. The choices: Enabled, Disabled.

Resume by Alarm

When enabled, you can set the data and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode. The choices are Enabled, and Disabled. If you enabled this function, set the date and time for the followings.

Reload Global Timer Events

Primary IDE 0
Primary IDE 1
Secondary IDE 1
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 are Enabled, and Disabled.

After you have made your selections in the Power Management setup, press the <**ESC**> key to go back to the main program screen.

4.12 PnP/PCI Configurations

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

Selecting PnP/PCI Configurations on the main program screen displays this menu:

Figure 4-8: BIOS – PnP/PCI Configurations
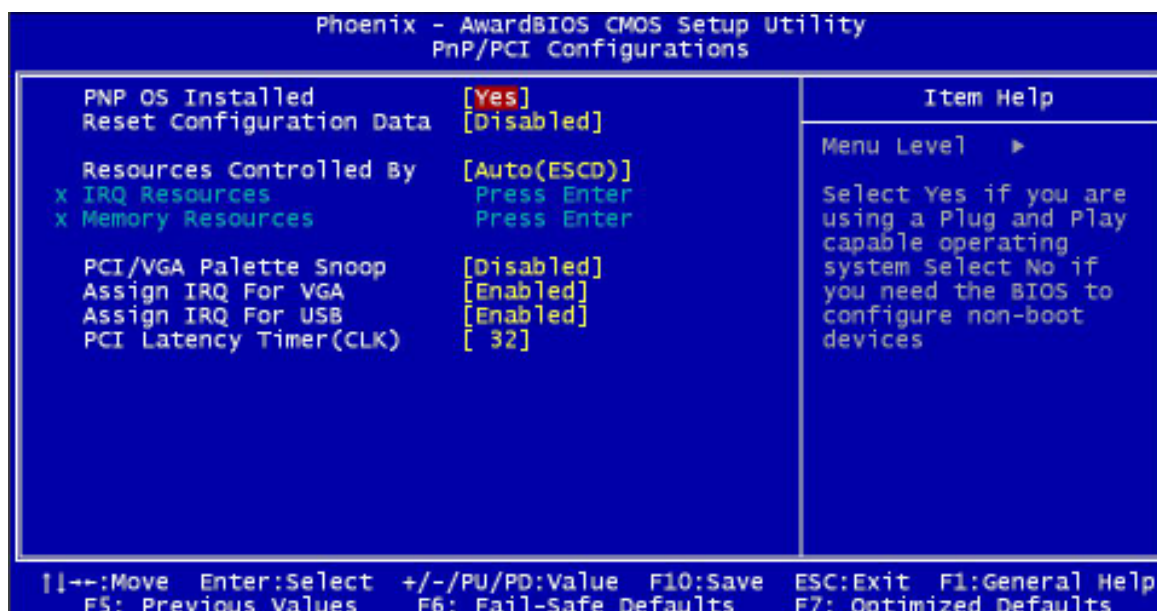
PNP OS Installed

Select Yes if the system operating environment is Plug and Play aware (e.g. Windows 95 and up). The available choices are: Yes and No.

> *Note:* **BIOS will automatically disable all PnP resources except the boot device card when you select Yes on Non-PnP operating system.**

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 are Enabled and 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 going into each of the submenus that follows this field. The choices are Auto (ESCD) and Manual.

IRQ Resources

When User select Manual for Resource Controlled, this setting allow the user to specify what IRQ will be assigned to PCI devices in the chosen slot. Options available: Auto, 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15.

Memory Resource

Memory length can be reserved as 8 KB, 16 KB, 32 KB or 64 KB and its address can be selected from C800 to DC00. Reserved memory address can not be modified when "Resource Controlled" is Auto.

PCI/VGA Palette Snoop

This setting is used only to solve the visualization problems with dedicated MPEG decompression cards. In such specific case, setup the voice on Enabled to allow the BIOS to monitor the visualization passages between the principal card and the card of decodes. The default setting is Disabled.

Assign IRQ for VGA

Enable this setting assigns an IRQ channel to the graphic card, allows the revival of the system from a hibernation state when activity is noticed on the graphic card. If you are not using your system's VGA controller, select Disabled to free the IRQ resource.

Assign IRQ for USB

Select Enabled if your system has a USB controller and you have one or more USB devices connected. If you are not using your systems USB controller, select Disabled to free the IRQ resource.

PCI Latency Timer (CLK)

The latency timer defines the minimum amount of time, in PCI clock cycles, that the bus master can retain the ownership of the bus. The Choices are from 0 to 255. The default value is 32.

After you have made your selections in the PnP/PCI Configuration setup, press the <**ESC**> key to go back to the main program screen.

4.13 PC Health Status

When main boards support hardware monitoring, this item lets you monitor the parameters for critical voltages, critical temperatures, and fan speeds.

Selecting PC Health Status on the main program screen displays this menu:
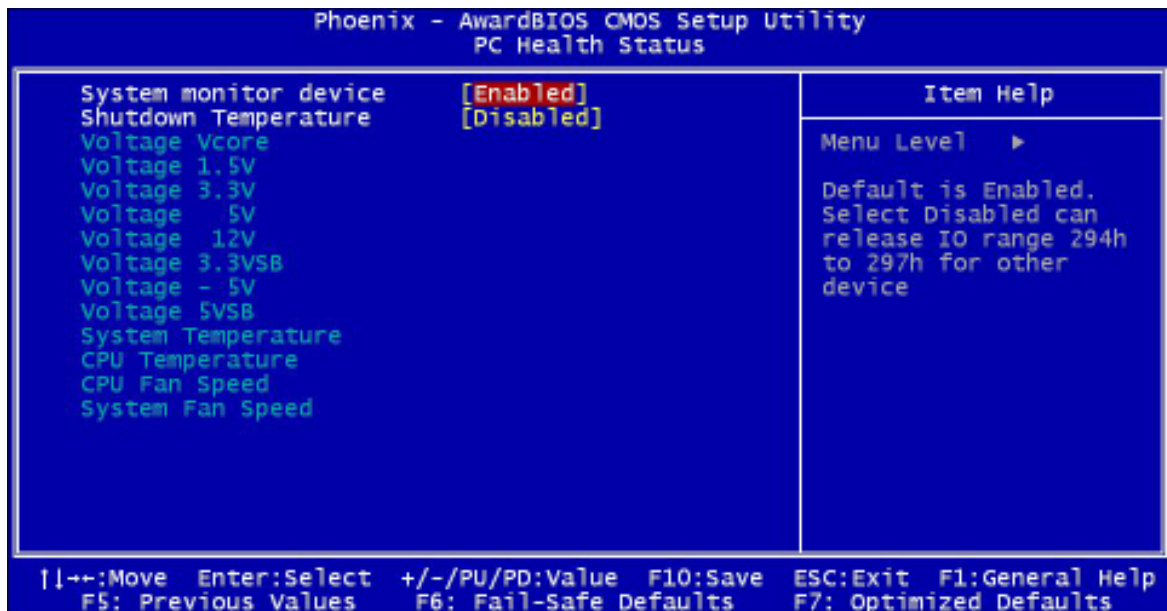
Figure 4-9: BIOS – PC Health Status

System Monitor Device
Enables/Disables the System Monitor device. When enabled, the system will monitor some system states such as temperature and power supplies.

Shutdown Temperature
The system will automatically shutdown when it reaches the temperature you selected. The choices are: 60ºC/140ºF, 65ºC/149ºF, 70ºC/158ºF, and disabled.

After you have made your selections in the PC Health Status setup, press the <**ESC**> key to go back to the main program screen.

4.14 Load Fail-Safe Defaults
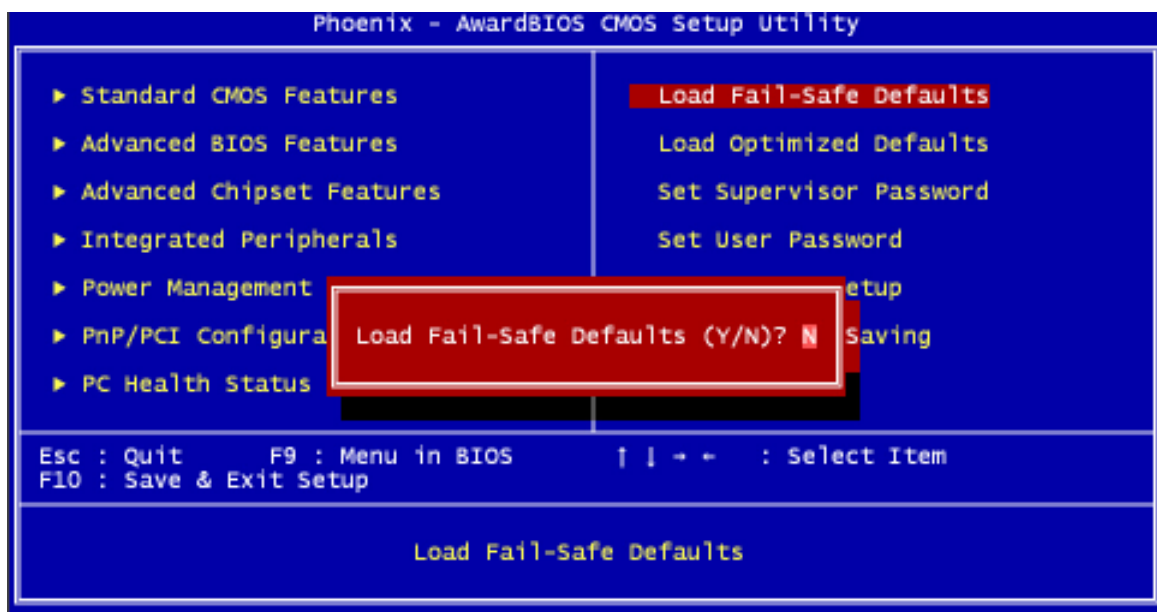
Figure 4-10: BIOS – Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the whole setup utility. Press the <**Y**> key and then <**Enter**> to install the defaults. Press the <**N**> key and then <**Enter**> to not install the defaults.

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

4.15 Load Optimized Defaults
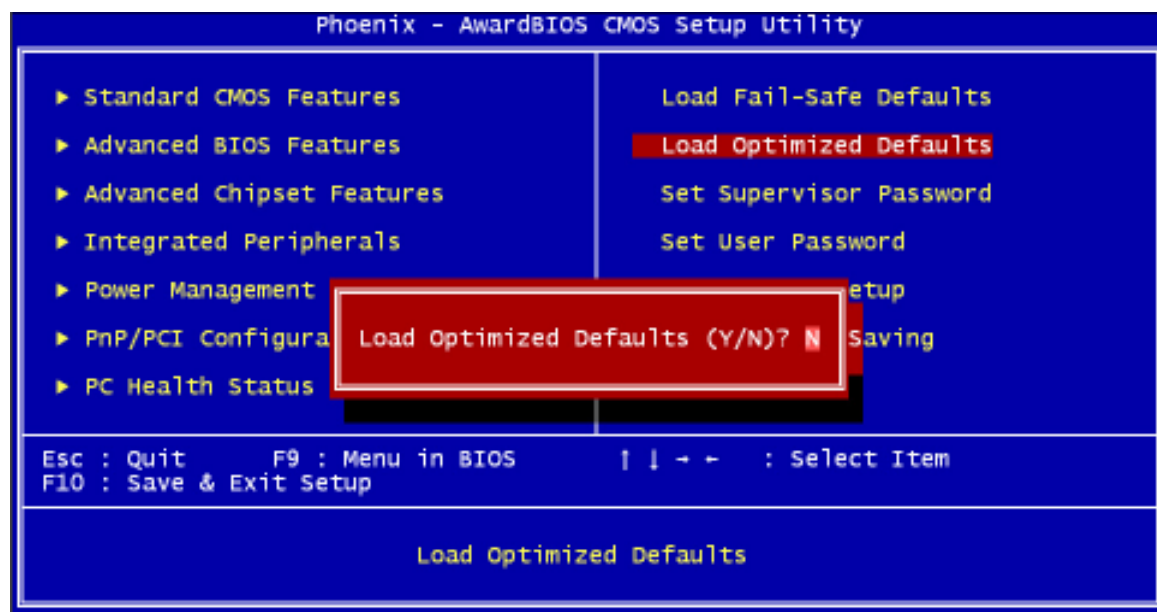
Figure 4-11: BIOS – Load Optimized Defaults

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.

4.16 Set Supervisor/User Password

The Supervisor/User Password utility sets the password. The main board 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 dialog box appears. A message appears confirming that the password has been disabled. If you have set supervisor and user Password, 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.*

4.17 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.

4.18 Exit Without Saving

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

This concludes Chapter 4. The next chapter covers drivers installing.
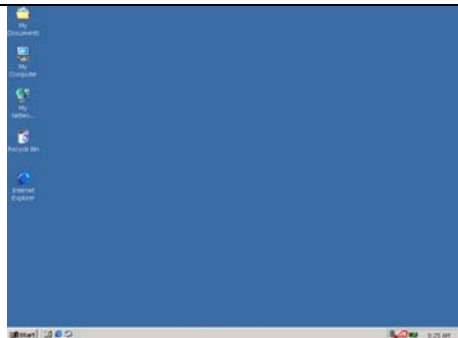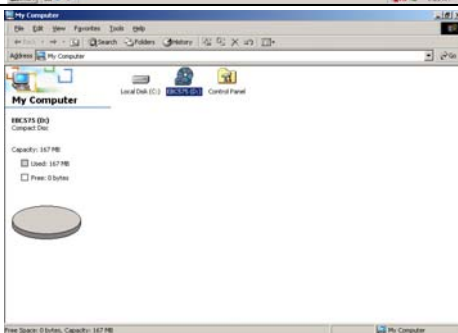
Chapter 5
Driver Installation

EBC575 Series comes with a bundled drivers CD that enables you to install Intel chipset, Intel Ata, VGA, LAN and Audio drivers. These drivers may be updated or re-versioned without any further notice. Please visit NEXCOM web site http://www.nexcom.com.tw frequently for new information.

Note: **The installation instructions in this manual are based on Windows 2000 operation system.**

5.1 Installation CD

Please follow the below instructions to find Intel chipset, VGA, USB and LAN drivers in the driver CD to implement installation.

Step 5.1.1 Place the Driver CD into your CD-ROM drive. Open My Computer on your desktop.	
Step 5.1.2 My computer menu appears. Double click your CD-ROM drive to open.	

5.2 Installing Drivers for EBC575
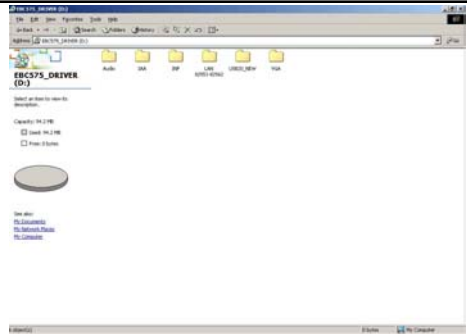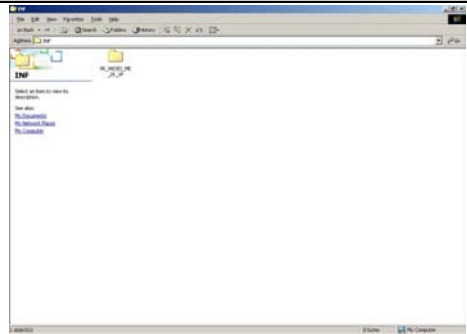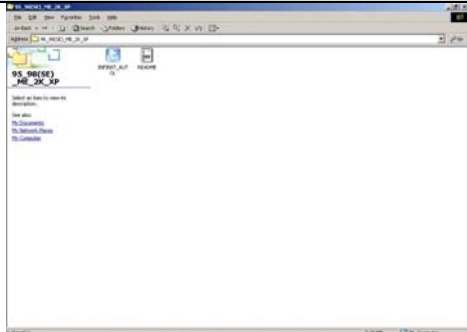
The following sections cover the drivers installation for the EBC575. Refer the following for the section numbers for each driver:
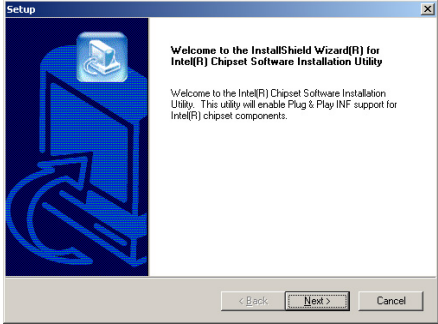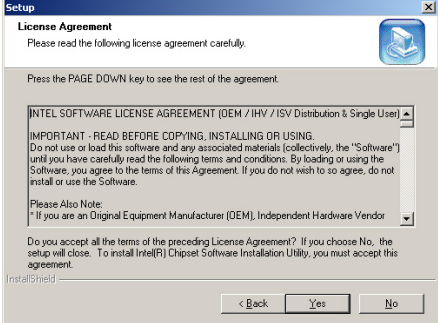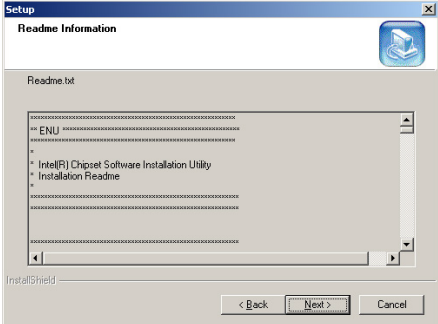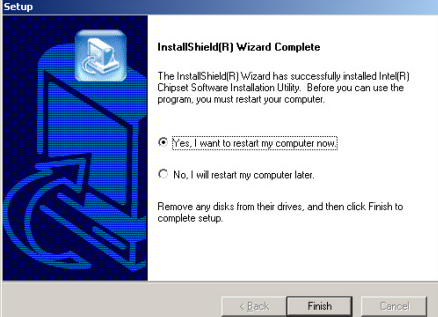
Intel Chipset	---	**5.3**
VGA	---	**5.4**
Intel ATA	---	**5.5**
Audio	---	**5.6**
USB	---	**5.7**
LAN	---	**5.8**

Note: *You should install the Intel chipset patch and then install Intel Ata, before installing other drivers. You may be prompted for your Windows Installation CD during setup.*

5.3 Installing Intel Chipset
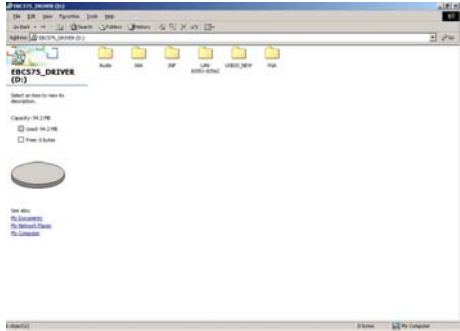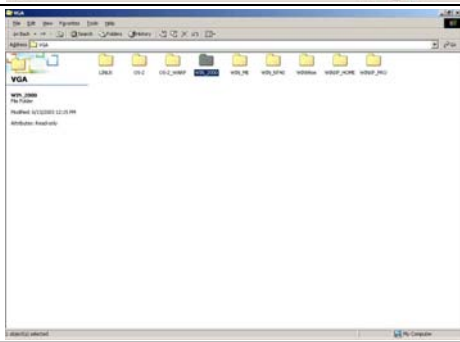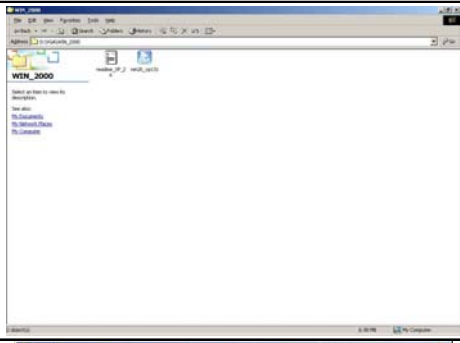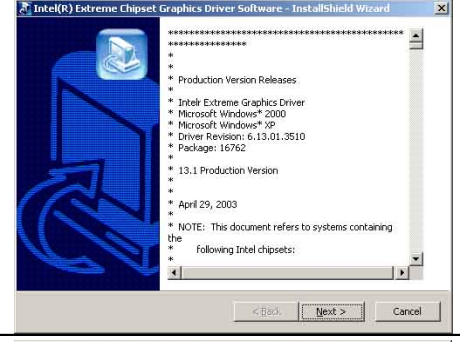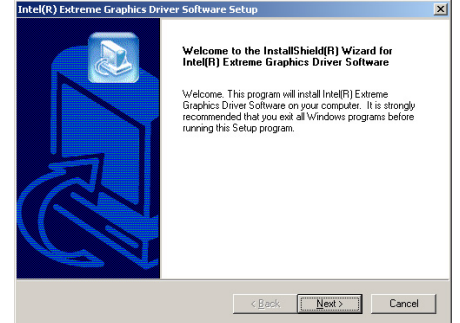
The chipset patch updates the chipset and enables user to adjust the advanced chipset components.
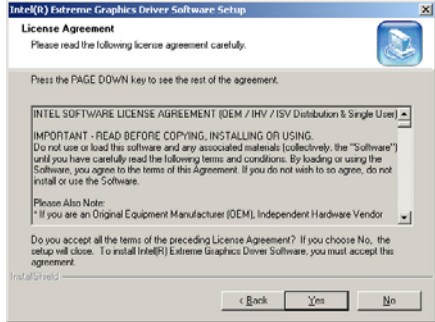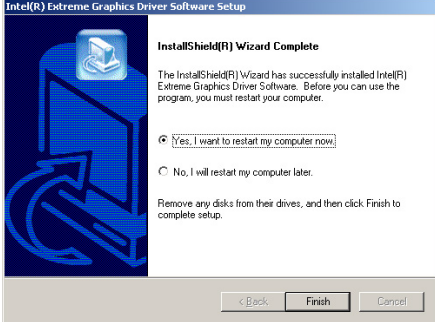
Step 5.3.1 Point to the **INF** folder. Double click to open it.	
Step 5.3.2 The INF folder opens; double click to open **95_98(SE)_ME_2K_XP** folder.	
Step 5.3.3 Double click to open the icon of **INFINST_AUTOL**; it will start to run the installation program.	

Step 5.3.4 The Welcome Screen appears, click **Next** button.	
Step 5.3.5 Read the License Agreement. If you accept it, click **Yes** to continue.	
Step 5.3.6 Read the readme file and click **Next** button to continue the installation process.	
Step 5.3.7 The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.	

5.4 Installing the On-board VGA
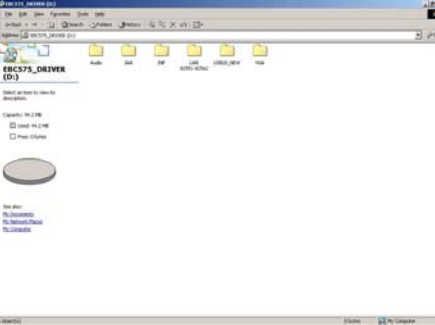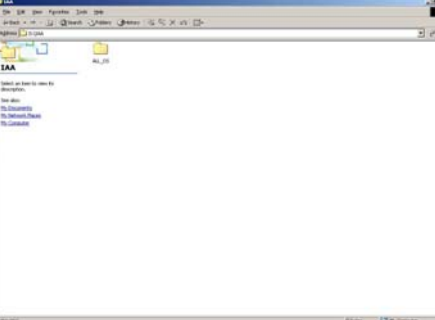
After installing Intel chipset, repeat steps 5.1.1 and 5.1.2 to open VGA folder.
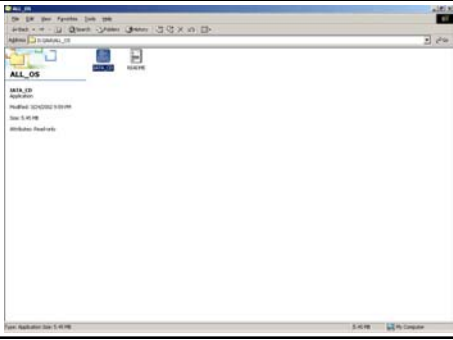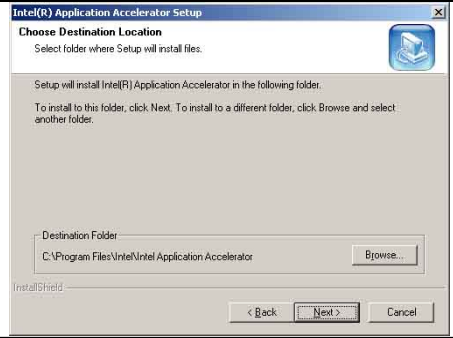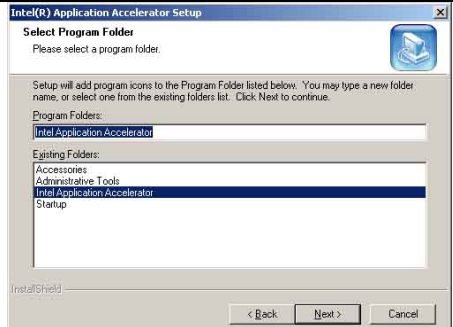
Step 5.4.1 Double click to open the **VGA** folder.	
Step 5.4.2 Point to the right folder according to your computer operation system. Double click to open the folder.	
Step 5.4.3 Double click on the win2k_xp131 icon to start the installation process.	
Step 5.4.4 The InstallShield Wizard starts, click **Next** button to continue.	
Step 5.4.5 The Welcome Screen appears. Click **Next** button to continue.	
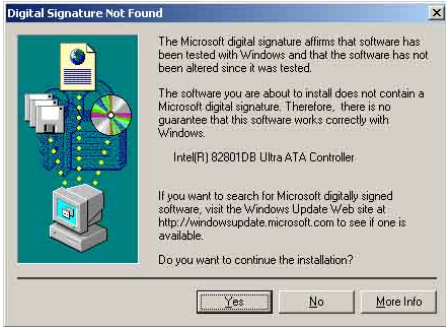
Step 5.4.6 Read the License Agreement. If you agree it, click **Yes** to continue.	
Step 5.4.7 The complete installation screen appears. Select **Yes, I want to restart my computer now**, and click **Finish** button to reboot your computer.	

5.5 Installing the Intel ATA Driver

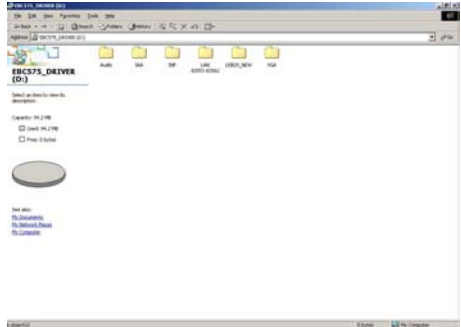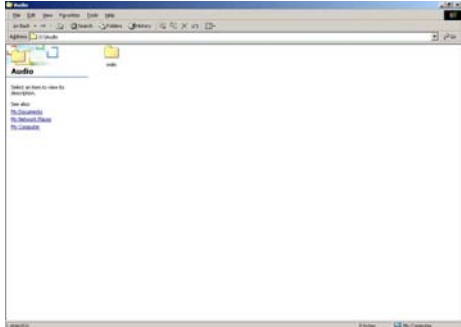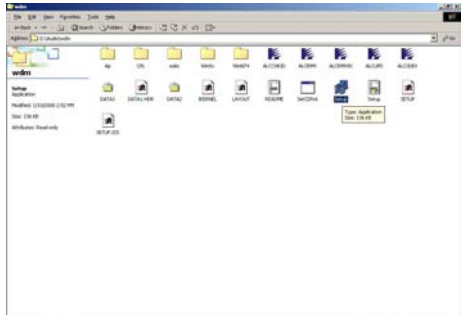For installing Intel ATA Driver, go back to computer desktop and open My computer.

Step 5.5.1 Point to the **IAA** folder. Double click to open it.	
Step 5.5.2 The IAA folder opens; double click to open **ALL_OS** folder.	

Step 5.5.3 Double click on **ITAT_CD** icon to start the installation process.	
Step 5.5.4 The welcome screen appears, click **Next** button to continue.	
Step 5.5.5 Read the License Agreement. If you accept it, click **Yes** to continue.	
Step 5.5.6 Point to the location where you like to install the driver. Click **Next** button to continue.	
Step 5.5.7 You may use the default folder name, Intel Application Accelerator (recommended) or name the folder. Click **Next** button to continue.	

Step 5.5.8 Click **Yes** button to continue the installation process. The setup program copies files into your computer.	
Step 5.5.9 The complete installation screen appears. Select **Yes, I want to restart my computer new**, and click **Finish** button to reboot your computer.	

5.6 Installing the Audio Driver
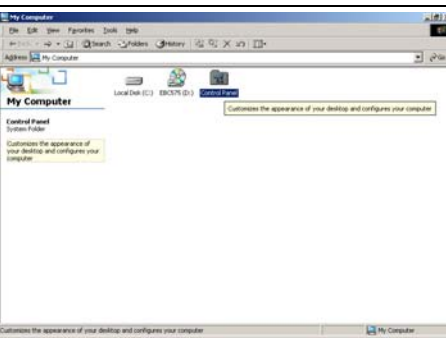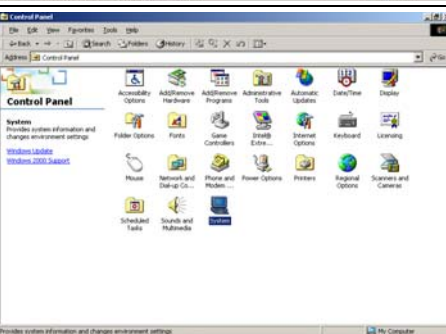
For installaing Audio driver for your EBC575, go back to computer desktop and open My computer.

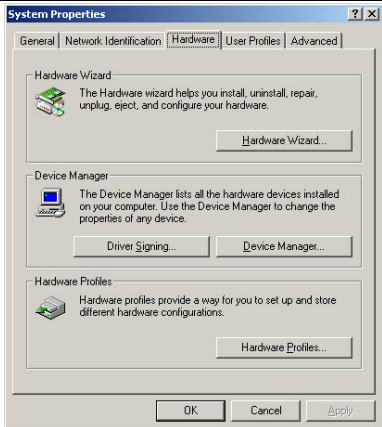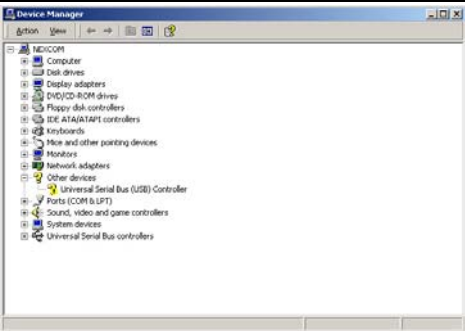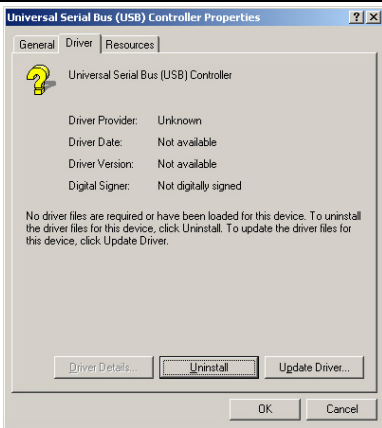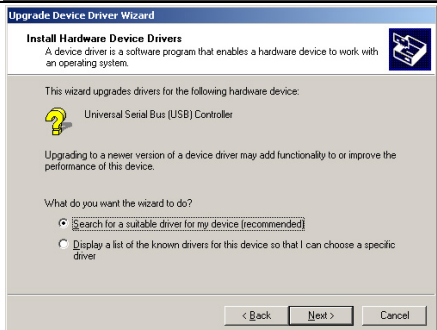|	
Step 5.6.1 Double click to open the **Audio** folder.	
Step 5.6.2 When the **wdm** folder appears, double click to open it.	
Step 5.6.3 Double click on the **Setup** icon to start the installation process.	
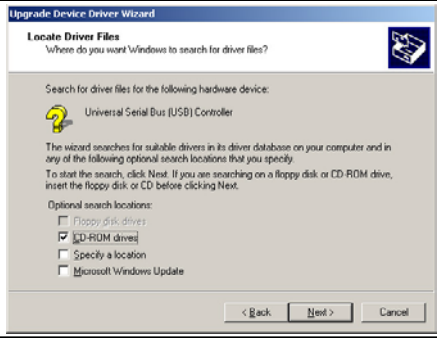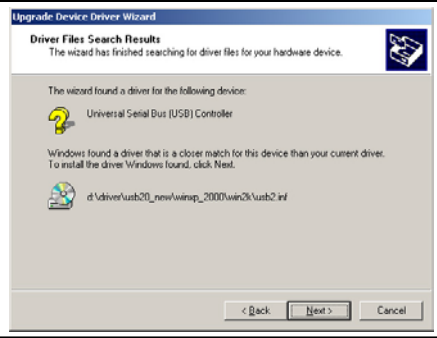
Step 5.6.4 The welcome screen appears, click **Next** button to continue.	
Step 5.6.5 Click **Yes** to continue the installation process. The setup program copies files into your computer.	
Step 5.6.6 The program updates your computer driver files, and you are prompted to restart your computer. Click **Yes, I want to restart my computer now** and then click **Finish** button to reboot.	

5.7 Installing the On-board USB

After installing the Audio driver, go back to computer desktop and open My computer.
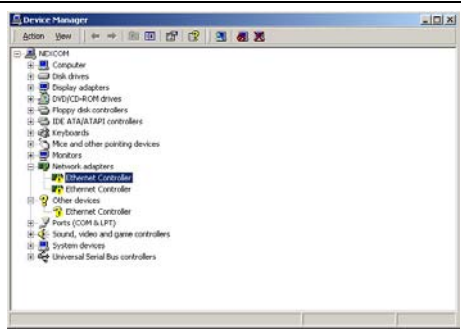
Step 5.7.1 Double click the **Control Panel** icon to open it.	
Step 5.7.2 Double click the **System** icon.	

Step 5.7.3 In the system properties dialog, click to open the **Hardware** page and then click **Device Manager** button on the page.	
Step 5.7.4 Click the Plus sign (+) next to Other devices. The system detects the **Universal Serial Bus (USB) Controller**. Double click it to view its properties.	
Step 5.7.5 Open Driver page in the Universal Serial Bus Controller properties dialog. Click **Update Driver** button to start the Upgrade Device Driver Wizard.	
Step 5.7.6 Click **Next** to continue the Upgrade Device Driver Wizard.	
Step 5.7.7 Check the radio button next to **Search for a suitable drive for my device (recommended)**, and then click Next to continue.	

Step 5.7.8 Click **CD-ROM drives** for system to search for driver. Click Next to continue.	
Step 5.7.9 The wizard found the driver for the USB device. Click **Next** button. The setup program will start coping files into your computer.	
Step 5.7.10 You have completed the upgrade device driver wizard. Click **Finish** button to return to your system.	

5.8 Installing the On-board LAN

After installing USB driver, open My Computer again and repeat step 5.7.1 and 5.7.2.

Step 5.8.1 Click the **Plus sign (+)** next to **Network Adapters**. The system will show the network Ethernet card you are suing. Double click on the Ethernet card.	

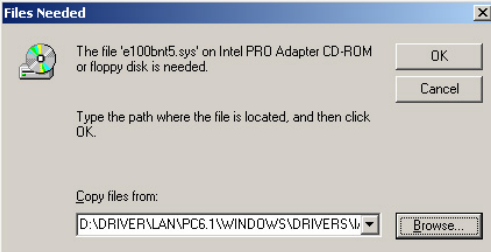|	
Step 5.8.2 Open the Driver page, and click **Update Driver** button to start the Upgrade Device Driver Wizard.	
Step 5.8.3 Click **Next** button to continue the Upgrade Device Driver Wizard.	
Step 5.8.4 Check the radio button next to **Search for a suitable driver for my device (recommended)**, and then click **Next** to continue.	
Step 5.8.5 Check **CD-ROM drives** for system to search for driver. Click **Next** button to continue.	
Step 5.8.6 The wizard found the driver for the Ethernet device. Click **Next** button.	

Step 5.8.7 Make sure you have the driver CD inserted in your CD-ROM, and Click **OK** button to continue the installation process.	*[Insert Disk dialog box screenshot]*
Step 5.8.8 Browse to the path: **D:\DRIVER\LAN\PC6.1\WINDOWS** **DRIVERS\IA32** where D: is your CD-ROM drive letter. Click **OK** button to continue.	*[Files Needed dialog box screenshot]*
Step 5.8.9 Click **Yes** button to continue the installation process. The setup program copies files into your computer.	*[Digital Signature Not Found dialog box screenshot]*
Step 5.8.10 You have completed the upgrade device driver wizard. Click **Finish** to return to your system.	*[Completing the Upgrade Device Driver Wizard screenshot]*
Step 5.8.11 **Repeat step 5.6.1 to 5.6.10**, until you have installed all three Ethernet drivers.	*[Device Manager screenshot]*

Appendix

Appendix A Connectors Pin Definition

The following tables list EBC575 connectors:

Connector	Function
J1	Panel Volt Select Connector
J2	LVDS Panel
J3	LVDS Panel
J4	AC'97 Connector
J6	PCI Slot
J7	IDE Active LED
J8	12V ATX Power Connector
J9	Fan Connector
J10	GPI/O
J11	ASK IR Connector
J12	Printer Connector
J14	USB 2.0
J15	Floppy Disk Connector
J16	COM2
J17	External VGA Connector
J22	Keyboard/Mouse Connector
J23	COM1
J25	CPU Type
J26	External KB/MouseConnector
J27	SMBus Connector
J28	Fan connector
J29	IDE Connector
CON1	ATX Power Connector
JP1	CMOS Clear
JP2	Reset Button
JP3	Power LED
JP4	CF Card
JP5	Power Button

Table A-1: EBC575 Connectors

J1: Panel Volt Select Connector

PIN No.	Description
*1-2	3.3 V
2-3	5 V

J2: LVDS Panel Connector

Pin No.	Description	Pin No.	Description
1	PANEL CLK	2	PANEL DATA
3	LCD_VDD	4	A4P
5	A7P	6	A4M
7	A7M	8	LCD_VDD
9	GND	10	A5P
11	CLK1P	12	A5M
13	CLK1M	14	GND
15	GND	16	BKL_Power
17	A6P	18	BKL_Power
19	A6M	20	GND

J3: LVDS Panel Connector (Master)

Pin No.	Description	Pin No.	Description
1	PANEL CLK	2	PANEL DATA
3	LCD_VDD	4	A0P
5	A3P	6	A0M
7	A3M	8	LCD_VDD
9	GND	10	A1P
11	CLK1P	12	A1M
13	CLK1M	14	GND
15	GND	16	BKL_Power
17	A2P	18	BKL_Power
19	A2M	20	GND

J4: AC'97 Connector

Pin No.	Description	Pin No.	Description
1	SDOUT	2	VCC5
3	RST#	4	GND
5	SYNC	6	+12V
7	SDIN0	8	SDIN1
9	BTCLK	10	SPKR

J7: IDE Active LED

Pin No.	Description	Pin No.	Description
1	VCC	2	ACTIVE

J9: Fan Connector

Pin No.	Description	Pin No.	Description
1	GND	2	+12V
3	FAN_TAC		

J10: GPI/O

Pin No.	Description	Pin No.	Description
1	GPIO20	2	GPIO24
3	GPIO21	4	GPIO25
5	GPIO22	6	GPIO26
7	GPIO23	8	GPIO27
9	VCC	10	GND

J11: ASK IR Connector

Pin No.	Description	Pin No.	Description
1	5V	2	CIRRX
3	IRRX	4	GND
5	IRTX		

J12: Printer Connector

Pin No.	Description	Pin No.	Description
1	STB#	14	AFD#
2	PRD0	15	ERR#
3	PRD1	16	INIT#
4	PRD2	17	SLIN#
5	PRD3	18	GND
6	PRD4	19	GND
7	PRD5	20	GND
8	PRD6	21	GND
9	PRD7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

J14: USB 2.0 Connector

Pin No.	Description	Pin No.	Description
1	VCC	2	DATA0-
3	DATA0+	4	DATA1-
5	DATA1+	6	GND

J15: Floppy Disk Connector

Pin No.	Description	Pin No.	Description
1	VCC	14	STEP#
2	INDEX#	15	GROUND
3	VCC	16	WDATA#
4	DRVA#	17	GROUND
5	VCC	18	WGATE#
6	DSKCHG#	19	GROUND
7	NC	20	TK00#
8	NC	21	GROUND
9	NC	22	WPT#
10	MOTEA#	23	GROUND
11	NC	24	RDATA#
12	DIR#	25	GROUND
13	DENSEL#	26	SIDE1#

J16: COM2

Pin No.	Description	Pin No.	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	GND

J17: VGA Connector

Pin No.	Description	Pin No.	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC5	10	GROUND
11	NC	12	DDCDA
13	HSYNCR	14	VSYNCR
15	DDCCL	16	NC

J22: Keyboard/Mouse Connector

Pin No.	Description	Pin No.	Description
1	KDAT	2	MDAT
3	GND	4	VCC
5	KCLK	6	MCLK
7	GND	8	GND
9	GND		

J23: COM1

Pin No.	Description	Pin No.	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	GND

J25: CPU Type

Pin No.	Description
*1-2	P4 Processor
2-3	P4-M Processor

J26: Extra Keyboard Connector

Pin No.	Description	Pin No.	Description
1	VCC	2	VCC
3	KDAT	4	MDAT
5	KCLK	6	MCLK
7	GND	8	GND

J27: SMBus Connector

Pin No.	Description	Pin No.	Description
1	VCC	2	SMBDATA
3	SMBCLK	4	GND

J28: Fan Connector

Pin No.	Description	Pin No.	Description
1	GND	2	+12V
3	FAN_TAC		

Appendix B Watchdog Timer Setting

The EBC575 series features a watchdog timer that reset the CPU or generates an interrupt if the processor stops operating for any reason. This feature ensures system reliability in industrial standalone or unmanned environments.

B.1 Watchdog Timer Working Procedure

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

You must enter timer values into the WDT Configuration Register (Write the control value to the Configuration Port), and clear (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 second	Default at 64 seconds
	2 seconds	
	4 seconds	
	8 seconds	
	16 seconds	
	32 seconds	
	64 seconds	
	128 seconds	

Table B-1: Watchdog Timer Character and Function

B.2 Watchdog Timer Control Register

The Watchdog Timer Control Register controls the EDT working mode. Write the value to the WDT Configuration Port.

The following table describes the Control Register bit definition.
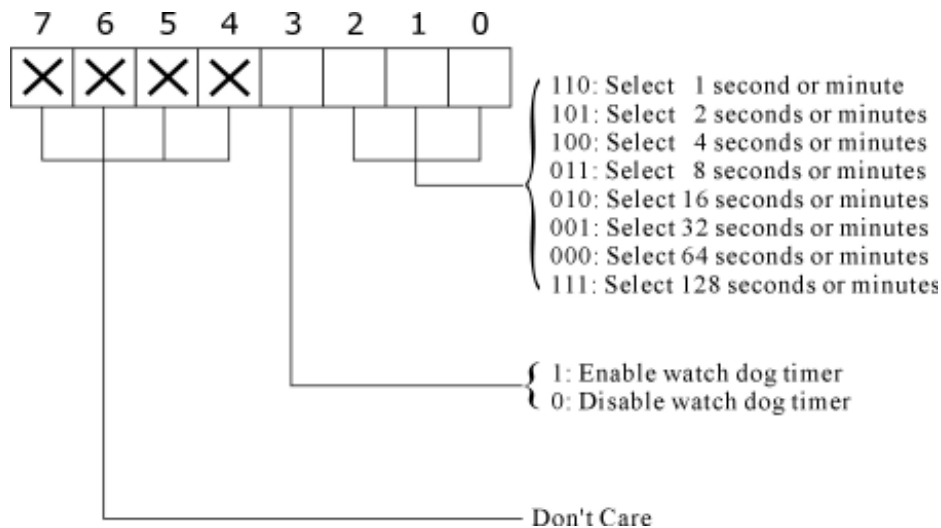
Table B-2: Control Register Bit Definition

B.3 Watch Dog Timer Programming Procedure

Power on or reset the system

The initial value of WDT Control Register (D4~D0) is zero, when power is on or reset the system. The following shows the initial value of WDT (00000000b):

Bit	Value	Mean
4	0	Select Reset
3	0	Disable watch dog timer
2, 1, 0	0 0 0	Select 64 second

Table B-3: WDT Control Register Initial Value

Initialize the SQW of RTC (set SQW output period = 0.5 second)

To initialize the SQW of RTC processor is to set the SQW signal which is output period = 0.5 second. It offers the basic frequency of the WDT counter.

The following is an example of initializing the SQW signal program in Intel 8086 assembly language.

```
; (General SQW = 0.5 Sec.)
Mov dx, 70h
Mov ax, 0Ah
Out dx, al              ; Out port 70h = 0Ah
Mov dx 71h
Mov as 2Fh
Out dx, al              ; Out port 71h = 2Fh
; (enable the SQW output)
Mov dx, 70h
Mov ax, 0Bh
Out dx, al              ; Out port 70h = 0Bh
Mov dx, 71h
Mov ax, 0Ah
Out dx, al              ; Out port 71h = 0Ah
```

Clear the WDT

Repeatedly read WDT Configuration Port and the interval cannot be longer than the preset time, otherwise, the WDT will generate NMI or Reset signal for the system. The following is an example of clear 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 working mode. The initial value of WDT Control Register is shown as follows:.*

WDT Control Register (Write to WDT configuration port)

You can set the WDT Control Register to control the WDT working mode.
The initial value of the WDT Control Register is as the following:

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

Follow these instructions below to set the register:

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

    Exampe: If D2~D0 = 0, the time-out internal is 64 seconds.

```
AND   al, 11111000b        ; Setting the time-out internal as 64 seconds.
```

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

    Example: D3 = 0, Disables WDT

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

    Example: D3 = 1, Enables WDT

```
OR    al, 00001000b            ; Enable the WDT
```

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

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

Appendix C Programming the GPI/O

GPI/O (General Purpose Input/Output) pins are provided for custom system design. This appendix provides definitions and its default setting for the ten GPI/O pins in the EBC575 series. The pin definition is shown in the following table:

Pin No.	GPI/O mode	PowerOn Default	Address	Pin No.	GPI/O mode	PowerOn Default	Address
1	GPI	Read High	801H (0)	2	GPO	High	801H (4)
3	GPI	Read High	801H (1)	4	GPO	High	801H (5)
5	GPI	Read High	801H (2)	6	GPO	High	801H (6)
7	GPI	Read High	801H (3)	8	GPO	High	801H (7)
9	VCC	-	-	10	GND	-	-

Table C-1: J10 – GPI/O Connector

Read the GPI Pin (1/3/5/7) status form I/O port 801H bit (0/1/2/3).
The bit is Set/Clear indicated High/Low

Control the GPO pin (2/3/6/8) level from I/O port 801H bit (4/5/6/7).
The bit is Set/Clear indicated output High/Low

Note: *All of these GPIO pins are 8mA digital open-drain buffer and internal pull-up.*