Table of Contents

Before You Begin

About This Manual

This manual introduces your motherboard, or called system board, and tells you how to set it up for operation. It is divided into the following chapters:

- Chapter 1, **Introduction**, introduces the product features and major components. It also gives installation guidelines.

- Chapter 2, **Jumpers and Connectors**, provides jumper and connector information.

- Chapter 3, **Hardware Installation**, tells you how to install memory modules, CPU, and expansion cards.

- Chapter 4, **BIOS Setup**, provides information on the BIOS Setup program that configures the system for use.

- Chapter 5, **Software Installation**, describes how to install the drivers and utilities supplied with your motherboard.

If your motherboard comes to you installed inside a computer, you may not need all the information in this manual. Refer to relevant chapters or sections when you need specific information.

For service purposes, we recommend that you contact an authorized dealer. Making personal alterations to the system may violate your warranty.

Safety Precautions

To protect the motherboard and other components against damage from static electricity, you should follow these guidelines whenever you handle electrical components:

- Disconnect the AC power cord from the electrical outlet before you work on the inside of the computer.

- Hold a component by its edge and avoid touching the IC chips, leads, or circuitry.

- Use a grounded wrist strap when handling computer components.

- When a component is removed from the system, place it on the bag that came with the component or on an anti-static pad.

1 **Introduction**

1.1 Unpacking

After unpacking the shipping carton, you should find these standard items:

- Motherboard

- Driver and User's Manual CD

- Cable Kit

Inspect all the items. If any item is damaged or missing, notify your dealer immediately.

1.2 Features

This motherboard utilizes state-of-the-art technologies to meet the users' needs and can be easily upgraded to meet any future demands.

The motherboard features:

● **Form factor**
Micro ATX (9.6" x 9.6")

● **CPU socket**
uPGA478 Pentium 4 socket to support Intel® Pentium 4 processor at 400 MHz or Northwood processor at 400 MHz data bus

● **Chipset**
Intel® Brookdale-GL Graphics Memory Controller Hub (GMCH) chipset to manage the flow of information between system Bus, memory interface, AGP port, and Hub interface

● **I/O Controller Hub**
Intel® 82801DB ICH4 chipset with upstream hub interface for access to Intel GMCH, ATA/100/66/33 Bus Master IDE controller, integrated system memory controller, and six USB ports support

● **Super I/O**
LPC super I/O (SMSC LPC47M192-NC)

● **Expansion slots**
Four PCI slots (PCI 2.2 compliant)

● **Memory**
Two DIMM sockets to support DDR-SDRAMs (DDR200/266) maximum of 2 GB memory, allowing you to meet the increase in processor performance and multimedia and 3D functions

● **I/O Connector**
Supports single floppy disk drive connector (1.44 MB, 3-mode), one serial port, one parallel port with EPP and ECP capabilities, six USB ports (four at rear I/O, two at front panel), three rear audio ports (Line-in/Mic-in/ Speaker-out) and two front audio ports (Headphone-out/Mic-in), one RJ-45 port (option), one VGA port, one PS/2 keyboard, and one PS/2 mouse

- **Audio controller**
  AC'97 2.1-compatible stereo audio codec:
  – SigmaTel STAC9750T or
  – Analog Device AD1981A or
  – Analog Device AD1885

- **LAN controller** (option)
  PCI Ethernet controller is fully-compliant with 10Base-T and 100Base-TX specifications and IEEE 802.3 standard:
  – Intel 82562ET or
  – NS DP83816

- **ATX 12 V power supply support only**

- **ACPI (Advanced Configuration and Power Interface) support**
  When used with an ACPI-supported operating system, it allows the operating system to control the Energy Saving features for maximum power conservation and performance at the same time.

- **ROM BIOS**
  256 K x 8 LPC Flash ROM supports system BIOS, graphics BIOS, and Plug-and-Play tables.

1.3 Major Components
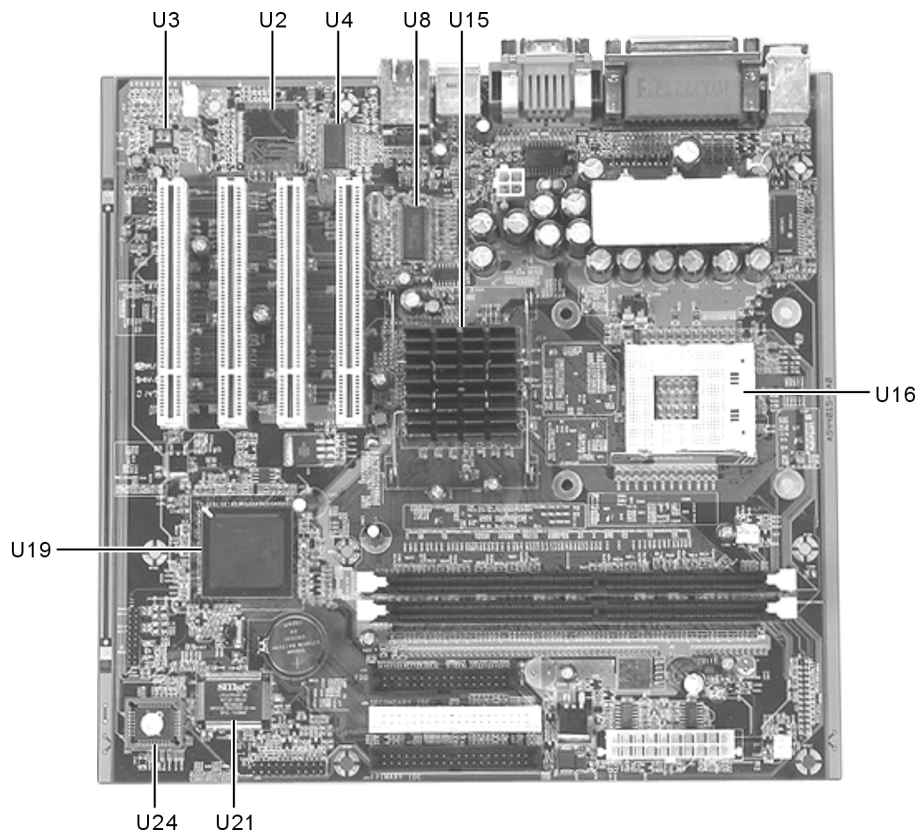
This section identifies the major controllers on the motherboard.

Reference	Description
U2	NS DP83816 PCI Ethernet controller (option)
U3	SigmaTel STAC9750T / Analog Device AD1981A / Analog Device AD1885 AC97 audio codec
U4	Intel 82562ET–10/100 Mbps platform LAN connecting device (option)
U8	System Clock Generator
U15	Intel Brookdale-GL Memory Controller Hub (GMCH)
U16	uPGA478 socket to support Intel® Pentium 4 / Northwood processor
U19	Intel 82801DB Input/Output Controller Hub (ICH4)
U21	SMSC LPC47M102-NC Super I/O Controller: fan controller, FDC, SIO and PIO
U24	(FWH) Firmware Hub Flash ROM

1.4 Setup Guidelines

This section tells you the major steps in installing and setting up the motherboard. Detailed information will be provided in other chapters.

If you are installing the motherboard by yourself, you will have to perform some or all of these steps:

1. Install the memory modules. See section 3.1 for details.

2. Install the CPU. See section 3.2 for details.

3. Install the motherboard into the computer cabinet. The board has 8 mounting holes. You can usually align the holes with the cabinet and secure the board with screws. In some other cases, the board's edge fit under metal flanges built into the cabinet.

4. Install any expansion cards if necessary. See section 3.3 for details.

5. Install the power supply, hard disk drive, CD-ROM drive, and floppy disk drive.

6. Connect one end of each signal cable to the corresponding connector on the motherboard and the other end to the installed device. See section 2.2 for details.

7. Replace the computer cabinet cover.

8. Connect the monitor, keyboard, mouse, and power cord.

9. After the computer is assembled, you can power it on.

10. Run BIOS Setup to enter the system configuration information. See chapter 4 for details.

11. Install the software drivers. See chapter 5 for details.

2 Jumpers and Connectors

2.1 Jumper Definitions

A jumper is a set of two or more pins on the motherboard. You use a jumper cap to cover (short) the pins for selecting a hardware setting. Jumpers with more than two pins have numbers imprinted on the motherboard to identify the pins.

See the next figure for jumper locations and the table that follow for jumper definitions.

> **CAUTION:** Jumpers not described in this section are reserved for factory use only. Do not change the default settings.
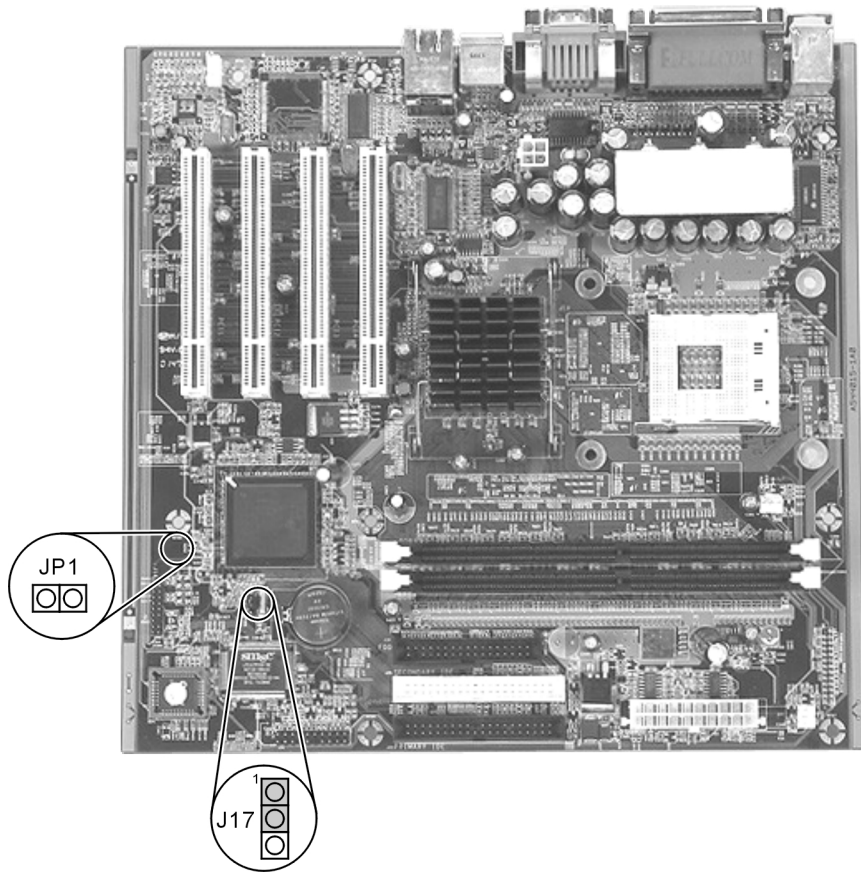
Jumper	Definition	Setting	Description
J17	CMOS setting	1-2	Normal
		2-3	Clear CMOS To clear the RTC and CMOS RAM, set J17 to 2-3 for one second and set it back to 1-2 again.
JP1	Password setting	Open	Normal
		Short	Clear password
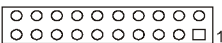
2.2 Connector Definitions
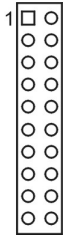
CAUTION: When connecting the power connectors to the motherboard, make sure that the computer is not connected to an electrical outlet.

CAUTION: When connecting a signal cable (also called ribbon cable), pin 1 of the cable should be aligned with pin 1 of the connector on the motherboard. Pin 1 side of the cable is identified by a color, usually red, stripe. Pin 1 of the motherboard connector is identified by the number 1 imprinted on the board.

Internal Connectors

Connector	Definition	Description
BT1	Battery	This is the socket for the RTC battery.
DDR1/ DDR2	DIMM sockets	These are the two sockets for the memory modules. See section 3.1 for installation instruction.
J8	CD-in	This connects the audio cable from the CD-ROM drive.
J10, J21	+12 V ATX power	These (J10 4-pin and J21 20-pin) connect the power cord from a standard ATX 12 Volt power supply for systems using the Intel Pentium 4 processor.
J14	CPU fan	This connects a 3-pin CPU cooling fan of 500-mAMP (6 W) or less with a minimum of 3500 RPM. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be "Positive," the black "Ground," and the yellow "Rotation" signal. **CAUTION:** The CPU and/or motherboard will overheat if there is no cooling fan installed. Incorrect use of the pins may result in damage to the motherboard and/or cooling fan.
J22	System fan	This connects a 3-pin system cooling fan of 500-mAMP (6 W) or less with a minimum of 3500 RPM. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be "Positive," the black "Ground," and the yellow "Rotation" signal.
J24 Pin 5, 6	HDD LED	This connects the HDD drive in-use indicator. Connect one end to the board and the other end to the cabinet's HDD in-use indicator.
Pin 7, 9, 11	Power LED	This connects to the Power LED indicator on the system's front panel. In Suspend mode the Power LED does not light.
Pin 15, 16	Power button	This connects to the Power button on the system's front panel.

Connector	Definition	Description	
J16 Pin 1, 3, 5, 7	USB	The USB ports connect USB devices.	
Pin 13, 15	Phone-in	This connects an external headphone.	
Pin 19	MIC-in	This connects an external microphone. **NOTE:** For each of these ports to be available, you must connect a signal cable from the connector to their respective ports on the front panel.	
J18	Floppy disk drive	This connects the floppy disk drive signal cable. After connecting the single end to the board, connect the two connectors on the other end to floppy disk drive.	
J23	Primary IDE	This connects the IDE signal cable for the first and second IDE devices. After connecting the single end to the board, connect the two connectors on the other end to the hard disk drives. If you install two hard disk drives, you must configure the second drive to Slave mode by setting its jumper accordingly. See the documentation of your hard disk drive for information.	
J20	Secondary IDE	This connects the IDE signal cable for the third and fourth IDE devices. After connecting the single end to the board, connect the two connectors on the other end to the hard disk drives. If you install two hard disk drives, you must configure the second drive to Slave mode by setting its jumper accordingly. See the documentation of your hard disk drive for information.	
PCI1, PCI2, PCI3 PCI4	PCI slots	These are the four slots for PCI cards. See section 3.3 for installation instruction.	
U7	CPU socket	This is the socket for the CPU. See section 3.2 for installation instruction.	

External Connectors

Connector	Definition	Description
J4	PIO (upper)	This parallel port connects a parallel device.
J4	VGA (lower)	This connects an external VGA display monitor.
J5	USB	The USB ports connect USB devices.
J6	Line-in (left)	This line-in port connects an audio device such as Hi-Fi set, radio set, CD player, synthesizer, walkman, etc.
J6	Line-out (middle)	This lineout port connects an audio device such as a set of headphones, external speakers with amplifier, or an audio recording device.
J6	MIC-in (right)	This connects an external microphone.
J6	COM1 (upper)	This serial port connects a serial device.
J7	Mouse (upper) Keyboard (lower)	The PS/2 ports connect a PS/2 keyboard and mouse.
J9 (option)	RJ-45 (upper)	This connects an external RJ-45 Local Area Network (LAN) cable.
J9	USB (lower)	The USB ports connect USB devices.

3 Hardware Installation

> **CAUTION:** Make sure that the power is turned off and the power cord is disconnected before installing hardware devices. Leaving the power on can cause serious damage to your system.

3.1 Installing Memory Modules

Your motherboard has two sockets supporting DDR-SDRAM 200/266 unregistered 184-pin non-ECC DIMMs (single and double-sided). This allows a maximum of 2 GB system memory.

> **NOTE:** System does not support double-sided x16 DDR-SDRAMs.

1. Locate the DIMM sockets on the motherboard. (See page 9.)

2. Align the DIMM module with the socket and firmly insert the DIMM into the socket. Then, push the plastic clips to snap it into place.
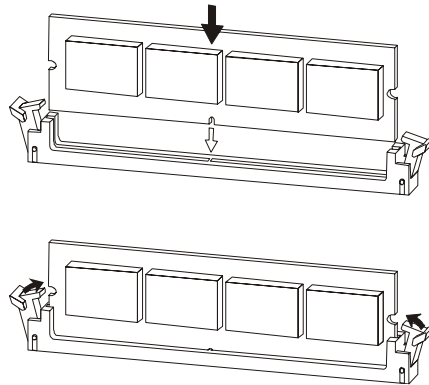
> **NOTE:** The DIMM modules will fit in only one orientation. Do not touch the memory module's connectors. Handle only by the edges.
>
> **WARNING:** DIMM modules become extremely hot during operation.

3.2 Installing CPU

Your system board provides ZIF Socket uPGA478.

1. Find the ZIF socket (Socket uPGA478) on the motherboard (see page 9).

2. Lift the ZIF socket arm up to the vertical position.

3. Align the CPU so its Pin 1 corner (beveled corner) is at the Pin 1 corner of the ZIF socket. Then insert the CPU's pins into the corresponding holes in the socket.
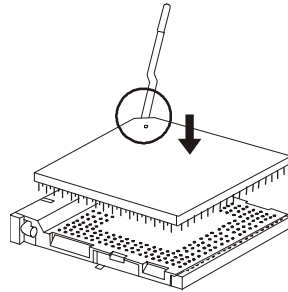
4. Press the arm downward to the horizontal position. You will feel some resistance while doing so. This is normal as the pressure starts to secure the CPU in place.
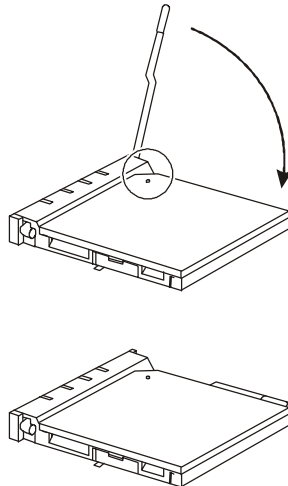
5. Install the CPU fan (see manufacturer's instructions that came with the fan).

6. Connect the fan cable to J14 (see page 9).

> **CAUTION:** The CPU cooling fan must be installed, otherwise the CPU and/or motherboard will overheat and be damaged.

3.3 Installing Expansion Cards

Your motherboard contains four PCI slots. You can install expansion cards for additional or enhanced functions.

1. Read your expansion card documentation for any necessary settings before installation.

2. Locate the expansion slots (see page 9).

3. Remove the metal slot cover in the computer cabinet by unfastening one screw. Keep the cover for future use when you remove the card.

4. Firmly press the expansion card's edge connector into the expansion slot and secure with the previously removed screw.

5. Replace the computer cabinet cover.

6. Run the BIOS Setup program if required (see Chapter 4). If you install a VGA card in the PCI slot and want to use it, you have to select PCI display card as the first display using the **Init Display First** item in the "Integrated Peripherals" submenu under the "Advanced" Setup menu.

7. Install the software driver if required.

4 BIOS Setup

4.1 Using BIOS Setup

The BIOS Setup program allows you to enter the system configuration information. This information is needed by the system to identify the type of devices installed and to set up special features. The configuration information is stored in a special kind of memory called CMOS (Complementary Metal Oxide Semiconductor) RAM. CMOS RAM data are backed up by a Real Time Clock (RTC) backup battery.

Running Setup and Moving Around

You may need to run Setup when:

● You see an error message on the screen requesting you to run Setup.

● You change factory default settings to accommodate some special features.

● You want to modify the configuration information.

To run the Setup program, press **F10** during system startup.

> **NOTE:** The Setup program may have been updated after this User's Manual was published.

The ▶ mark before a title or an item means there is a submenu for this title/item. You can press **Enter** to go to the submenu for more settings.

To make selections, you use the ←/→ arrow keys to highlight a menu title, the ↑/↓ arrow keys to highlight an item, and the **Page Up/Page Down/+/–** keys to change the value for the selected item.

A brief description of keyboard usage is listed next:

Key	Description
↑, ↓	Move the highlight to the previous or the next item.
←, →	Move the highlight to the previous or next option.
Page Up/+, **Page Down/−**	Cycle through the pre-defined values for the selected item. Pressing **Page Up** or **+** brings up the next value; pressing **Page Down** or **−** brings up the previous one.
Enter	Select a submenu (if available).
Esc	1) From the Setup menu, exit Setup without saving. 2) From a submenu, return to the previous menu.
Tab	Jumps from one item to another.
F5	Restore the previous CMOS value from CMOS (available only in option Setup menus).
F9	Load the Setup default values (available only in option Setup menus).
F10	Save the changes and exit Setup.
F1	General help information.

4.2 Main Menu

The "Main" Setup menu contains the basic configuration settings of the system.

```
   Main  Advanced  Security  PC Health  Power  Boot  Exit
 ┌──────────────────────────────────────────────┬──────────────────────┐
 │   Date (mm:dd:yy)          Tue,04/30/2002     │     Item Help        │
 │   Time (hh:mm:ss)          16 : 14 : 54       ├──────────────────────┤
 │                                               │  Menu Level    ▶     │
 │   BIOS Version             R0.07              │                      │
 │                                               │  Change the day, month,│
 │   Processor Type           Intel(R) Celeron(tm)│  and year           │
 │   Processor Speed             0   MHz         │                      │
 │                                               │                      │
 │   Cache RAM                   KB              │                      │
 │                                               │                      │
 │   Base Memory                640K             │                      │
 │   Extended Memory          63424K             │                      │
 │   Total Memory             64512K             │                      │
 │                                               │                      │
 │                                               │                      │
 │                                               │                      │
 │                                               │                      │
 ├───────────────────────────────────────────────┴──────────────────────┤
 │ ++ Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select  +/-/PU/PD:Value │
 │ Esc:Exit       F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults │
 └────────────────────────────────────────────────────────────────────┘
```

Date (mm:dd:yy)
The date format is <month> <date> <year>.

Time (hh:mm:ss)
The time format <hour> <minute> <second> is based on a 24-hour military-time clock format.

System information on the following items is also listed.

- **BIOS Version**
- **Processor Type**
- **Processor Speed**
- **Cache RAM**
- **Base Memory**
- **Extended Memory**
- **Total Memory**

4.3 Advanced Menu

The "Advanced" Setup menu contains the input/output configuration settings of the system.

```
 Main  Advanced  Security  PC Health  Power  Boot  Exit
┌─────────────────────────────────────────────┬───────────────────────┐
│    Reset Configuration Data    [Disabled]    │      Item Help        │
│    Boot Up NumLock Status      [On]          ├───────────────────────┤
│                                              │  Menu Level    ▶      │
│    APIC Mode                   [Enabled]     │                       │
│    CPU Clock Ratio             [ 8 X]        │  Default is Disabled. │
│    Spread Spectrum             [Enabled]     │  Select Enabled to    │
│  ▶ Integrated Peripherals                    │  reset Extended System│
│  ▶ IDE Configuration                         │  Configuration Data   │
│  ▶ Diskette Configuration                    │  ESCD) when you exit  │
│                                              │  Setup if you have    │
│                                              │  installed a new add-on│
│                                              │  and the system       │
│                                              │  reconfiguration has  │
│                                              │  caused such a serious│
│                                              │  conflict that the OS │
│                                              │  cannot boot          │
│                                              │                       │
├──────────────────────────────────────────────┴──────────────────────┤
│ ↔ Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select   +/-/PU/PD:Value│
│ Esc:Exit      F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults│
└─────────────────────────────────────────────────────────────────────┘
```

Reset Configuration Data

Normally, you would leave this field disabled. Select *Enabled* to reset the Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on device and the system reconfiguration has caused such a serious conflict of resources that the operating system cannot boot.

Boot Up NumLock Status

This item sets if the **Num Lock** key will be automatically activated after system startup.

APIC Mode

This item allows you to enable or disable APIC (Advanced Programmable Interrupt Controller) mode.

CPU Clock Ratio

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

Spread Spectrum

This item allows you to take advantage of the center spread-type or down spread-type of spread spectrum.

Integrated Peripherals

Press **Enter** to go to a submenu that allows you to configure the on-board device controllers (I/O, IRQ, and DMA assignment).

```
┌──────────────── Advanced ──────────────────────────────────────┐
│                                                                  │
│  ┌─────────────────────────────────────────┬──────────────────┐ │
│  │        Integrated Peripherals            │    Item Help     │ │
│  ├─────────────────────────────────────────┼──────────────────┤ │
│  │  USB Controller           [Enabled]      │ Menu Level   ▶▶  │ │
│  │  USB Keyboard Support     [Enabled]      │                  │ │
│  │  USB Mouse Support        [Enabled]      │                  │ │
│  │                                          │                  │ │
│  │  AC97 Audio               [Enabled]      │                  │ │
│  │  Init Display First       [Onboard/AGP]  │                  │ │
│  │  Onboard Serial Port 1    [3F8/IRQ4]     │                  │ │
│  │  Onboard Parallel Port    [Disabled]     │                  │ │
│  │  Parallel Port Mode       [Bi-directional]                  │ │
│  │  ECP Mode Use DMA         [3]            │                  │ │
│  │  Midi Port Address        [330]          │                  │ │
│  │  Midi Port IRQ            [10]           │                  │ │
│  │                                          │                  │ │
│  └─────────────────────────────────────────┴──────────────────┘ │
│  →← Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select   +/-/PU/PD:Value │
│  Esc:Exit       F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults │
└──────────────────────────────────────────────────────────────────┘
```

USB Controller

This item allows you to enable or disable support for Legacy USB devices in non-USB-aware operating systems like DOS.

USB Keyboard Support

This item allows you to enable or disable support for Legacy USB keyboards in non-USB-aware operating systems like DOS.

USB Mouse Support

This item allows you to enable or disable support for Legacy USB mouse in non-USB-aware operating systems like DOS.

AC97 Audio

Selecting *Enabled* allows BIOS to detect whether you are using any AC97 audio codec device. If an AC97 audio codec device is detected, the on-board AC97 audio controller will be enabled; if no AC97 audio codec device is detected, the on-board AC97 audio controller will be disabled. If you have conflicts with the on-board AC97 audio controller, you may set this field to *Disabled*.

Init Display First

This item allows you to select which display adapter to initialize first.

Onboard Serial Port 1

This item sets the input/output address and interrupt request line (IRQ) for the on-board serial port (COM1) controller.

Onboard Parallel Port

This item allows you to select a logical LPT port name and its matching address for the physical parallel (printer) port.

Parallel Port Mode

This item sets the operating mode for the on-board parallel (printer) port. Your system supports EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) standards, which turn the standard parallel port into a high-speed bi-directional peripheral port.

ECP Mode Use DMA

This item allows you to select a DMA channel for the parallel port for use during ECP mode.

Midi Port Address

This item sets the address of the onboard MIDI connector.

Midi Port IRQ

This item, which allows you to set *IRQ 5* or *IRQ 10* for the onboard MIDI connector, is not available if the above item is set at *Disabled*.

> **NOTE:** The above items Midi Port Address and Midi Port IRQ might not be available on your motherboard.

IDE Configuration

Press **Enter** to go to a submenu that allows you to select the IDE controller and hard disk drive type installed in your system.

```
▌ Advanced ▌

╔══════════════════════════════════════════════╤══════════════════════╗
║           IDE Configuration                  │      Item Help       ║
╟──────────────────────────────────────────────┼──────────────────────╢
║   Primary IDE Controller    [Enabled]        │  Menu Level   ▶▶     ║
║   Secondary IDE Controller  [Enabled]        │                      ║
║                                              │                      ║
║ ▶ IDE Primary Master                         │                      ║
║ ▶ IDE Primary Slave                          │                      ║
║ ▶ IDE Secondary Master                       │                      ║
║ ▶ IDE Secondary Slave                        │                      ║
║                                              │                      ║
║                                              │                      ║
║                                              │                      ║
║                                              │                      ║
║                                              │                      ║
╟──────────────────────────────────────────────┴──────────────────────╢
║ ↔ Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select  +/-/PU/PD:Value ║
║ Esc:Exit      F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults ║
╚══════════════════════════════════════════════════════════════════════╝
```
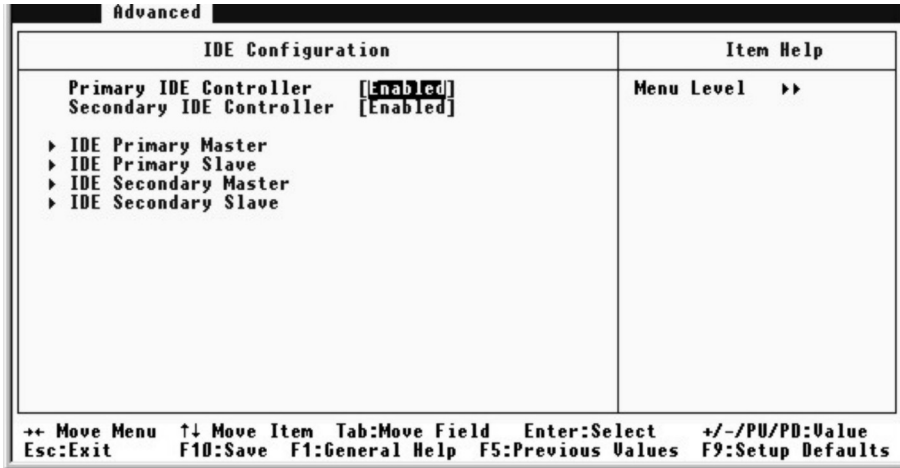
Primary IDE Controller
Secondary IDE Controller

This item allows you to enable or disable the primary and secondary IDE controller. Your BIOS supports two IDE controllers that provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks in a Master/Slave relationship.

IDE Primary Master
IDE Primary Slave
IDE Secondary Master
IDE Secondary Slave

Each of these four items sets the type of the IDE device (such as the hard disk drive and CD-ROM drive) in your system.

Press **Enter** to go to the submenu as shown next:

```
 Advanced

           IDE Primary Master                      Item Help

   IDE HDD Auto-Detection    [Press Enter]     Menu Level    ▶▶▶

   IDE Primary Master        [Auto]            To auto-detect the
                                               HDD's size, head... on
   Capacity                  0 MB              this channel

   Cylinder                  0
   Head                      0
   Precomp                   0
   Landing Zone              0
   Sector                    0
   Access Mode               [Auto]
   PIO Mode                  [Auto]
   UDMA Mode                 [Auto]


 →← Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select    +/-/PU/PD:Value
 Esc:Exit       F10:Save   F1:General Help  F5:Previous Values  F9:Setup Defaults
```

When you press **Enter** for the "IDE HDD Auto-Detection" item, the
remaining fields on this menu will be filled if the detection is successful.

For the **IDE Primary/Secondary Master/Slave** item, select *Manual* only
if you wish to manually enter the parameters such as number of cylinders,
number of heads, landing zone, write precompensation, and number of
sectors/tracks.

The **Access Mode** item is for IDE hard disks only. Descriptions of the
available options are:

CHS	For IDE hard disk drives smaller than 528 MB.
Large	For drives over 528 MB that do not support Logical Block Addressing. (Large type of drives can only be used with MS-DOS and is not common.)
LBA	For drives over 528 MB that support Logical Block Addressing. (Most IDE drives over 528 MB support the LBA mode.)
Auto	For IDE drives that support the "auto-detect" function.

The **PIO Mode** item sets the mode timing according to the IDE hard disk drives in your system. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO (Programmed Input/Output) allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by them. This is simpler and more efficient (and faster). PIO mode concerns data transfer rate. It can be *Mode 0* to *Mode 4*. A higher number indicates a faster rate. In *Auto* mode, the system automatically determines the best mode for each device.

For the **UDMA Mode** item, UDMA (Ultra synchronous DMA mode transfer) 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.

Diskette Configuration

Press **Enter** to go to a submenu that allows you to select the type of floppy drive installed in your system and the write enable/disable option.

```
┌─ Advanced ──────────────────────────────────────────────────────────┐
│  ┌──────────────────────────────────────────────┬─────────────────┐ │
│  │         Diskette Configuration               │    Item Help    │ │
│  ├──────────────────────────────────────────────┼─────────────────┤ │
│  │  Diskette Controller      [Enabled]          │ Menu Level   ▶▶ │ │
│  │                                              │                 │ │
│  │  Drive A                  [1.44M, 3.5 in.]   │                 │ │
│  │  Floppy 3 Mode Support    [Disabled]         │                 │ │
│  │  Diskette Write Protect   [Disabled]         │                 │ │
│  │                                              │                 │ │
│  │                                              │                 │ │
│  │                                              │                 │ │
│  │                                              │                 │ │
│  │                                              │                 │ │
│  │                                              │                 │ │
│  ├──────────────────────────────────────────────┴─────────────────┤ │
│  │ ↔ Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select   +/-/PU/PD:Value │
│  │ Esc:Exit      F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults │
│  └──────────────────────────────────────────────────────────────────┘ │
└──────────────────────────────────────────────────────────────────────┘
```

Diskette Controller

This item allows you enable or disable the Floppy Disk Controller (FDC).

Drive A

Each of these items sets the type of floppy disk drive in your system.

None	No floppy disk drive installed.
360K, 5.25 in	5-1/4 inch PC-type standard drives; 360-KB capacity.
1.2M, 5.25 in	5-1/4 inch AT-type high density drive; 1.2 MB capacity.
720K, 3.5 in	3-1/2 inch double-sided drive; 720 KB capacity.
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 MB capacity.
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 MB capacity.

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2 MB in a 3.5-inch diskette. This is normally disabled but you may choose from either *Disabled* or *Drive A*.

Diskette Write Protect

This item allows you to enable or disable floppy disk write protection.

4.4 Security Menu

The "Security" Setup menu contains the security setting that safeguards your system against unauthorized use.

```
     Main  Advanced  Security  PC Health  Power  Boot  Exit
   ┌─────────────────────────────────────────┬──────────────────────┐
   │  Supervisor Password Is    [Not Installed]│      Item Help        │
   │  User Password Is          [Not Installed]│                       │
   │  Set Supervisor Password                  │  Menu Level    ▶      │
   │  Set User Password                        │                       │
   │                                           │  Change/Set/Disable   │
   │  Security Option           [Setup]        │  Password             │
   │                                           │                       │
   │                                           │                       │
   │                                           │                       │
   │                                           │                       │
   │                                           │                       │
   │                                           │                       │
   │                                           │                       │
   ├───────────────────────────────────────────┴──────────────────────┤
   │ →← Move Menu  ↑↓ Move Item  Tab:Move Field   Enter:Select   +/-/PU/PD:Value │
   │ Esc:Exit     F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults │
   └───────────────────────────────────────────────────────────────────┘
```
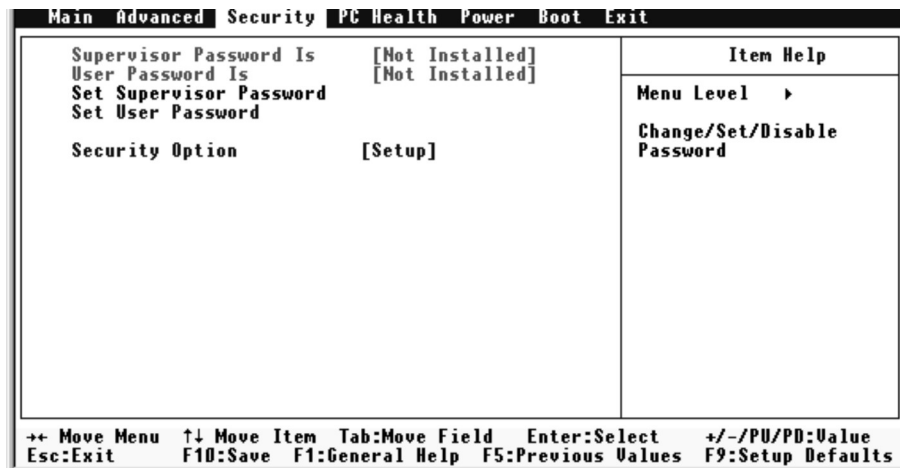
Supervisor Password Is

This item shows if a supervisor password has been set. The password is required for accessing the BIOS Setup program if both **Supervisor Password Is** and the next **User Password Is** item was set.

User Password Is

This item shows if a user password has been set. The password is required for accessing the BIOS Setup program if the preceding **Supervisor Password Is** item was not set.

Set Supervisor Password

This item allows you to set the supervisor password. When typing the password, first make sure that **Num Lock** is off, and then type the password in the entry fields.
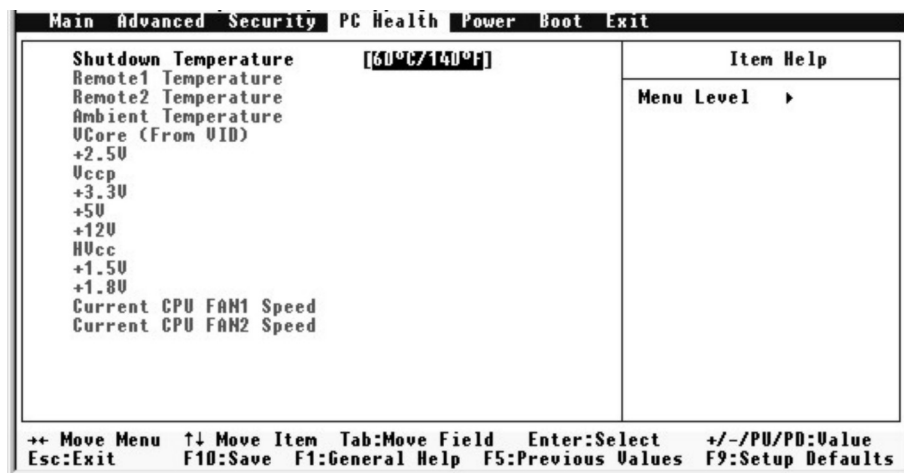
Set User Password

This item allows you to set the user password. When typing the password, first make sure that **Num Lock** is off, and then type the password in the entry fields.

Security Option

This item allows you to set whether the password is required every time the system boots or only when you enter BIOS Setup.

4.5 PC Health

The "PC Health" Setup menu allows you to monitor the operating status of your system.

```
 Main  Advanced  Security  PC Health  Power  Boot  Exit
┌──────────────────────────────────────────────┬──────────────────┐
│  Shutdown Temperature      [60°C/140°F]       │    Item Help     │
│  Remote1 Temperature                          ├──────────────────┤
│  Remote2 Temperature                          │ Menu Level    ►  │
│  Ambient Temperature                          │                  │
│  VCore (From VID)                             │                  │
│  +2.5V                                        │                  │
│  Vccp                                         │                  │
│  +3.3V                                        │                  │
│  +5V                                          │                  │
│  +12V                                         │                  │
│  HVcc                                         │                  │
│  +1.5V                                        │                  │
│  +1.8V                                        │                  │
│  Current CPU FAN1 Speed                       │                  │
│  Current CPU FAN2 Speed                       │                  │
│                                               │                  │
│                                               │                  │
└──────────────────────────────────────────────┴──────────────────┘
 →← Move Menu    ↑↓ Move Item  Tab:Move Field   Enter:Select    +/-/PU/PD:Value
 Esc:Exit        F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults
```
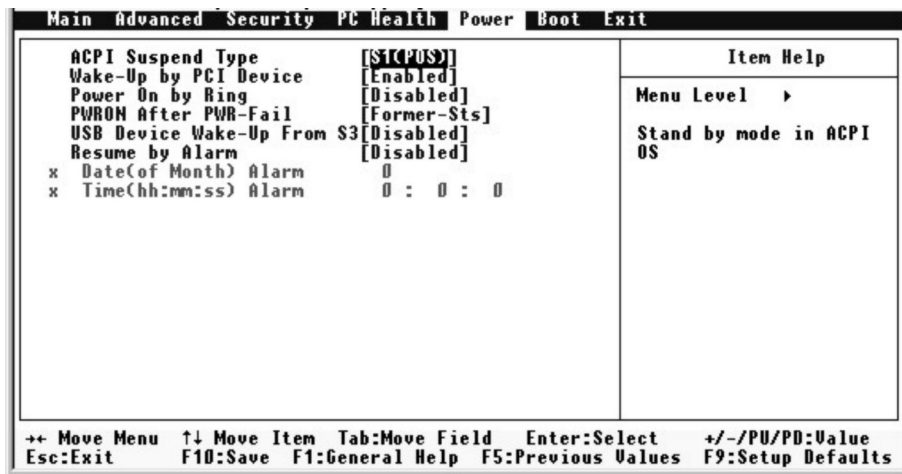
Shutdown Temperature

This item allows you to set up the CPU shutdown temperature.

The following items on your system are monitored:

- **Remote1 Temperature**
- **Remote2 Temperature**
- **Ambient Temperature**
- **VCore (From VID)**
- **+2.5 V**
- **Vccp**
- **+3.3 V**
- **+5 V**
- **+12 V**
- **HVcc**
- **+1.5 V**
- **+1.8 V**
- **Current CPU FAN1 Speed**
- **Current CPU FAN2 Speed**

4.6 Power Menu

The "Power" Setup menu contains the power management settings that help save system power.

```
   Main   Advanced   Security   PC Health   Power   Boot   Exit
 ┌─────────────────────────────────────────────────┬──────────────────────┐
 │  ACPI Suspend Type        [S1(POS)]              │      Item Help       │
 │  Wake-Up by PCI Device    [Enabled]              │                      │
 │  Power On by Ring         [Disabled]             │  Menu Level    ▶     │
 │  PWRON After PWR-Fail     [Former-Sts]           │                      │
 │  USB Device Wake-Up From S3[Disabled]            │  Stand by mode in ACPI│
 │  Resume by Alarm          [Disabled]             │  OS                  │
 │ x   Date(of Month) Alarm       0                 │                      │
 │ x   Time(hh:mm:ss) Alarm      0 :  0 :  0        │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 │                                                  │                      │
 ├──────────────────────────────────────────────────────────────────────┤
 │ ←→  Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select    +/-/PU/PD:Value│
 │ Esc:Exit      F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults│
 └──────────────────────────────────────────────────────────────────────┘
```

ACPI Suspend Type

This item allows you to set whether the ACPI Suspend Mode is S1 or S3-type.

> **NOTE:** The S1 sleeping state is a low wake-up latency sleeping state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system contexts. The S3 sleeping state is a low wake-up latency sleeping state where all system contexts are lost except system memory. CPU, cache, and chipset context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context. Control starts from the processor's reset vector after the wake-up event.

Wake-Up by PCI Device

This item allows you to wake up the system upon detection of any activity on the add-on PCI card.

Power On by Ring

This item allows you to wake up the system upon detection of any activity on the modem.

PWRON After PWR-Fail

This item defines the state of your computer when power is restored after an unexpected power interruption.

Former-Sts	System restores itself to its former state before power failed.
On	System will power on when power is restored.
Off	System remains in the power-off state until you press the power button of your system cabinet.

USB Device Wake-Up From S3

When enabled, an input signal on the USB device awakens the system from an S3 Sleeping State.

Resume By Alarm

This item allows a timer alarm to wake up the system from a soft-off state.

Date (of Month) Alarm/Time (hh:mm:ss) Alarm

This item allows you to set the date to wake up the system if the previous item "Resume By Alarm" is enabled.

4.7 Boot Menu

The "Boot" Setup menu sets the sequence of the devices to be searched for the operating system.

```
   Main  Advanced  Security  PC Health  Power   Boot   Exit
 ┌─────────────────────────────────────────┬──────────────────────┐
 │   Quiet Boot              [Enabled]      │      Item Help        │
 │   Quick Boot              [Enabled]      │                       │
 │                                          │  Menu Level    ▸      │
 │   Summary Screen          [Disabled]     │                       │
 │                                          │                       │
 │   1st Boot Device         [Hard Disk]    │                       │
 │   2nd Boot Device         [Floppy]       │                       │
 │   3rd Boot Device         [CDROM]        │                       │
 │   4th Boot Device         [Disabled]     │                       │
 │ ▸ Hard Disk Boot Priority                │                       │
 │                                          │                       │
 │                                          │                       │
 │                                          │                       │
 │                                          │                       │
 │                                          │                       │
 │                                          │                       │
 ├──────────────────────────────────────────┴──────────────────────┤
 │ �→← Move Menu  ↑↓ Move Item  Tab:Move Field   Enter:Select    +/-/PU/PD:Value │
 │ Esc:Exit      F10:Save  F1:General Help  F5:Previous Values  F9:Setup Defaults │
 └──────────────────────────────────────────────────────────────────┘
```

Quiet Boot
This item when disabled allows the display of normal POST messages during system boot. When enabled, system displays OEM logo instead of POST messages.

Quick Boot
This item allows the system to skip certain tests while booting. This will decrease the time needed to boot the system.

Summary Screen
This item allows you to enable or disable the displaying onscreen of various system information while booting.

1st Boot Device
2nd Boot Device
3rd Boot Device
4th Boot Device

These items set the sequence of booting, i.e., which drive to search first for the operating system.
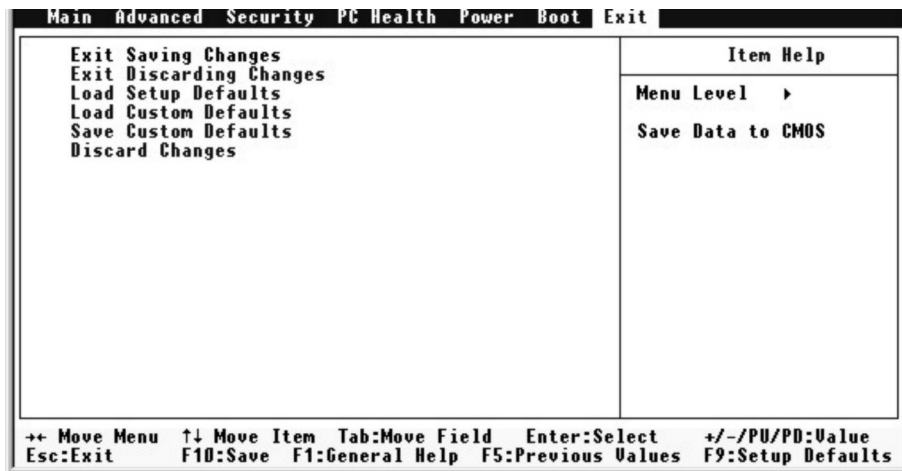
Hard Disk Boot Priority

Press **Enter** to go to a submenu that allows you to select the hard disk boot device priority.

```
                                          Boot
┌─────────────────────────────────────────┬───────────────────────────┐
│        Hard Disk Boot Priority           │        Item Help          │
├─────────────────────────────────────────┼───────────────────────────┤
│   1.                                     │   Menu Level    ▶▶        │
│   2.                                     │                           │
│   3.                                     │   Use <↑> or <↓> to       │
│   4.                                     │   select a device , then  │
│   5.                                     │   press <+> to move it    │
│                                          │   up , or <-> to move it  │
│                                          │   down the list. Press    │
│                                          │   <ESC> to exit this      │
│                                          │   menu.                   │
│                                          │                           │
│                                          │                           │
│                                          │                           │
│                                          │                           │
├─────────────────────────────────────────┴───────────────────────────┤
│   ↑↓:Move    PU/PD/+/-:Change Priority   F10:Save     ESC:Exit       │
└──────────────────────────────────────────────────────────────────────┘
```
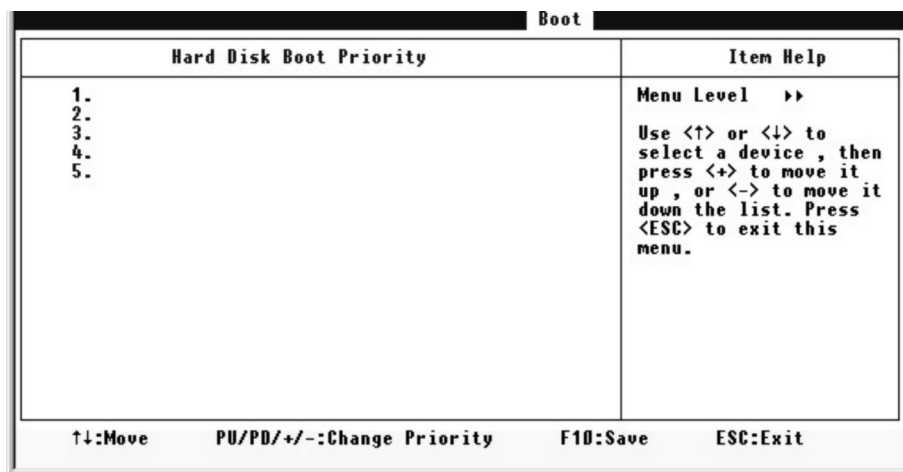
4.8 Exit Menu

The "Exit" Setup menu allows you to leave the BIOS Setup program. After you are finished with your settings, you must save and exit so that the new settings can take effect.

```
 Main  Advanced  Security  PC Health  Power  Boot  Exit

   Exit Saving Changes                          Item Help
   Exit Discarding Changes
   Load Setup Defaults              Menu Level    ▸
   Load Custom Defaults
   Save Custom Defaults             Save Data to CMOS
   Discard Changes









 ↔ Move Menu   ↑↓ Move Item  Tab:Move Field   Enter:Select    +/-/PU/PD:Value
 Esc:Exit      F10:Save  F1:General Help  F5:Previous Values   F9:Setup Defaults
```

Exit Saving Changes
After finishing with your settings, you must save and exit Setup so that the changes you have made can take effect.

Exit Discarding Changes
This option allows you to exit the BIOS Setup program without saving the changes you have made.

Load Setup Defaults
Factory default settings are provided with the BIOS. If you would like to load the BIOS default factory settings for the most stable, minimal performance system operation, choose this item.

Load Custom Defaults
This option allows you to load BIOS settings from the system's flash ROM.

Save Custom Defaults

This option allows you to save the current BIOS settings to the system's flash ROM.

Discard Changes

This option allows you to restore the previous values for all the BIOS Setup items.

4.9 BIOS Reference – POST Codes

NOTE: ISA POST codes typically output to the port address 80h.

POST (hex)	Description
CFh	Test CMOS R/W functionality.
C0h	Early chipset initialization: – Disable shadow RAM – Disable L2 cache (socket 7 or below) – Program basic chipset registers.
C1h	Detect memory – Auto-detection of DRAM size, type and ECC – Auto-detection of L2 cache (socket 7 or below).
C3h	Expand compressed BIOS code to DRAM.
C5h	Call chipset hook to copy BIOS back to E000 and F000 shadow RAM.
01h	Expand the Xgroup codes locating in physical address 1000:0.
02h	Reserved
03h	Initial Superio_Early_Init switch.
04h	Reserved
05h	1. Blank out screen 2. Clear CMOS error flag
06h	Reserved
07h	1. Clear 8042 interface 2. Initialize 8042 self-test
08h	1. Test special keyboard controller for Winbond 977 series Super I/O chips. 2. Enable keyboard interface.
09h	Reserved
0Ah	1. Disable PS/2 mouse interface (optional). 2. Auto-detect ports for keyboard and mouse followed by a port and interface swap (optional). 3. Reset keyboard for Winbond 977 series Super I/O chips.
0Bh	Reserved
0Ch	Reserved
0Dh	Reserved

POST (hex)	Description
0Eh	Test F000h segment shadow to see whether it is R/W-able or not. If test fails, keep beeping the speaker.
0Fh	Reserved
10h	Auto-detect flash type to load appropriate flash R/W codes into the run time area in F000 for ESCD and DMI support.
11h	Reserved
12h	Use walking 1's algorithm to check out interface in CMOS circuitry. Also set RTC power status and then check for override.
13h	Reserved
14h	Program chipset default values into chipset. Chipset default values are MODBINable by OEM customers.
15h	Reserved
16h	Initial on-board clock generator if Early_Init_Onboard_Generator is defined. See also POST 26h.
17h	Reserved
18h	Detect CPU information including brand, SMI type (Cyrix or Intel) and CPU level (586 or 686).
19h	Reserved
1Ah	Reserved
1Bh	Initial interrupts vector table. If no special is specified, all H/W interrupts are directed to SPURIOUS_INT_HDLR and S/W interrupts to SPURIOUS_SOFT_HDLR.
1Ch	Reserved
1Dh	Initial EARLY_PM_INIT switch.
1Eh	Reserved
1Fh	Load keyboard matrix (notebook computer platform).
20h	Reserved
21h	HPM initialization (notebook computer platform).
22h	Reserved
23h	1. Check validity of RTC value, e.g., a value of 5Ah is an invalid value for RTC minute. 2. Load CMOS settings into BIOS stack. If CMOS checksum fails, use default value instead.
24h	Prepare BIOS resource map for PCI and PnP use. If ESCD is valid, take into consideration of the ESCD's Legacy information.

POST (hex)	Description
25h	Early PCI initialization: – Enumerate PCI bus number – Assign memory and I/O resource – Search for a valid VGA device and VGA BIOS and put it into C000:0.
26h	1. If Early_Init_Onboard_Generator is not defined on-board clock generator initialization. Disable respective clock resource to empty PCI and DIMM slots. 2. Initialize on-board PWM. 3. Initialize on-board H/W monitor devices.
27h	Initialize INT 09 buffer.
28h	Reserved
29h	1. Program CPU internal MTRR (P6 and PII) for 0-640 K memory address. 2. Initialize the APIC for Pentium class CPU. 3. Program early chipset according to CMOS Setup, e.g., on-board IDE controller. 4. Measure CPU speed.
2Ah	Reserved
2Bh	Invoke video BIOS.
2Ch	Reserved
2Dh	1. Initialize double-byte language font (optional). 2. Put information on screen display, including Award title, CPU type, CPU speeds and full screen logo.
2Eh	Reserved
2Fh	Reserved
30h	Reserved
31h	Reserved
32h	Reserved
33h	Resets keyboard if Early_Reset_KB is defined, e.g., Winbond 977 series Super I/O chips. See also POST 63h.
34h	Reserved
35h	Test DMA Channel 0.
36h	Reserved
37h	Test DMA Channel 1.
38h	Reserved
39h	Test DMA page registers.

POST (hex)	Description
3Ah	Reserved
3Bh	Reserved
3Ch	Test 8254.
3Dh	Reserved
3Eh	Test 8259 interrupt mask bits for channel 1.
3Fh	Reserved
40h	Test 8259 interrupt mask bits for channel 2.
41h	Reserved
42h	Reserved
43h	Test 8259 functionality.
44h	Reserved
45h	Reserved
46h	Reserved
47h	Initialize EISA slot.
48h	Reserved
49h	1. Calculate total memory by testing the last double word of each 64 K page. 2. Program writes allocation for AMD K5 CPU.
4Ah	Reserved
4Bh	Reserved
4Ch	Reserved
4Dh	Reserved
4Eh	1. Program MTRR of M1 CPU. 2. Initialize L2 cache for P6 class CPU and program CPU with proper cacheable range. 3. Initialize the APIC for P6 class CPU. 4. On MP platform, adjust the cacheable range to a smaller one in case the cacheable ranges between each CPU are not identical.
4Fh	Reserved
50h	Initialize USB keyboard and mouse.
51h	Reserved
52h	Test all memory (clear all extended memory to 0).
53h	Clear password according to H/W jumper (optional).
54h	Reserved
55h	Display number of processors (multi-processor platform).

POST (hex)	Description
56h	Reserved
57h	1. Display PnP logo. 2. Early ISA PnP initialization – assign CSN to every ISA PnP device.
58h	Reserved
59h	Initialize the combined Trend anti-virus code.
5Ah	Reserved
5Bh	(Optional feature) show message for entering AWDFLASH.EXE from FDD.
5Ch	Reserved
5Dh	1. Initialize Init_Onboard_Super_IO. 2. Initialize Init_Onboard_AUDIO.
5Eh	Reserved
5Fh	Reserved
60h	Okay to enter Setup utility, e.g., not until this POST stage can users enter the CMOS Setup Utility.
61h	Reserved
62h	Reserved
63h	Reset keyboard if Early_Reset_KB is not defined.
64h	Reserved
65h	Initialize PS/2 mouse.
66h	Reserved
67h	Prepare memory size information for function call: INT 15h ax=E820h
68h	Reserved
69h	Turn on L2 cache.
6Ah	Reserved
6Bh	Program chipset registers according to items described in Setup and auto-configuration table.
6Ch	Reserved
6Dh	1. Assign resources to all ISA PnP devices. 2. Auto assigns ports to on-board COM ports if the corresponding item in Setup is set to "AUTO".
6Eh	Reserved
6Fh	1. Initialize floppy controller. 2. Set up floppy-related fields in 40:hardware.

POST (hex)	Description
70h	Reserved
71h	Reserved
72h	Reserved
73h	Reserved
74h	Reserved
75h	Detect and install all IDE devices: HDD, LS-120, ZIP, CD-ROM, etc.

76h	(Optional) Enter AWDFLASH.EXE if:
	   – AWDFLASH.EXE is found in floppy drive
	   – ALT+F2 is pressed.

77h	Detect serial and parallel ports.
78h	Reserved
79h	Reserved
7Ah	Detect and install coprocessor.
7Bh	Reserved
7Ch	Initialize HDD write-protect.
7Dh	Reserved
7Eh	Reserved

7Fh	Switch back to text mode if full screen logo is supported.
	   – If errors occur, report errors and wait for keys
	   – If no errors occur or F1 key is pressed to continue: clear EPA or customization logo.

80h	Reserved
81h	Reserved
E8POST.ASM Starts	
82h	1. Call chipset power management hook. 2. Recover the text font used by EPA logo (not for full screen logo). 3. If password is set, ask for password.
83h	Save all data in stack back to CMOS.
84h	Initialize ISA PnP boot devices.
85h	1. USB final initialization. 2. Switch screen back to text mode.
86h	Reserved
87h	NET PC: build SYSID structure.
88h	Reserved

POST (hex)	Description
89h	1. Assign IRQs to PCI devices. 2. Set up ACPI table at top of memory.
8Ah	Reserved
8Bh	1. Invoke all ISA adapters ROMs. 2. Invoke all PCI ROMs (except VGA).
8Ch	Reserved
8Dh	1. Enable/disable parity checks according to CMOS Setup. 2. APM initialization.
8Eh	Reserved
8Fh	Clear noise of IRQs.
90h	Reserved
91h	Reserved
92h	Reserved
93h	Read HDD boot sector information for Trend's anti-virus code.
94h	1. Enable L2 cache. 2. Program daylight saving. 3. Program boot up speed. 4. Chipset final initialization. 5. Power management final initialization. 6. Clear screen and display summary table. 7. Program K6 writes allocation. 8. Program P6 class write combining.
95h	Update keyboard LED and typematic rate.
96h	1. Build MP table. 2. Build and update ESCD. 3. Set CMOS century to 20h or 19h. 4. Load CMOS time into DOS timer tick. 5. Build MSIRQ routing table.
FFh	Boot attempt (INT 19h).
ACPI POST Code	
F1	System is in S1 mode.
F2	System is in S2 mode.
F3	System is in S3 mode.
F4	System is in S4 mode.

4.10 Updating BIOS (Flash Utility)

You can use the following utility to update the BIOS as the BIOS version is changed. It allows your system to have the most updated functions and compatibility.

Preparation

The upgrade process requires two files:

● The new BIOS file (e.g., newbios.bin) from your dealer

● The upgrade utility (awdflash.exe) from Award Software, Inc.

Although you may conceivably use a different media for the files, this User's Manual assumes that you are using a floppy disk.

Creating a Bootable Floppy Disk

Transfer the two Award files listed above onto the floppy disk. Now you are ready to start the upgrade process.

> **WARNING:** DO NOT interrupt the upgrade program while it runs! Interrupting the program leaves the system without BIOS and the system will not be usable. If by some unlikely chance the power goes off when the program is running, the system will be left without working BIOS. There must be a correctly programmed flash EPROM installed.

Running the Program

Boot the system from a bootable floppy disk you have created. Booting from the floppy disk bypasses loading drivers from the `CONFIG.SYS` and `AUTOEXEC.BAT` files on the hard drive, eliminating the possibility of loading a program (e.g., memory manager) that conflicts with the Award flash utility.

> **NOTE:** The Award flash utility cannot run when EMM386 or QEMM are loaded. Attempting to do so causes an error message to appear.

At the DOS command line, type `awdflash` and press **Enter**.

A sequence of prompts will ask you to type data:

1. File Name to Program:
Type the name of the new BIOS file (e.g., `newbios.bin`) and press **Enter**.

2. Do You Want to Save BIOS (Y/N)?
At the bottom of the menu, this prompt appears:
If you DO NOT wish to save the old BIOS, type `N` and press **Enter**. Then move to step 4.
If you DO wish to save the old BIOS, respond `Y` and press **Enter**.

3. File Name to Save:
Type a filename for the old BIOS (e.g., `oldbios.bin`) and press **Enter**.
Your old BIOS is saved in a file as named, in the default drive and directory.

4. Do You Want to Update? (Y/N):
If you DO NOT wish to update the BIOS, type `N` and press **Enter**. The program exits to the command line.
If you DO wish to update the BIOS, respond `Y` and press **Enter**. When the updating is finished, the following message appears: "Programming Flash Memory – 1FF00 OK."

5 Software Installation

You need to install the software drivers using the CD supplied with your motherboard. The drivers are required for taking full advantage of the unique features of your motherboard.

> **NOTE:** The driver CD may have been updated after this User's Manual was completed. If your CD is different from that described in this chapter, refer to the README files on the CD. These files contain the latest information from the software supplier.

5.1 Installation Instructions for Windows® 98/2000/Me/XP

Chipset Driver

The chipset driver is required for using your system's Intel® Brookdale-GL chipset capabilities. To install this driver, follow these steps:

1. Insert the driver CD into the CD-ROM drive.

2. Run the **SETUP.EXE** program in the **\6813bu\chipset** directory on the CD.

3. Follow the onscreen instructions to complete the installation.

VGA Driver

The video driver allows you to select high-resolution displays with richer colors. It can drive LCD displays as well as CRT displays. Follow these procedures to install the VGA driver:

1. Insert the CD into the drive.

2. Run the **SETUP.EXE** program in the following directory on the CD:
   \6813bu\VGA\win98 (for Windows 98)
   \6813bu\VGA\winme (for Windows Me)
   \6813bu\VGA\win2K (for Windows 2000)
   \6813bu\VGA\winxp (for Windows XP).

3. Follow the onscreen instructions to complete the installation.

4. When finished installing, choose the "Yes" option to reboot and click "Finish" to restart your system. The driver should now be loaded.

Audio Driver

The audio driver is required for using your system's SigmaTel STAC9750T / Analog Device AD1981A / Analog Device AD1885 audio codec capabilities. To install this driver, follow these steps:

1. Insert the driver CD into the CD-ROM drive.

2. Run the **SETUP.EXE** program in the following directory on the CD:
   when motherboard contains SigmaTel STAC9750T chip –
   \6813bu\Audio\sigmatel\win98 (for Windows 98)
   \6813bu\Audio\sigmatel\winme (for Windows Me)
   \6813bu\Audio\sigmatel\win2K (for Windows 2000)
   \6813bu\Audio\sigmatel\winxp (for Windows XP) or
   when motherboard contains Analog Device AD1981A/AD188 chip –
   \6813bu\Audio\AD\win98 (for Windows 98)
   \6813bu\Audio\AD\winme (for Windows Me)
   \6813bu\Audio\AD\win2K (for Windows 2000)
   \6813bu\Audio\AD\winxp (for Windows XP).

3. Follow the onscreen instructions to complete the installation.

LAN Driver (option)

> **NOTE:** Have your Windows 98/Me/XP/2000 Installation CD available in case you are prompted for them when you install the new adapter.

1. After connecting the LAN cable, ensure that Windows 98/Me/XP/2000 is up and running properly.

2. Insert the CD into the drive.

3. For Windows 98/Me/XP:
   Right-click on "My Computer," then "Properties," then "Device Manager."
   For Windows 2000:
   Right-click on "My Computer," then "Properties," then "Hardware," then "Device Manager."

4. For Windows 98/Me/XP:
   Under the item "Other Devices," "PCI Ethernet Controller" should have a yellow marker "?" on it.
   For Windows 2000:
   Under the item "Other Devices," "Ethernet Controller" should have a yellow marker "!" on it.

5. For Windows 98/Me/XP:
   Double-click or right-click "PCI Ethernet Controller" to enter "Properties."
   For Windows 2000:
   Double-click or right-click "Ethernet Controller" to enter "Properties."

6. Click on the "Driver" tab.

7. Click on "Update Driver," then click on "Have Disk" and choose the following:
   when motherboard contains Intel DA82562ET chip –
   \6813bu\LAN\Intel\win98 (for Windows 98)
   \6813bu\LAN\Intel\winme (for Windows Me)
   \6813bu\LAN\Intel\win2K (for Windows 2000)
   \6813bu\LAN\Intel\winxp (for Windows XP) or
   when motherboard contains NS DP83816 chip –
   \6813bu\LAN\NS\win98 (for Windows 98)
   \6813bu\LAN\NS\winme (for Windows Me)
   \6813bu\LAN\NS\win2K (for Windows 2000)
   \6813bu\LAN\NS\winxp (for Windows XP).

8. "Intel DA82562ET or NS DP83816 PCI Fast Ethernet NIC" must be shown on screen.

9. Restart Windows 98/Me/XP/2000 to complete driver installation.

USB v.2.0 Driver

The USB driver is required to enable your system to connect to USB v.2.0 devices. To install this driver, follow these steps:

1. Insert the driver CD into the CD-ROM drive.

2. For Windows 98/Me/XP:
    Right-click on "My Computer," then "Properties," then "Device Manager."
    For Windows 2000:
    Right-click on "My Computer," then "Properties," then "Hardware," then "Device Manager."

3. Under the item "USB Device," double-click or right-click on "USB Hub" to enter "Properties."

4. Click on the "Driver" tab.

5. Click on "Update Driver," then click on "Have Disk" and choose the following directory `\6813bu\USB\`.

6. Follow the onscreen instructions to complete the installation.