

Personal Computer User's Guide

December 1998

5728893301 (Rev 1)

TTE3156

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**Federal Communications Commission (FCC)
Statement
FCC Notice - Part 15**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment on and off, the user is encouraged to try to correct the interference by one or more of the following measures:

- ◆ Reorient or relocate the receiving antenna.
- ◆ Increase the separation between the equipment and the receiver.
- ◆ Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- ◆ Consult the dealer or an experienced radio/TV technician for help.

Use only shielded cables to connect I/O devices to this equipment.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

**THIS DEVICE COMPLIES WITH PART 15 OF FCC
RULES. OPERATION IS SUBJECT TO THE FOLLOWING
TWO CONDITIONS (1) THIS DEVICE MAY NOT CAUSE
HARMFUL INTERFERENCE. AND (2) THIS DEVICE
MUST ACCEPT ANY INTERFERENCE RECEIVED.
INCLUDING INTERFERENCE THAT MAY CAUSE
UNDESIRE OPERATION.**

Safety and Maintenance Precautions

1. Read and follow all instructions carefully.
2. Save these instructions for future use.
3. Follow all warnings and instructions marked on the products.
4. Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
5. Do not use this product near water.
6. Do not place this product on an unstable surface. If the product should fall, it may become seriously damaged and, more importantly, may cause injuries to the user.
7. There should be slots and openings at the back or bottom of the cabinet for ventilation. This is also to ensure reliable operation of the product and to protect it from overheating. The openings should never be blocked. Do not place the product on a bed, sofa, rug or other similar surfaces. This product should never be placed near any object that produces heat. This product should not be placed in a built-in installation unless proper ventilation is provided.
8. This product should be operated from the type of power source indicated on the label. If you are not sure of the type of power available, consult your dealer or local power company.
9. Do not allow anything to rest on the power cord. Do not put this product where the cord could be stepped on.
10. Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or cause short circuits, risking the possibility of a fire or electric shock. Never spill liquid of any kind onto this product.
11. Please turn off power of all equipment when it is not used for a long time.
12. For pluggable equipment, the socket-outlet should be installed near the equipment and should be easily accessible.
13. **CAUTION:** (English)
Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
ATTENTION: (French)
Il y a danger d'explosion s'il y a remplacement incorrect de la

batterie.

Remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

VORSICHT! (German)

Explosionsgefahr bei unsachgemäßen Austausch der Batterie Ersetz nur durch denselben oder einem vom Hersteller empfohlenem ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

14. Do not attempt to service this product yourself. If you have the suspicion that the product is not in proper working order, unplug the unit and seek assistance from qualified service personnel, especially under the following conditions:
 - a. When the power cord or plug is damaged or frayed.
 - b. If liquid has been spilled onto the product, or if the product has been exposed to rain or water.
 - c. If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in further damage or complications.
 - d. If the product has been dropped or the cabinet has been damaged.
 - e. If the product exhibits a distinct deterioration in performance, indicating a need for service.

**Canadian Department of Communication Radio
Frequency Interference Statement**

(English)

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

(French)

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Wichtige Sicherheitshinweise

1. Bitte lesen Sie sich diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssig- oder Aerosolreiniger. Am besten dient ein angefeuchtetes Tuch zur Reinigung.
4. Das Gerät ist vor Feuchtigkeit zu schützen.
5. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Verletzungen hervorrufen.
6. Die Belüftungsöffnungen dienen zur Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
7. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
8. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
9. Alle Hinweise und Warnungen, die sich an den Geräten befinden, sind zu beachten.
10. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
11. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
12. Wenn folgende Situationen auftreten, ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a. Netzkabel oder Netzstecker sind beschädigt.
 - b. Flüssigkeit ist in das Gerät eingedrungen.
 - c. Das Gerät war Feuchtigkeit ausgesetzt.
 - d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
13. Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 645 beträgt 70dB(A) oder weniger.
14. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6A und ein Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm² einzusetzen.
15. Das CD-ROM Laufwerk ist ein Laserklasse 1 Gerät.

About This Guide

Congratulations on your purchase of this new computer system. This user's guide provides information on the installation and setup procedures for your new motherboard or computer system.

Chapter 1: Getting Started gives you information on what is provided with your computer system and the available functions and locations of controls. If you are a first-time computer user, this chapter also introduces you to the basics of computing.

Chapter 2: Specifications lists the standard features and technical specifications of the motherboard.

You can find the motherboard layout in **Chapter 3: Connectors and Jumpers**. Through this chapter, you can acquaint yourself with the functions and locations of different connectors and jumpers on your motherboard.

For information on BIOS Setup Utility, please refer to **Chapter 4: BIOS Setup**. You may need to look into this chapter if you are installing new peripherals into your system, or would like to change system settings such as power management, ...

If you need to install or replace CPU, memory, and other internal devices, refer to **Chapter 5: Installation**.

Finally, some basic troubleshooting techniques are provided in **Chapter 6: Troubleshooting**.

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Chapter 1: *Getting Started*

This chapter introduces you to your computer system. If this is the first time you are using a computer, this chapter gives you information on the basics of computing.

Choosing a Location

Before you start, you need to find a place for your computer. Like any other delicate electronic device, your PC should be placed in a suitable location.

-  Your PC should be placed on a flat, sturdy surface where you plan to work. Dropping it may cause serious damages.
-  There must be enough ventilation for proper heat dissipation. Make sure there is enough spaces (at least two to three inches) on all sides except the bottom.
-  The main unit, keyboard, mouse, and all other peripheral devices should be located in a relatively dry and cool place. These should be kept away from direct sunlight or any other sources of extreme heat. Exposing to high temperature may cause internal overheating, and may blemish the exterior of your computer system.
-  Do not place your PC near water. Accidentally pouring liquid into your system may damage it.

-  Keep your PC away from devices that generate radio frequency interference such as stereo equipment. This should also be kept at least three feet from sources of strong magnetic fields since these may destroy information stored on your diskette and hard disk.

Unpacking Your System

After finding a suitable location, you can remove your PC from the box. Please check to see if there is anything missing. Main items in your package should include:

- Main Unit
Depending on your order, your system may include floppy disk drive, hard disk drive, and CD-ROM drive.
- Windows 95 Enhanced PS/2 Keyboard
- PS/2 Mouse
- Device Drivers and Utility Disks
- Windows 98 Software Package
This includes Windows 98 operating system on CD-ROM disc, a 3.5" boot disk, and a user's guide.
- This User's Guide
- AC Power Cord

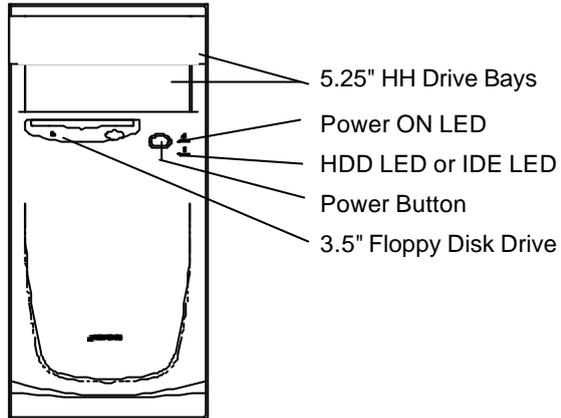
There may be some optional devices or items included in the package. These shall depend on the model and the configuration that you have ordered. If there is anything missing, contact your dealer immediately.

Keep the original carton and packing materials. If you need to move your PC to another location in the future, the original packaging materials best protect your PC.

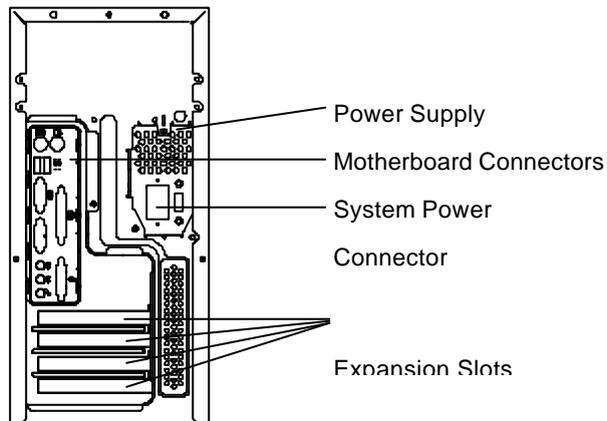
Locations and Functions of Controls

NOTE: If your system comes in a different system chassis, information on this section does not apply.

Front Panel



Rear Panel



Making the Connections

You are now ready to connect the devices to get the system working. For installation of devices that are not covered in this section, please refer to their respective manuals.

———— **WARNING: Before You Start Connecting** ————

*Make sure that your computer is turned **OFF** before connecting any devices. Connecting devices with the power on may result in severe damages!*



Keyboard

The keyboard is an input device. You use this to enter your commands or data to the computer. Connect the keyboard to your system by inserting the connector of its cable to the PS/2 keyboard jack found at the rear of your system. The connector is designed to fit into the keyboard jack in only one way. Do not forcibly insert the connector. Be sure to align the pins into the holes accordingly before inserting.

 **Mouse**

The mouse is another input device. This is also known as a pointing device. You use this to point to the required items, confirm or cancel your commands, or select items from a given list. Connect the mouse to your system by inserting the connector of its cable to the PS/2 mouse port at the rear of your system. The connector is designed to fit into the PS/2 mouse port in only one way. Do not forcibly insert the connector. Be sure to align the pins into the holes accordingly before inserting.

 **SVGA/VGA Monitor**

The monitor is an output device. This is also known as the screen display. You need this to see the results of the computer operations and other information required from the system. You will need a video cable to connect a monitor to your system. This is usually supplied with the monitor.

There are monitors that come with video cable attached to the monitor. In such case, just align the connector from the video cable to the VGA port of your system. Locate the VGA port at the back of your system. You can recognize this port easily as only this type of connector can be fit into it.

Other monitors bundle a separate video cable. After inserting a connector of the video cable to the VGA port, connect the other end to the monitor. Refer to the user's guide of the monitor for more information.

 **Printer**

The printer is another output device. You use this to provide hardcopies of the documentation required. This is also called an LPT device, or, a parallel printer. Parallel refers to the type of communication method used to transmit the signals between your system and the printer. This type of transmission is faster, but is limited by the distance of the communicating devices.

To connect a parallel printer to your system, you shall need a printer cable. This type of cable is supplied with your printer. Connect an end of this cable to the parallel port of your system. This port is located at the rear panel.

Check the printer's manual for any driver installation required to maximize its performance. Then, make sure that you have designated your print destination properly in your applications program before issuing a print command.



AC Power

Now, get the AC power cord and insert the female end (with holes) into the AC Power In at the rear of your system. The other end of the power cord is plugged into an AC wall outlet. Next, check if the power cords of all other devices (monitor, printer, ...) are all plugged to an AC wall outlet.

WARNING: Before You Plug Into an AC Outlet

Check if your system is switched to the right **AC voltage**. Power supplies that do not have automatic voltage switching feature have to be set to the AC voltage of your power outlet. You can check the system simply by looking at the rear panel. Usually, non-automatic switching power supply has a switch near the AC Power In socket of your system. Set this switch to the correct voltage.

We strongly suggest that you use a multiple-outlet surge protector (sometimes called a "power strip") so as to prevent damage to your system and its peripherals caused by electrical surges in the power line. Connect the power of all other devices or peripherals to this, too. Be sure to have the surge protector plugged to a wall outlet all to itself.

It is also greatly recommended that your computer and its peripherals be plugged into a grounded outlet. Do not use any device to convert the three-prong (grounded) plug of your power cord for use with a two-prong (non-grounded) outlet.

Turning the System On/Off

By this time, everything is already connected and you are ready to power on your PC. Press power button to turn it on. Your computer will boot and will automatically enter Windows 98 operating system. The Power On LED of your computer will be lit.

WARNING: Before You Turn On Your Computer

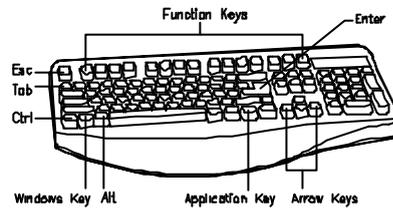
Check if your system is switched to the right **AC voltage**. Power supplies that do not have automatic voltage switching feature has to be set to the AC voltage of your power outlet. You can check the system simply by looking at the rear panel. Usually, non-automatic switching power supply has a switch near the AC Power In socket of your system. If these do not match, set the switch to the correct voltage.

If you would like to turn off your system, perform Windows 98 shut down operations first:

- 1 Press  (Windows) key.
- 2 Click "Shut Down...".
- 3 Confirm by clicking "Yes" button.
- 4 Your system power will automatically be turned off.
- 5 Press main power switch, if necessary.

Using the Keyboard

Keyboard works like a typewriter. There are, however, a number of keys that are specific to a computer keyboard that you won't find on a typewriter. These are shown and listed below:



-  Tells the PC you have finished entering a command and you want the PC to execute it.
Confirms your selection and tells the PC to proceed.
-  This usually returns you to the previous screen.
Also used to exit a program.
-  Usually used to move the cursor to the next field or menu item.
-  Moves the cursor in the direction of the arrow.
-  Windows key -> Displays the Microsoft Windows 98 Start menu. Pressing this has the same effect as clicking Start button at the bottom left of the screen.
-  Application key -> Opens a shortcut menu for the current program. Pressing this has the same results as pressing the right button of the mouse.
-  ~  Function keys -> These are shortcut keys for various operations, depending on the instructions set by the applications program.

Special Key Combinations

-  +  Holding down this key and another key at the same time gives a command to the current program. The commands are dependent on the preset values of that application program.
-  +  Pressing this key with an ASCII code returns the ASCII character. Some application programs also assign preset commands to this key.



Displays the close program. This allows you to select a specific program to be terminated. Pressing this combination two times consecutively resets your computer without performing shut down operations. Doing so may result to data loss.

Using the Mouse

With most software programs, you use a mouse to select options and move around the screen.

You may want to place a mouse pad under your mouse to make it move more smoothly. You can buy mouse pads at computer and office supply stores.



Pointing with the Mouse

Slide the mouse on a flat surface and watch the pointer on your screen move in the same direction. You point to an item by positioning the pointer over the item. If you run out of space on the mouse pad, lift the mouse to reposition it.

Clicking the Mouse

The mouse has either two or three buttons: a left and a right button, and sometimes a middle button. You will use the left button most often. Press the left button to highlight items, to select items, or to run your software programs. The right button has different uses depending on the software. In most software programs, pressing the right button will display a shortcut menu. The center button is rarely used.

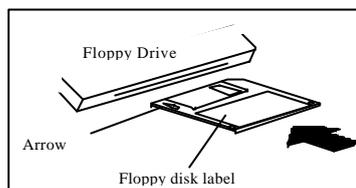
To “click” an item, point to the item on the screen, and press the left mouse button. To “double-click” an item, press the left button twice quickly.

Using the Floppy Disk Drive

Your floppy disk drive uses 3.5" floppy disks. Maximum capacity of each disk is 1.44MB.

Inserting a Disk

Hold the disk with the label and the arrow facing up. Then, slide the disk into the drive until it snaps into place.



WARNING

If you remove a disk while the indicator light is on, you may damage the information on the disk.

Removing a Disk

First, make sure the drive indicator light is *off*. Then, press the Eject button located at the bottom right side of the drive.

Floppy disks are designated by your operating system as drive A. Often, it is represented by **A:**. Some systems can accommodate two floppy disk drives. In such case, the other floppy disk is designated as drive B, and represented by **B:**.

Presence of floppy disk drives are automatically detected by your system and the operating system.

Using the Hard Disk

Hard disk is a storage medium that allows you to store programs and data. Aside from the Windows operating system, your PC is supplied with a number of system programs installed on the hard disk.

———— **WARNING: Before You Reset or Turn Off** ————

When the Hard Disk Access Indicator is flashing, do not reset or turn off your system. Doing so may cause loss of, or damage to, hard disk data.

Like any other types of disks, it is essential that you make backup copies of your hard disk data periodically.

First hard disk drive in a system is designated as drive C, symbol is **C:**. Next hard disk drive is drive D, and so on.

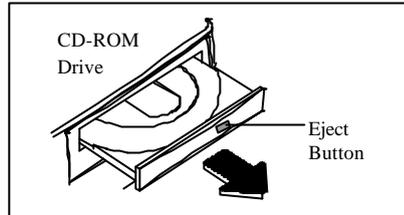
Your system and Windows operating system automatically detects your hard disk drives. If a hard disk is not detected, enter your BIOS Setup Utility to see if it is properly registered.

Using the CD-ROM Drive

Before you insert a CD, check for dust or fingerprints on the side of the CD without the title. Dust or smudges may cause the drive to read the CD incorrectly. You can use a clean, dry, non-abrasive cloth to wipe it clean.

Inserting a Disc

Turn on your PC. Press the Eject button usually found at the lower right side of the CD-ROM drive to open the CD drawer. Hold the CD by the edge with the title facing up and place it into the CD drawer. Press the Eject button again, or gently push the front of the CD drawer, to close it.



Removing a Disc

Press the Eject button to open the CD drawer. Then, lift the CD by its edge and place it in its protective sleeve or case. Press the Eject button again, or gently push the front of the CD drawer, to close it.

CD-ROM is short for Compact Disc - Read Only Memory. As the name implies, it is "read-only". You cannot save information on CD-ROM discs.

Windows operating system can automatically detect most CD-ROM drives. If your drive is not detected, you need to install the device drivers that come with that drive. Refer to the drive's manual for the procedures.

CD-ROM drives are assigned a drive letter next to the last assigned hard disk drive of the system. For example, if your system has one hard disk, hard disk drive is C: and CD-ROM drive becomes D:.

Handling CD-ROM Discs With Care

- ☆ Dust and smudges on the side of the CD without the title or label may cause the drive to read the CD incorrectly. Use a clean, dry, non-abrasive cloth to wipe it clean.
- ☆ Do not force the CD drawer open by hand.
- ☆ Do not place objects (other than CD-ROM disc) in the CD-ROM drawer.
- ☆ Do not touch the pickup lens of the CD-ROM drive module.
- ☆ To prevent accidents or collection of dusts, be sure to close the CD drawer when not in use.
- ☆ Do not scratch or write on discs. Also, do not put tape on discs.
- ☆ Keep the discs away from direct sunlight or sources of extreme heat.
- ☆ Keep the discs away from water or liquid.

Chapter 2 :

Specifications

This chapter lists the standard features and technical specifications of your motherboard.

Standard Features

- ☆ Socket 7 compatible processor, supports Intel P55C, AMD K6, AMD K6-2 CPUs, Cyrix MII, IBM 6x86MX
 - ☆ Supports 66/75/83/95/100 MHz FSB
 - ☆ Designed using VIA Apollo MVP3 chipset
 - ☆ Supports 66/75/83/95/100 MHz CPU/DRAM bus
 - ☆ 0KB/512KB L2 cache factory option
 - ☆ Two DIMM sockets, for total of 512MB using 66MHz EDO RAM or 100MHz registered DIMM; or, total of 256MB memory using 100MHz SDRAM
 - ☆ Integrated ATI Rage IIC AGP chip with 2MB or 4MB SGRAM display memory
 - ☆ Integrated 16-bit Sound Blaster compatible Crystal CX4235 audio/sound interface
 - ☆ Integrated Winbond W83877TF/ATF Super I/O controller
 - ☆ Built-in ports: serial port, parallel, PS/2 keyboard, PS/2 mouse, VGA DB15 port, USB ports x2, game/MIDI port,
-

microphone in, audio line in, and audio line out

- ☆ PC health monitoring features: Winbond W83781
 - ◆ *Monitor system and CPU voltages*
 - ◆ *Monitor CPU fan speed*
 - ◆ *Monitor CPU and chassis temperature*
- ☆ 2MB Flash ROM with Award BIOS
- ☆ Expansion slots: PCI slots x2, PCI/ISA combo slot x1
- ☆ micro-ATX form-factor, ATX backwards compatible
- ☆ Supports full ACPI and APM 1.2 power management, PC97/PC98 compliant
- ☆ Runs under Windows 98 operating system

IMPORTANT NOTES

Installation procedures for device drivers are provided on CD or floppy disk that contains the device driver. Please refer to these files for the installation procedures:

☞ *Be sure to install **VGA and audio device drivers** provided with your system after installation or re-installation of operating system.*

☞ *Be sure to install **PCI driver** that came with your system before installing and accessing PCI cards.*

Technical Specifications

CPU (Central Processing Unit)

- Socket 7 compatible, supports:
 - ♦ *Pentium P55C 166/200/233 MHz*
 - ♦ *AMD K6 200/233/266/300 MHz*
 - ♦ *AMD K6-2 300/333/350/400 MHz*
 - ♦ *Cyrix MII 300/333 MHz*
 - ♦ *IBM 6X86MX 300/333 MHz*
- Supports 66/75/83/95/100MHz FSB
- Optional 512KB L2 cache using 64Kx64 x1 (factory option)

Chipset

- VIA Apollo MVP3 chipset (VT82C598AT + VT82C586)
- Supports 66/75/83/95/100MHz CPU/DRAM bus

Power Management

- PC97/PC98 compliant
- APM (Advanced Power Management) 1.2 power management feature supported
- Full ACPI (Advanced Configuration and Power Interface) power management feature supported
 - ♦ *Wake-On-LAN (WOL) feature enables a management application to remotely power up a system; perform remote PC setup; update; and, perform asset tracking after office hours and on weekends. This feature keeps daily LAN traffic to a minimum.*
 - ♦ *Slow blinking LED to indicate that your system is in sleep-state*

- ♦ *BIOS support for USB keyboard during boot if this is the only keyboard attached to the system*
- ♦ *Real-time clock wake-up alarm to respond to preset wake-up events*
- Suspend function via sleep button or time out

Memory

- 2MB Flash ROM with Award BIOS
- Two 168-pin 3.3V DIMM sockets provided
- 512MB maximum memory using 66MHz EDO or 100MHz registered DIMM; 256MB maximum memory using 100MHz SDRAM memory

Integrated VGA Controller

- ATI Rage IIC AGP chip
- 2MB or 4MB SGRAM display memory

Integrated Audio/Sound Controller

- 16-bit Sound Blaster compatible
- Crystal CX4235 audio chip with SRS 3D sound

Super I/O Controller

- Winbond W83877TF/ATF Super I/O controller
- Supports PnP, ACPI, 2.88MFDC, SPP/EPP/ECP parallel mode, UART 16550A, SIR, FIR, CIR

Built-in I/Os

- Serial port and parallel port
- PS/2 Keyboard and mouse controller
- DB15 VGA port
- Two USB (Universal Serial Bus) port interfaces
- Game/MIDI port
- Microphone in, audio line in, and audio line out
- Expansion slots: PCI slots x2, PCI/ISA combo slot x1

Optional Hardware Monitoring Features

- Winbond W83781 chip
- Monitor system voltages: +5V, -5V, +12V, -12V, +3.3V and CPU VCCcore
- Monitor CPU fan speed
- Monitor CPU and chassis temperature

Power Input Requirement

100-125V~,4A

220-240V~,2A

50/60 Hz

Environmental Specifications

Ambient Temperature

Operating: 50 °F to 104 °F (10 °C to 40 °C)

Non-operating: 5 °F to 140 °F (- 15 °C to 60 °C)

NOTE: Safety regulations for operating temperature are set at 25°C ±5°C.

Humidity

Operating: 15% to 80%, no condensation

Non-operating: 10% to 90%, no condensation

Unit Dimensions

Motherboard: 243.8 x 243.8 mm

Tower System: 180 (W) x 334 (D) x 375 (H) mm

NOTE: If your system comes in a different system chassis, dimension for tower system does not apply.

REMARK

Specifications are subject to change without prior notice.

C h a p t e r 3 : *Connectors & Jumpers*

This chapter provides the layout, descriptions and functions of the connectors and jumpers of your motherboard.

There are a number of connectors and jumpers on the motherboard. Connectors allow you to connect to different peripherals and/or devices. Jumpers, on the other hand, provide you flexibility and different functions when set to different values.

These jumpers were set to factory default before shipping, which gives you the best performance. You should not alter these settings unless you are sure of what you are doing. If you want to change any setting, please make sure that the computer has been turned OFF and make a note of what the original settings are. This way, you can always revert to the original settings if the new settings do not work.

Quick Reference

Jumpers/Connectors	Function	Page
CFAN1	CPU Fan Connector	3-9
CN3	Power Connector	3-9
COM1	Serial Port Connector	3-5
FAN2	Chassis Fan Connector	3-9
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JCD1	CD In Connector	3-7
JFP1	Front Panel Connector	3-14
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JIR1	IR Port Connector	3-8
JKB+MS1	PS/2 Keyboard/Mouse Connector	3-4
JMIC	Microphone In Jack	3-6
JMPEG1	MPEG Connector	3-7
JMSPK	Fax/Modem Speaker Connector	3-6
JP4, JP3, JP2, JP1	Bus Frequency Select Jumpers	3-13
JU2	VGA Interrupt	3-5
JUSB1	USB Port Connector	3-4
JVCC3	I/O Voltage Select Jumper	3-14
JWOL	Wake-on-LAN Connector	3-7
JWOR	Wake-on-Ring Connector	3-7

LPT1	Printer Port Connector	3-4
PCI1, PCI2, PCI3	PCI Slots	3-10

Description on Connectors & Jumpers

1 PS/2 Keyboard/Mouse Connector (JKB+MS1)

The PS/2 enhanced keyboard and mouse is connected to the computer via female mini-DIN connectors **JKB+MS1** mounted on the motherboard.

Pin	Signal	Pin	Signal
1	Data	4	+5V (fused)
2	NC	5	CLK
3	GND	6	NC

2 USB Port Connector (JUSB1)

The USB (Universal Serial Bus) connector, **JUSB1**, is a 2-layered connector mounted on the motherboard for connecting up to two USB devices.

Pin	Signal
1	Power (+5V)
2	USBP0# [USBP1#]
3	USBP0 [USBP1]
4	GND

3 Printer Port Connector (LPT1)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	Strobe#	7	Data bit 5	13	Select	19	GND
2	Data bit 0	8	Data bit 6	14	Auto Feed#	20	GND
3	Data bit 1	9	Data bit 7	15	Fault#	21	GND
4	Data bit 2	10	ACK#	16	INIT#	22	GND
5	Data bit 3	11	Busy	17	SLCT IN#	23	GND
6	Data bit 4	12	Error	18	GND	24	GND
						25	GND

LPT1 is a female DB25 (25-hole) parallel port built-in on the motherboard. You can select the mode of parallel port through BIOS Setup utility.

4 Serial Port Connector (COM1)

Pin	Signal	Pin	Signal	Pin	Signal
1	DCD	4	DTR#	7	RTS
2	Serial In#	5	GND	8	CTS
3	Serial Out#	6	DSR	9	RI

COM1 is a male DB9 (9-pin) serial port connector built-in on the motherboard. To enable or disable these, perform BIOS Setup.

5 VGA Port Connector (J4)

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	R	6	GND	11	NC	16	GND
2	G	7	GND	12	MONID1	17	GND
3	B	8	GND	13	HSYNC		
4	NC	9	NC	14	VSYNC		
5	GND	10	GND	15	MONID2		

VGA interface is built-in. Video cable of a VGA/SVGA monitor is connected to **J4**.

6 VGA Interrupt (JU2)

JU2 enables or disables VGA interrupt. Default is disabled.

JU2	Function
1-2	Disable
2-3	Enable

7 Line In Jack (JAUXI)

JAUXI is for connecting audio output of peripheral devices such as CD/cassette player.

Pin	Signal
1	GND
2	Audio Left In
3	Audio Right In

8 Line Out Jack (JAUXO)

JAUXO is for connection to an amplifier system or other audio peripheral devices.

Pin	Signal
1	GND
2	Audio Left Out
3	Audio Right Out

9 Microphone In Jack (JMIC)

JMIC is for connection to an external microphone.

Pin	Signal
1	GND
2	Mono In
3	Electret Bias Voltage

10 Game/MIDI Port Connector (JGAME1)

Pin	Signal	Pin	Signal	Pin	Signal
1	+5V (fused)	6	GP1 (JSY1R)	11	GP2 (JSX2R)
2	GP4 (JSBUT0)	7	GP5 (JSBUT1)	12	MIDI-OUTR
3	GP0 (JSX1R)	8	+5V (fused)	13	GP3 (JSY2R)
4	GND	9	+5V (fused)	14	GP7 (JSBUT3)
5	GND	10	GP6 (JSBUT2)	15	MIDI-INR

JGAME1 is a 15-pin connector mounted on the motherboard for connection of joystick or MIDI devices.

11 Fax/Modem Speaker Connector (JMSPK)

Fax/modem's speaker output is connected to **JMSPK**.

Pin	Signal	Pin	Signal
1	MICLIN	3	GND
2	GND	4	SPK

1 2 Wake-on-LAN Connector (JWOL)

Wake-on-LAN is a key feature for corporate systems. **JWOL** connector allows a management application to remotely power on a computer that is originally turned off.

Pin	Signal
1	VDD_5VSB
2	GND
3	RI*

1 3 Wake-on-Ring Connector (JWOR)

JWOR wakes up the system if a ring from the modem is detected.

Pin	Signal
1	GND
2	RI*

1 4 CD In Connector (JCD1)

The audio output signal of the CD-ROM drive is connected to **JCD1**.

Pin	Signal
1	RIGHT_CD_INPUT
2	CD_COMMON_INPUT
3	CD_COMMON_INPUT
4	LEFT_CD_INPUT

1 5 CMOS Clear (JBAT1)

JBAT1 gives you the option to clear CMOS during boot.

Pin	Description
1-2	Default
2-3	Clear CMOS

1 6 MPEG Connector (JMPEG1)

JMPEG1 is for connecting MPEG-1 audio in signals.

Pin	Signal
1	MPEG_R
2	Analog GND
3	Analog GND
4	MPEG_L

17 IR Port Connector (JIR1)

Pin	Signal	Pin	Signal
1	VCC5	4	GND
2	Off	5	IRTX2
3	IRRX2		

18 FDD Connector (FDD1)

Pin	Signal	Pin	Signal
1	GND	2	DENSEL
3	GND	4	Reserved
5	Key	6	FDEIN
7	GND	8	FDINDX# (Index)
9	GND	10	FDMO0# (Motor Enable A)
11	GND	12	FDDS1# (Drive Select B)
13	GND	14	FDDS0# (Drive Select A)
15	GND	16	FDMO1# (Motor Enable B)
17	MSEN1	18	FDDIR# (Stepper Motor Direction)
19	GND	20	FDSTEP# (Step Pulse)
21	GND	22	FDWD# (Write Data)
23	GND	24	FDWE# (Write Enable)
25	GND	26	FDTRK0# (Track 0)
27	MSEN0	28	FDWPD# (Write Protect)
29	GND	30	FDRDATA# (Read Data)
31	GND	32	FDHEAD# (Side 1 Select)
33	GND	34	DSKCHG# (Diskette Change)

Floppy disk drives are connected to the motherboard through a 34-pin flat cable to **FDD1**.

1 9 CPU Fan Connector (CFAN1)**2 0 Chassis Fan Connector (FAN2)**

CFAN1 becomes active when the system's power is turned on, while **FAN2** becomes

Pin	CFAN1 Signal	FAN2 Signal
1	FANTEC1	FANTEC2
2	+12V	+12V
3	GPIO0	SYSFAN_ON

active when the CPU temperature is over the specification.

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	+3.3V	6	+5V	11	+3.3V	16	GND
2	+3.3V	7	GND	12	-12V	17	GND
3	GND	8	PWRGD	13	GND	18	-5V
4	+5V	9	+5VSB	14	PS-ON#	19	+5V
5	GND	10	+12V	15	GND	20	+5V

2 1 Power Connector (CN3)

The 20-pin connector from the switching power supply is connected to **CN3**.

If the switching power supply used is an ATX-compliant power supply, remote power on/off is supported and the system's power can be turned off through software control. This feature is called soft-off control. It allows your computer to automatically go back to the power state (on, off, or suspend) after being interrupted either by power outage or by disconnection of power cord. To enable this feature, your system's advanced power management must be enabled both in the BIOS setup utility and in the operating system.

2.2 PCI Slots (PCI1, PCI2, PCI3)

PCI1, PCI2 and **PCI3** allow connections of PCI cards. Note that **PCI3** is a combo slot, you can install PCI card only if no ISA card is installed in **ISA1** slot.

Pin	A	B	Pin	A	B
1	GND	-12 V	32	AD16	AD17
2	+12 V	GND	33	+3.3 V	C/BE2#
3	+5 V	GND	34	FRAME#	GND
4	+5 V	No Connect	35	GND	IRDY#
5	+5 V	+5 V	36	TRDY#	+3.3 V
6	PIRQ#A	+5 V	37	GND	DEVSEL#
7	PIRQ#C	PIRQ#B	38	STOP#	GND
8	+5 V	PIRQ#D	39	+3.3 V	PLOCK#
9	Reserved	No Connect	40	+5 V	PERR#
10	+5 V (I/O)	Reserved	41	+5 V	+3.3 V
11	Reserved	No Connect	42	GND	SERR#
12	GND	GND	43	PAR	+3.3 V
13	GND	GND	44	AD15	C/BE1#
14	Reserved	Reserved	45	+3.3 V	AD14
15	PCIRST#	GND	46	AD13	GND
16	+5 V (I/O)	CLK	47	AD11	AD12
17	GNT#	GND	48	GND	AD10
18	GND	REQ#	49	AD09	GND
19	PCI_PM#	+5 V (I/O)	50	Key	Key
20	AD30	AD31	51	Key	Key
21	+3.3 V	AD29	52	C/BE0#	AD08
22	AD28	GND	53	+3.3 V	AD07
23	AD26	AD27	54	AD06	+3.3 V
24	GND	AD25	55	AD04	AD05
25	AD24	+3.3 V	56	GND	AD03
26	AD26	C/BE3#	57	AD02	GND
27	+3.3 V	AD23	58	AD00	AD01
28	AD22	GND	59	+5 V (I/O)	+5 V (I/O)
29	AD20	AD21	60	PU_ACK64#	+5V
30	GND	AD19	61	+5 V	+5 V

Pin	A	B	Pin	A	B
31	AD18	+3.3 V	62	+5 V	+5 V

^{2 3} ISA Slot (ISA1)

ISA1 is a combo slot that allows connection of an ISA card only if no PCI card is installed in **PCI3** slot.

Pin	B	A	D	C
1	GND	IOCHK#	MEMCS16#	SBHE#
2	BRSTDRV	SD7	IOCS16#	LA23
3	+5 V	SD6	IRQ10	LA22
4	IRQ9	SD5	IRQ11	LA21
5	-5 V	SD4	IRQ12	LA20
6	DRQ2	SD3	IRQ15	LA19
7	-12 V	SD2	IRQ14	LA18
8	ZEROWS#	SD1	DACK0#	LA17
9	+12 V	SD0	DRQ0	MEMR#
10	GND	IOCHRDY	DACK5#	MEMW#
11	SMEMW#	AEN	DRQ5	SD8
12	SMEMR#	SA19	DACK6#	SD9
13	IOW#	SA18	DRQ6	SD10
14	IOR#	SA17	DACK7#	SD11
15	DACK3#	SA16	DRQ7	SD12
16	DRQ3	SA15	+5 V	SD13
17	DACK1#	SA14	RMASTER#	SD14
18	DRQ1	SA13	GND	SD15
19	REFRESH#	SA12		
20	SYSCLK	SA11		
21	IRQ7	SA10		
22	IRQ6	SA9		
23	IRQ5	SA8		
24	IRQ4	SA7		
25	IRQ3	SA6		
26	DACK2#	SA5		
27	TC	SA4		
28	BALE	SA3		
29	+5 V	SA2		
30	OSC1	SA1		
31	GND	SA0		
	Key	Key		

2.4 Primary/Secondary IDE Connectors (IDE1, IDE2)

IDE devices are connected to the motherboard through 40-pin Daisy-chained cable to **IDE1** or **IDE2**. **IDE1** is for primary IDE devices while **IDE2** is for secondary IDE devices. Those signals in brackets are signals for IDE2 connector.

Pin	Signal	Pin	Signal
1	Reset IDE	2	GND
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	GND	20	Key
21	DDRQ0 [DDRQ1]	22	GND
23	I/O Write#	24	GND
25	I/O Read#	26	GND
27	IOCHRDY	28	P_ALE (Cable Select pull-up)
29	DDACK0# [DDACK1#]	30	GND
31	IRQ14 [IRQ15]	32	Reserved
33	Address 1	34	Reserved
35	Address 0	36	Address 2
37	Chip Select 1P# [Chip Select 1S#]	38	Chip Select 3P# [Chip Select 3S#]
39	Activity#	40	GND

2 5 CPU Speed Ratio Jumper (JBF1)

Processor Core Frequency Ratio	1-2	3-4	5-6
5.5	OFF	OFF	ON
5.0	OFF	ON	ON
4.5	ON	ON	ON
4.0	ON	OFF	ON
1.5/3.5 (Default)	OFF	OFF	OFF
3.0	OFF	ON	OFF
2.5	ON	ON	OFF
2.0	ON	OFF	OFF

2 6 Bus Frequency Select Jumpers (JP1, JP2, JP3,

JP2	JP3	JP4	CPU	JP1 (SDRAM)		PCI	AGP
				1-2*	2-3		
1-2*	1-2*	1-2*	100	100	66	33	66
1-2	1-2	2-3	95	95	64	32	64
1-2	2-3	1-2	83	83	66	33	66
1-2	2-3	2-3	75	75	60	30	60
2-3	2-3	1-2	66	66	66	33	66

JP4)

*Default setting

2 7 CPU Core Voltage Select Jumper (J1)

VCC2 (Vcore)	7-8	5-6	3-4	1-2
3.5V	ON	ON	ON	ON
3.3V	ON	ON	OFF	ON
3.2V	ON	ON	OFF	OFF
2.9V	ON	OFF	OFF	ON
2.8V	ON	OFF	OFF	OFF
2.5V	OFF	ON	OFF	ON
2.2V (Default)	OFF	OFF	ON	OFF
2.1V	OFF	OFF	OFF	ON

2 8 I/O Voltage Select Jumper (JVCC3)

JVCC3	V _{I/O}
1-2	3.52V
2-3 (Default)	3.3V

2 9 Front Panel Connector (JFP1)

JFP1 connects I/O controls to the front panel.

Pin	Signal	Pin	Signal
1	JPWBN	5	OFF
2	GND	6	PWRLED
3	HDLED*	7	GND
4	VCC5	8	NC

3 0 Select -5V Power Supply (J5VN)

If you are using SFX type of power supply, you can derive your -5V power from **J5VN**.

J5VN	-5V
1-2 (Default)	SFX
2-3	ATX

Chapter 4 : *BIOS Setup*

The Award CMOS Setup Utility of your system is discussed in this chapter.

Basic Input and Output System (BIOS) is the interface between the hardware and the operating system software. Its function is to provide a series of software interrupts and functions that control operations on certain devices connected to your system. Aside from this, it performs a series of Power On Self Test (POST) every time you boot the system. POST checks your actual system configuration with the system configuration data stored in a non-volatile memory known as CMOS RAM. These tests are to ensure that your system is properly configured to recognize the devices such as memory, FDD, HDD, etc.

Usually, you may need to perform setup due to the following circumstances:

- Adding or removing devices to or from the system, such as FDD, HDD, adapter cards, or memory
- Changing the type of video display
- Setting the built-in clock/calendar to the correct time and/or date
- Enabling or disabling special features such as power management functions, system passwords, etc.
- Setting or resetting configuration data if these were accidentally lost or if the onboard battery was replaced.

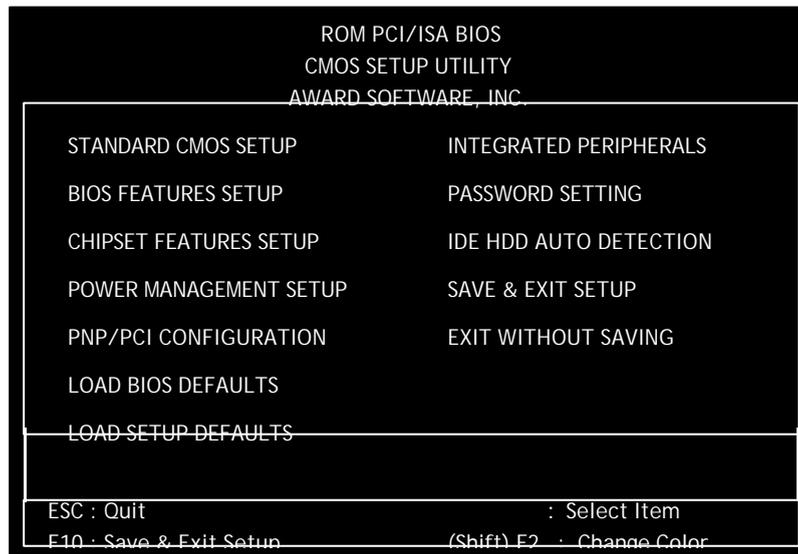
Entering System Setup

When you turn on your system, press key immediately to enter CMOS Setup Utility.

You have to press key fast enough before it starts up the operating system. If you are not able to enter the Setup Utility through this, reboot your computer and repeat the above procedure.

If the computer detects discrepancies between your CMOS data and actual system configuration, it will prompt you with an error message and request you to run setup. Just the same, you can enter setup by pressing key.

The following main menu appears upon entering Setup Utility:



Use the cursor keys to move to the required item and press <Enter> to select. <PgUp>, <PgDn>, <+> or <-> keys are used

to modify configuration data. An online help message is provided at the bottom of the screen. Each item and corresponding options available are discussed in the succeeding sections.

Standard CMOS Setup Sub-menu

This sub-menu allows you to configure system setting such as current date and time, type of storage devices installed in the system, and type of display monitor connected to the system.

```

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

Date (mm:dd:yy) : Wed, Aug 12 1998
Time (hh:mm:ss) : 16 : 49 : 8

HARD DISKS  TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
Primary Master : Auto  0   0   0       0   0   0   0   AUTO
Primary Slave  : Auto  0   0   0       0   0   0   0   AUTO
Secondary Master : Auto  0   0   0       0   0   0   0   AUTO
Secondary Slave : Auto  0   0   0       0   0   0   0   AUTO

Drive A : 1.44M, 3.5 in.
Drive B : None

Base Memory:
640K

Extended Memory: 31744K
Other Memory: 284K

Video : EGA/VGA

```

Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Item	Options	Description
------	---------	-------------

Date	month:day:year	Sets system date and time to current date and time.
Time	hour:min:sec	
Type	Auto User None	'Auto' lets BIOS detect installed IDE devices automatically. 'User' allows you to enter the specs manually. 'None' indicates that no IDE device is installed.
Mode	Normal Large LBA Auto	'Normal' is used for hard disks with less than 528MB disk capacity. 'Large' is for hard disks with 528MB and above disk capacity and support block mode data transfers. 'LBA' is for hard disks with 528MB and above disk capacity, but do not support block mode data transfers. 'Auto' lets BIOS automatically determine the correct mode.
Drive A	360KB, 5.25 in. 1.2MB, 5.25 in. 720KB, 3.5 in.	Selects the type of floppy drives installed in the system.
Drive B	1.44MB, 3.5 in. 2.88MB, 3.5 in. None	
Video	EGA/VGA CGA40 CGA80 Mono	Selects the type of display installed.
Halt On	All Errors All, But Keyboard All, But Diskette All, But Disk/Key No Errors	Determines whether system operation will be halted or not when errors are detected.

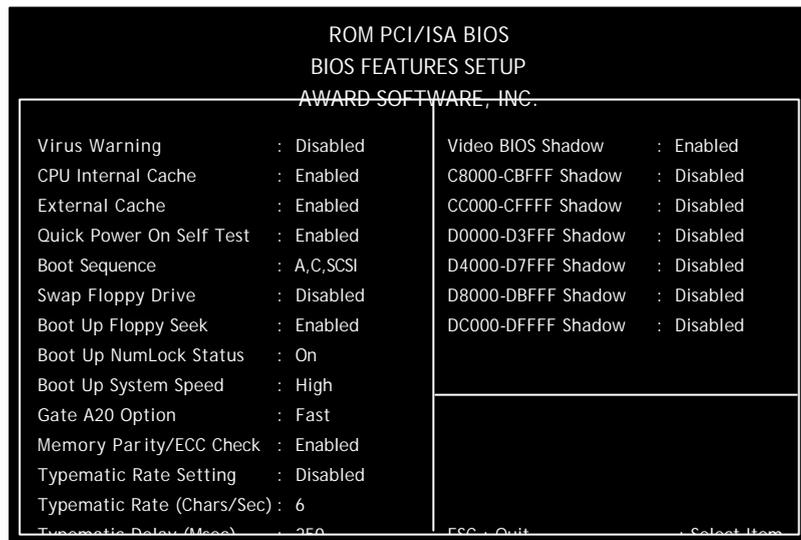
You can let your system automatically detect the IDE devices installed in your system by setting Primary Master, Primary Slave, Secondary Master, and Secondary Slave to Auto. In

this case, you do not have to perform setup if an IDE device is added or changed in your system.

System memory size is automatically detected by the BIOS, and is displayed at the bottom right part of the screen.

BIOS Features Setup Sub-menu

This sub-menu allows you to configure your system for basic operation.



Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Item	Options	Description
Virus Warning	Disabled Enabled	'Enabled' halts system operation and causes BIOS to issue a warning when any attempt to modify the boot sector and partition table of the hard disk drive is detected.
CPU Internal Cache	Disabled Enabled	Enables CPU internal or external cache to speed up memory access.
External Cache		
Quick Power On Self Test	Disabled Enabled	'Enabled' allows the BIOS to skip certain tests during boot.
Boot Sequence	A, C, SCSI C, A, SCSI C, CDROM, A CDROM, C, A D, A, SCSI E, A, SCSI F, A, SCSI SCSI, A, C SCSI, C, A C Only LS/ZIP, C	Determines the sequence where BIOS attempts to read the boot record during startup.
Swap Floppy Drive	Disabled Enabled	'Enabled' allows drive A: and B: to be swapped under DOS mode.
Boot Up Floppy Seek	Disabled Enabled	'Enabled' causes BIOS to check if the floppy disk drive installed is 40 or 80 tracks. (360K type is 40 tracks, 720K, 1.2M, or 1.44M are 80 tracks.
Boot Up NumLock Status	On Off	Determines the default state of the numeric keypad. 'On' is number keys while 'Off' is arrow keys.
Boot Up System Speed	High Low	Selects default system speed during boot.
Gate A20 Option	Fast Normal	Gate A20 is a device used to address memory above 1MB. 'Fast' - chipset provide support. 'Normal' - keyboard provide support.
Memory Parity/ECC Check	Enabled Disabled	Enables or disables memory parity checking feature.

Typematic Rate Setting	Enabled Disabled	Enables or disables typematic rate and typematic delay.
Typematic Rate (Chars/Sec)	6 8 10 12 15 20 24 30	If the typematic rate is enabled, this option sets the rate at which characters on the screen repeat when a key is pressed and held down.
Typematic Delay (Msec)	250 500 750 1000	If the typematic rate is enabled, this determines the delay between when the key was first depressed and when the acceleration begins.
Security Option	System Setup	Enables password checking when Setup Utility is entered. If set at 'System', the system also checks password during system boot.
PCI/VGA Palette Snoop	Enabled Disabled	Controls the ability of a primary PCI VGA controller to share a common palette with an ISA video card.
OS Select For DRAM >64MB	Non-OS2 OS2	'OS2' allows BIOS to run with OS/2 and use more than 64MB of RAM.
Report No FDD For WIN 95	No Yes	Determines if BIOS has to inform WIN95 OS if no FDD is installed.
Video BIOS Shadow	Enabled Disabled	'Enabled' copies video BIOS to RAM to increase video speed.
C8000-CBFFF Shadow	Disabled Enabled	'Disabled' - contents of video ROM are not copied to RAM.
CC000-CFFFF Shadow		'Enabled' - contents of video ROM area from C0000h-C7fffh are copied (shadowed) from ROM to RAM for faster execution. The ROM area not used by ISA adapter cards is allocated to PCI adapter cards.
D0000-D3FFF Shadow		
D4000-D7FFF Shadow		
D8000-DBFFF Shadow		

DC000-DFFFF Shadow		
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Chipset Features Setup Sub-menu

This sub-menu allows you to configure the system based on the specific features of the chipset used. Be sure you are familiar with the chipset before you attempt to make any changes on these.

ROM PCI/ISA BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.					
Bank 0/1 DRAM Timing	:	SDRAM 10ns	OnChip USB	:	Enabled
Bank 2/3 DRAM Timing	:	FP/EDO 70ns	USB Keyboard Support	:	Enabled
SDRAM Cycle Length	:	3	AutoDetect DIMM/PCI Clk	:	Enabled
DRAM Read Pipeline	:	Enabled	Spread Spectrum	:	Disabled
Cache Rd+CPU Wt Pipeline	:	Enabled	CPU Warning Temperature	:	Disabled
Cache Timing	:	Fast	Current System Temp.	:	39 /102
		/102	Current CPU Temperature	:	39
Video BIOS Cacheable	:	Enabled	Current CPU FAN Speed	:	0 RPM
System BIOS Cacheable	:	Enabled	Current SYSTEM FAN Speed	:	0 RPM
Memory Hole At 15Mb Addr.	:		: Disabled	INO(V)	: 2.19
V IN1(V)	:	3.29 V	IN2(V)	:	3.26 V +5 V : 4.99 V
					12 V : 11.73 V 12 V : 11.76 V

Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Change **WARNING: Before You Start Changing** system
malfunction. If you are not sure of the changes, reload BIOS
Defaults or Setup Defaults to revert to previous settings.

Item	Options	Description
Bank 0/1 DRAM Timing	SDRAM 10ns SDRAM 8ns Normal Medium Fast Turbo	Specifies the type of DRAM installed.
Bank 2/3 DRAM Timing	FP/EDO 70ns FP/EDO 60ns Normal Medium Fast Turbo	
SDRAM Cycle Length	3 2	Sets the CAS latency timing.
DRAM Read Pipeline	Enabled Disabled	Enables or disables pipelining.
Cache Rd+CPU Wt Pipeline	Enabled Disabled	Enables or disables cache timing.
Cache Timing	Fast Fastest	Sets cache timing specification.
Video BIOS Cacheable	Enabled Disabled	If cache controller is enabled, enabling these causes video BIOS cache at C0000H-C7FFFH or system BIOS ROM at F0000H-FFFFFH to be cached for faster execution.
System BIOS Cacheable		
Memory Hole At 15Mb Addr.	Disabled 15M-16M	If not disabled, certain space in memory is reserved for ISA cards in order to improve performance.
OnChip USB	Enabled Disabled	Enables or disables USB functions.
USB Keyboard Support		Enables or disables USB keyboard and mouse if USB function is enabled.
Auto Detect DIMM/PCI Clk	Enabled Disabled	Allows the system to auto detect DIMM and PCI frequency.

Spread Spectrum	Disabled 1.5% (CNTR) 0.6% (CNTR) 1.5% (DOWN) 0.6% (DOWN)	Specifies type and modulation of clock generator for spread spectrum.
CPU Warning Temperature	Disabled 50 /122 53 /127 56 /133 60 /140 63 /145 66 /151 70 /158	Indicates the maximum CPU temperature before the system issues a warning message.
Current System Temp.	n/a	System automatically shows the current state of the corresponding items.
Current CPU Temperature		
Current CPU FAN Speed		
Current SYSTEM FAN Speed		
In0(V)		
In1(V)		
IN2(V)		
+5V		
+12V		
-12V		
-5V		

Power Management Setup Sub-menu

This sub-menu configures the power conservation features.

ROM PCI/ISA BIOS POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
Power Management	: User Define	Primary INTR	: On
PM Control by APM	: Yes	IRQ3 (COM 2)	: Primary
Video Off Option	: Suspend -> Off	IRQ4 (COM 1)	: Primary
Video Off Method	: V/H SYNC+Blank	IRQ5 (LPT 2)	: Primary
MODEM Use IRQ	: 3	IRQ6 (Floppy Disk)	: Primary
Soft-Off by PWRBTN	: Delay 4 Sec	IRQ7 (LPT 1)	: Primary
** PM Timers **		IRQ8 (RTC Alarm)	: Disabled
HDD Power Down	: Disable	IRQ9 (IRQ2 Redir)	: Secondary
Doze Mode	: Disable	IRQ10 (Reserved)	: Secondary
Suspend Mode	: Disable	IRQ11 (Reserved)	: Secondary
** PM Events **		IRQ12 (PS/2 Mouse)	: Primary
VGA	: OFF	IRQ13 (Coprocessor)	: Primary
LPT & COM	: LPT/COM	IRQ14 (Hard Disk)	: Primary
HDD & FDD	: On	IRQ15 (Reserved)	: Disabled

Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Item	Options	Description
Power Management	User Define Max Saving Min Saving	'User Define' allows user to define timeout parameters. 'Max Saving' maximizes power saving capability. 'Min Saving' uses minimum power saving capability.
PM Control by APM	Yes No	'Yes' activates the APM (Advance Power Management) device to enhance power savings.

Video Off Option	All Modes->Off Always On Suspend->Off	Determines power saving mode of monitor: 'All Modes->Off' - blank screen when system enters any power saving mode. 'Always On' - monitor remains on. 'Suspend->Off' - blank screen when system enters suspend mode.
Video Off Method	Blank Screen V/H SYNC+Blank DPMS Support	Determines the manner in which the monitor enters blank screen.
MODEM Use IRQ	3 4 5 7 9 10 11 NA	Sets the IRQ address used by modem.
Soft-Off by PWRBTN	Delay 4 Sec Instant Off	'Delay 4 Sec' turns the system off if power button is pressed for more than 4 seconds. If less than 4 seconds, system enters suspend mode. 'Instant Off' turns off the system immediately if power button is pressed.
HDD Power Down	1 Min : 1 Min Interval 15Min Disable	Specifies the length of time the hard disk remains inactive (system stops reading or writing to HDD) before it is turned off.

Doze Mode	Disable 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 2 Min 4 Min	Doze mode specifies the length of time the system remains inactive before CPU clock is dropped down from its normal working speed. Suspend mode specifies the length of time the system remains inactive before shutting off all devices except CPU. In 'Max Saving' mode, doze mode and suspend mode is set at 10 sec. In 'Min Saving' mode, doze mode and suspend mode is set at 1 Hour.
Suspend Mode	6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hour	
VGA	Off On	'On' awakens the system if an event occurs at VGA port, LPT, COM, HDD, FDD, or DMA controller.
LPT & COM	None LPT COM LPT/COM	
HDD & FDD	On Off	
DMA/master	On Off	
Wake On LAN/Ring	Disabled Enabled	'Enabled' allows you to wake up the system through modem/LAN or RTC alarm.
RTC Alarm Resume		
Date (of Month)	day	Indicates the day of the month and time of the day to wake up the system.
Time (hh:mm:ss)	hour:min:sec	
Primary INTR	On Off	Specifies if a system which is in power saving mode has to monitor interrupt activities.
IRQ3 (COM 2)	Primary Secondary Disabled	If 'Primary INTR' is 'On'; 'Primary' wakes up the system if interrupt signal is detected. 'Secondary' or 'Disabled' ignores interrupt signal.
IRQ4 (COM 1)		
IRQ5 (LPT 2)		
IRQ6 (Floppy Disk)		
IRQ7 (LPT1)		

IRQ8 (RTC Alarm)		
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IRQ9 (IRQ2 Redir)		
IRQ10 (Reserved)		
IRQ11 (Reserved)		
IRQ12 (PS/2 Mouse)		
IRQ13 (Coprocessor)		
IRQ14 (Hard Disk)		
IRQ15 (Reserved)		

PNP/PCI Configuration Sub-menu

This sub-menu configures the system's PCI and Plug-and-Play features.

ROM PCI/ISA BIOS	
PNP/PCI CONFIGURATION	
AWARD SOFTWARE, INC.	
PNP OS Installed	: No
Resources Controlled By	: Auto
Reset Configuration Data	: Disabled
ACPI I/O Device Node	: Enabled
CPU to PCI Write Buffer	: Enabled
PCI Dynamic Bursting	: Enabled
PCI Master 0 WS Write	: Enabled
PCI Delay Transaction	: Enabled
PCI Master Read Prefetch	: Enabled
PCI#2 Access #1 Retry	: Disabled
AGP Master 1 WS Write	: Enabled
AGP Master 1 WS Read	: Disabled
PCI IRQ Activated By	: Level
Assign IRQ For USB	: Enabled
Assign IRQ For VGA	: Enabled
Assign IRQ For ACPI	: IRQ10

Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Item	Options	Description
PNP OS Installed	No Yes	'Yes' if your OS is aware of and follows Plug and Play specification.
Resource Controlled By	Manual Auto	If all ISA and PCI cards installed are PNP, set this to Auto.
Reset Configuration Data	Disabled Enabled	'Enabled' resets ESCD upon exiting setup if system recon-figuration of a newly installed add-on card causes such a serious conflict that the OS cannot boot.
ACPI I/O Device Node	Enabled Disabled	Enables or disables ACPI I/O device node.
IRQ-3 assigned to	PCI/ISA PnP Legacy ISA	If resources are controlled manually, each IRQ and DMA channel is assigned to a PCI/ISA PnP card or a legacy ISA card.
IRQ-4 assigned to		
IRQ-5 assigned to		
IRQ-7 assigned to		
IRQ-9 assigned to		
IRQ-10 assigned to		
IRQ-11 assigned to		
IRQ-12 assigned to		
IRQ-14 assigned to		
IRQ-15 assigned to		
DMA-0 assigned to		
DMA-3 assigned to		
DMA-5 assigned to		
DMA-6 assigned to		
DMA-7 assigned to		
CPU to PCI Write Buffer	Enabled Disabled	'Enabled' - up to 4 D words of data can be written to the PCI bus without interrupting CPU. 'Disabled' - write buffer is not used and CPU read cycle will not be completed until the PCI bus signals that are ready to receive data.

PCI Dynamic Bursting		When enabled, greater amounts of data are transferred on the PCI bus at a single command.
PCI Master 0 WS Write	Enabled Disabled	Enables or disables the corresponding features.
PCI Delay Transaction		
PCI Master Read Prefetch		
PCI#2 Access #1 Retry		
AGP Master 1 WS Write		
AGP Master 1 WS Read		
PCI IRQ Activated By	Level Edge	
Assign IRQ For USB	Enabled Disabled	System automatically assigns IRQ for USB, VGA, and ACPI.
Assign IRQ For VGA		
Assign IRQ For ACPI	IRQ7 IRQ10 IRQ11	

Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings which provide the minimum requirements for your system to operate.

If you selected this item and press <Enter>, you will be prompted with the following question:

Load BIOS Defaults (Y/N) ? _

Press 'Y' to restore defaults in CMOS and discard changes currently made. Press 'N' to continue making changes in the Setup Utility.

Load SETUP Defaults

The chipset defaults are settings which provide for maximum system performance.

If you selected this item and press <Enter>, you will be prompted with the following question:

Load SETUP Defaults (Y/N) ? _

Press 'Y' to restore previous data and discard changes currently made. Press 'N' to continue making changes in the Setup Utility.

Integrated Peripherals Sub-menu

This sub-menu allows you to configure integrated system I/O functions.

ROM PCI/ISA BIOS	
INTEGRATED PERIPHERALS	
AWARD SOFTWARE, INC.	
OnChip IDE First Channel	: Enabled
OnChip IDE Second Channel	: Enabled
IDE Prefetch Mode	: Enabled
IDE HDD Block Mode	: Enabled
IDE Primary Master PIO	: Auto
IDE Primary Slave PIO	: Auto
IDE Secondary Master PIO	: Auto
IDE Secondary Slave PIO	: Auto
IDE Primary Master UDMA	: Auto
IDE Primary Slave UDMA	: Auto
IDE Secondary Master UDMA	: Auto
IDE Secondary Slave UDMA	: Auto
Onboard Parallel Port	: 378/IRQ7
Onboard Parallel Mode	: SPP

Use the cursor keys to select an item and press <PgUp>, <PgDn>, <+> or <-> keys to modify its option.

Item	Options	Description
OnChip IDE First Channel	Enabled Disabled	Set these to 'Disabled' if add-on IDE cards are installed.
OnChip IDE Second Channel		
IDE Prefetch Mode	Enabled Disabled	Enables or disables IDE prefetching feature and HDD block mode. These depend on the specifications of IDE drives.
IDE HDD Block Mode		
IDE Primary Master PIO	Auto Mode 0 Mode 1 Mode 2 Mode 3 Mode 4	Determines the IDE accessing mode automatically ('Auto') or manually. Make sure the IDE device supports the accessing mode selected.
IDE Primary Slave PIO		
IDE Secondary Master PIO		
IDE Secondary Slave PIO		
IDE Primary Master UDMA	Disabled Auto	Set this to 'Auto' if your IDE hard drive supports Ultra DMA/33 implementation. Note that the operating environment should include a DMA driver (IDE bus master driver) to enable this feature.
IDE Primary Slave UDMA		
IDE Secondary Master UDMA		
IDE Secondary Slave UDMA		
Init Display First	AGP PCI Slot	Determines where the initial display derives its signals from.
Onboard FDD Controller	Disabled Enabled	Enables the floppy drive controller on the motherboard.
Onboard Serial Port 1	3F8/IRQ4 2F8/IRQ3 3E8/IRQ4 2E8/IRQ3 Disabled Auto	Specifies the base I/O port address and interrupt signal of serial port 1.

UART 2 Mode	Standard ASK IR HPSIR	Determines the infrared (IR) mode of serial port 2.
Onboard Parallel Port	Disabled 3BC/IRQ7 278/IRQ5 378/IRQ7	Sets the base I/O port address and interrupt signal for parallel port.
Onboard Parallel Mode	SPP EPP/SPP ECP ECP/EPP	Selects mode of parallel port. SPP → normal parallel mode EPP (Enhanced Parallel Port) → provides asymmetric bidirectional data transfer driven by the host device. ECP (Extended Capabilities Port) → achieve data transfer rates of up to 2.5 Mbps. Uses DMA protocol and provides symmetric bidirectional communication.
ECP Mode Use DMA	1 3	Selects DMA channel for ECP mode.
Parallel Port EPP Type	EPP 1.7 EPP 1.9	Selects type of EPP parallel mode.

Password Setting

This item controls BIOS and system security features. It allows you to set password, change, or disable password.

To set or change a password, select this item and press <Enter>, you will be prompted with the following question:

Enter Password:

Type in your password and press <Enter>. You will be asked to confirm:

Confirm Password:

Type in the same password to confirm, then press <Enter>. Restart your system to have your password recognized.

Do not forget If password is set, you are required to enter the correct password every time you enter Setup Utility. If 'Security Option' under 'BIOS Features Setup Sub-menu' is set to 'System', you will also be required to enter the correct password every time your system boots. Make sure you do not forget the password, or else, you need to drain CMOS RAM and reconfigure your system.

If you do not want to use a password, perform the above procedure. However, instead of typing and confirming a password when prompted, just press <Enter>. The message "Password Disabled!" will flash on screen.

IDE HDD Auto Detection

Select this item to let BIOS automatically detect the drive parameters of the IDE devices connected to the primary and secondary IDE channels of your system.

All possible drive parameters of an IDE channel will be displayed on screen. You will be prompted to enter a choice from the given list. Press the number of the option to select that parameter; "Y" to select the best choice, or press "N" to skip and let the BIOS decide.

If 'Primary Master', 'Primary Slave', 'Secondary Master', and 'Secondary Slave' items under 'Standard CMOS Setup' are set to 'Auto', BIOS will automatically update these with the selected choices.

Save & Exit Setup

This item allows you to save all the changes made before leaving CMOS Setup Utility.

Exit Without Saving

Select this item to discard all changes made and leave CMOS Setup Utility.

Chapter 5 :

Installation

This chapter provides the installation procedures for CPU, and system memory.

Installation procedures for motherboard and devices into system chassis are also provided. These procedures apply only to this specific chassis. If you are using a different chassis, please consult its user's guide.

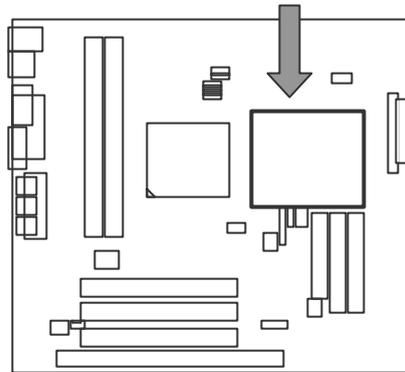
Before proceeding with the installation procedure, read through some safety tips and precautions first:

- Use a grounded wrist strap designed for static discharge.
- Discharge static electricity from your hands by touching a grounded metal object before removing the motherboard from its anti-static packaging.
- Hold the motherboard by its edges only. Do not touch its components, peripheral chips, memory modules, or gold contacts.
- Avoid touching pins of chips or modules.
- Put the motherboard back into its anti-static bag when not in use.
- Do not put the motherboard or system on an unstable surface, near water, nor near sources of extreme heat.

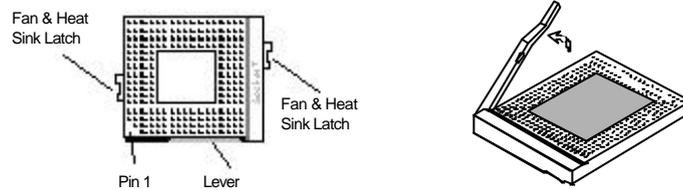
- Ensure that power of the system is turned off and power cord is disconnected from the power source before disassembling your system.
- Remove all cable connections from the system by pulling out the connector, not the cables. Pulling the cables may cause lead wires to break.
- Put disassembled/removed parts, including screws, in a safe and easily accessible place and make sure none of these drop or are left inside the main unit.
- Before installing back the cover, check if all parts, including internal cables, are properly mounted or installed.

CPU Installation

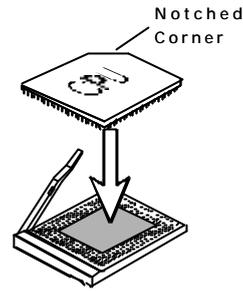
- 1 Locate CPU socket on the motherboard.



- 2 Slightly move the lever away from the socket, then lift it up.



- 3 Insert the CPU gently but firmly into the CPU socket. Make sure that the CPU pins align with the socket pinholes. Do not insert it forcibly. (Your CPU fits into the socket in only one way. Note that the notched corner of the CPU should be aligned to pin 1 of the socket. Be careful not to bend any pins.



- 4 Pull down the lever back to its original position.
- 5 Set the jumpers to the right frequency and voltage. Check Bus frequency select jumpers JP1, JP2, JP3 and JP4; I/O voltage select jumper JVCC3 and CPU core voltage select jumper J1. Refer to Chapter 3: Connectors and Jumpers for the required settings.

Reminder: Installing a CPU

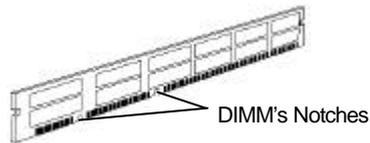
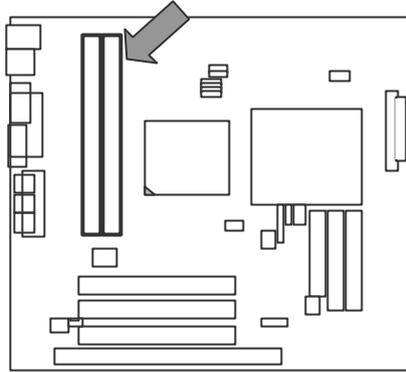
Use only the types of CPU supported by your system. Refer to Chapter 2: Specifications for more details.

Memory Installation

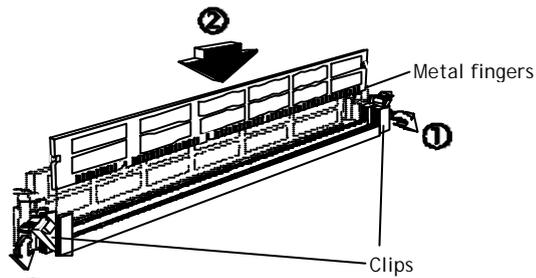
Your system provides two DIMM slots for the installation of system memory.

Installation procedures as follows:

- 1 Locate the DIMM sockets on the motherboard.
- 2 Align the two notches of the DIMM with the receptive points on the DIMM socket. You cannot insert the DIMM into its socket if this is not aligned properly.

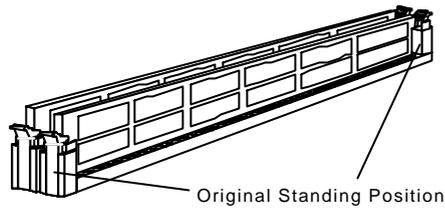


- 3 Press the clips on both sides of the DIMM socket outward to release it.



- 4 Insert the DIMM vertically with its metal fingers aligned with the socket's grooved slot.

- 5 Press until the DIMM is locked onto the socket. (The clips will return to its original standing position when the DIMM is properly inserted into the socket, as shown.)



- 6 To ensure proper operation, check if the clip is properly locked onto the hollow of the DIMM. If not, press slightly to lock it.

Reminder: Installing a DIMM

Use only the types of DIMM supported by your system. Refer to Chapter 2: Specifications for more details.

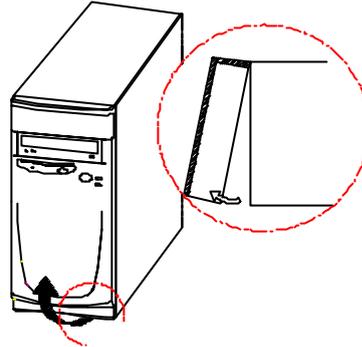
- 7 You do not have to change jumpers or BIOS setting. Your system automatically detects the size and type of memory installed.

Removing System Cover

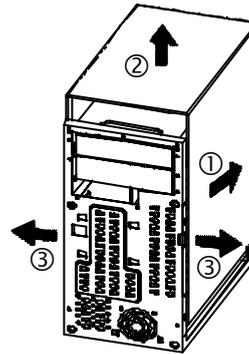
— **WARNING: Before Removing System Cover** —

Turn off the main power switch. Disconnect all power cords and signal cables attached to the system. Connecting devices with the power on may result in severe damages!

- 1 Remove the front panel by holding it at the bottom and pulling it out towards you.

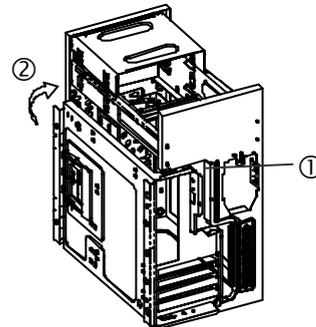
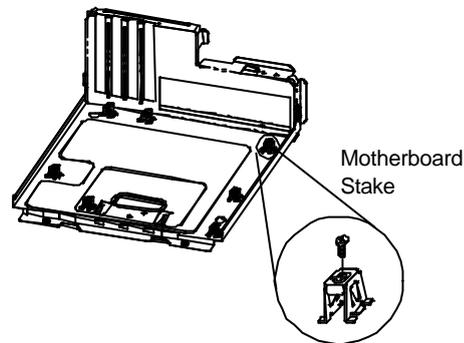
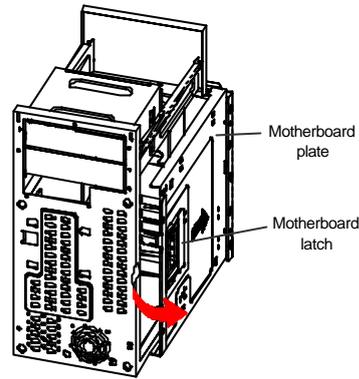


- 2 Slide the cover approximately 20 mm backwards.
- 3 Lift it upwards until it is cleared from the system. You may need to pull it a little bit outwards on both sides to release it.



Installing the Motherboard

- 1 Remove system cover.
- 2 Move the motherboard latch backward and pull the motherboard plate to the right to separate it from the chassis.
- 3 Rest the motherboard plate on its side. Remove the screw on each motherboard stake.
- 4 Position the motherboard tooling holes onto the appropriate motherboard stakes. Then, secure each with a screw.
- 5 Align motherboard plate to the chassis. Then, push the motherboard latch forward in the direction of the arrow shown to fasten firmly.
- 6 Attach internal cables properly and restore system cover and front panel.



Installing Add-On

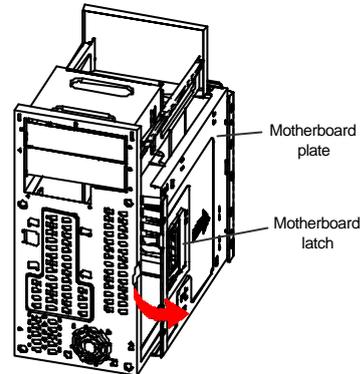
Cards

Several types of add-on or adapter cards can be added into your system for additional or enhanced features. These may include VGA card, modem card, and many others. Add-on cards may come in PCI bus type, or ISA bus type, and are installed in PCI slot, or ISA slot, respectively.

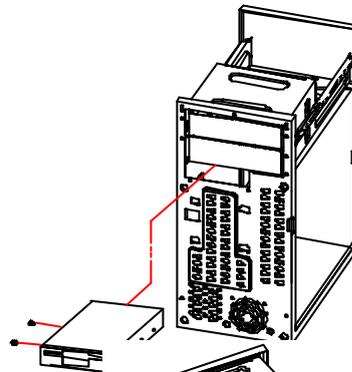
- ¹ Remove system cover.
- ² Choose the slot in which you want to install the adapter card. Note that the type of adapter card should correspond to the type of expansion slot.
- ³ Unscrew the expansion slot cover screw found on its top and remove that cover.
- ⁴ Set the required jumpers on the adapter card, as required. Refer to its manual for more details.
- ⁵ Carefully, but firmly, press the adapter card into the expansion slot until it is fully installed.
- ⁶ Secure the expansion slot cover screw.
- ⁷ Save the expansion slot cover for future use.
- ⁸ Check the user's guide of the adapter card to see if there is any jumper on the motherboard that requires setting.
- ⁹ Restore system cover and front panel.

Installing 3.5" Drive

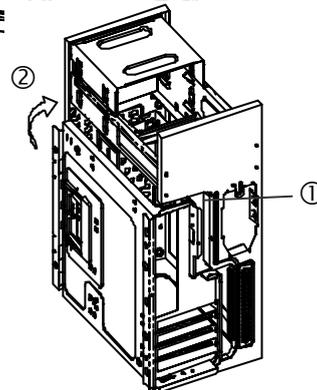
- 1 Remove system cover.
- 2 Move the motherboard latch backward and pull the motherboard plate to the right to separate it from the chassis.



- 3 Install the 3.5" device (3.5" floppy disk drive) into the 3.5" bracket as shown. Then, fasten with two screws per side.



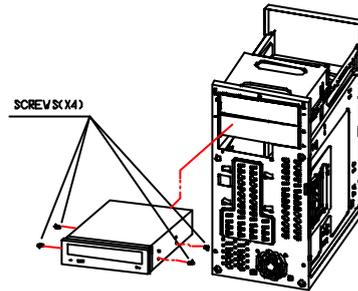
- 4 Align the motherboard plate to the chassis. Then, push the motherboard latch forward in the direction of the arrow shown to fasten firmly.
- 5 Connect the power cable from the power supply to the drive.



- 6 Connect the data cable from FDD1 of the motherboard to the drive.
- 7 Enter CMOS Setup Utility and select the correct floppy type under Standard CMOS Setup Sub-menu.
- 8 Restore system cover and front panel.

Installing 5.25" Drives

- 1 Remove system cover.
- 2 Install the 5.25" drive into one of the brackets and secure with two screws on each side.
- 3 Connect a power cable from the power supply to the drive.
- 4 Connect the data cable from IDE1 (or IDE2) of the motherboard to the drive.
- 5 Enter CMOS Setup Utility and set the proper type of device under Standard CMOS Setup Sub-menu.
- 6 Restore system cover and front panel.



Chapter 6 :

Troubleshooting

Useful tips and handy solutions you may need for your troubleshooting are provided in this chapter. If you are having trouble with the operating system, check the User's Guide that comes with your Windows 98 software package.

No Display

Computer isn't getting power.

Check connection of power.

Check connection of surge protector (if available) and AC power outlet.

Check if AC outlet has power.

VGA monitor not properly connected.

Check video cable connection. Consult monitor's manual if necessary.

Computer is in sleep or suspend mode.

Press a key on the keyboard to wake it up.

Monitor's brightness control is not adjusted properly.

Adjust monitor's brightness control to the desired level.

A screen saver program is turned on.

Press a key or move the mouse to turn off the screen saver program.

Keyboard or Mouse Doesn't Work

Cables are not properly connected.

Turn off your system and check if the cable is properly connected to the right jack/port at the rear of your system.

Keyboard or Mouse is defective.

Contact your dealer to replace it.

Floppy Disk Drive Doesn't Work

Floppy disk drive LED indicator is not lit.

LED indicator might be defective.

Enter Setup Utility and check if floppy disk drive is detected.

Floppy disk drive might be defective. Contact your dealer for replacement.

Floppy disk drive LED indicator is lit.

Check the type of disk and if the disk is properly inserted into the drive.

Floppy disk is defective.

Non-system Disk Error Message

A floppy disk is inserted into the floppy disk drive when the computer is turned on.

There is no operating system found in the floppy disk. Just remove the disk from the drive and press any key to continue the boot procedure.

CD-ROM Errors

CD-ROM disc not detected.

Check if the disc is inserted properly into the CD drawer with its label facing up.

CD drawer is closed all the way.

CD-ROM disc ejected without any error message.

Check if the disc is inserted properly into the CD drawer with its label facing up.

If there are visible scratches or dirt on the shiny side of the disk, your disc need to be cleaned. You may clean this with a CD polishing kit. If the scratches or dirt can't be removed, you have to replace the disc.

Check if other discs can be read. Your CD-ROM drive might be damaged.

Can't open a document/file on the disc.

Some files or documents require specific software installed before it can be opened. Check the manual that came with the disc.

Printer Doesn't Work Wrong Characters Printed

Incorrect printer settings.

Check Print Manager and select the correct printer destination.

Updated device driver required.

Check your printer device driver.

If your printer is of an older model, use the updated drivers provided with the Windows operating system.

If you are using a latest model, you can install its device driver into your system. Consult the printer manual.

Cable is not properly connected.

Turn off your system and check printer cable connections.

Inaccurate System Clock

System clock is not properly set.

Enter BIOS Setup Utility and set system clock to current time and date.

On-board Lithium battery is used up or exhausted.

Contact your dealer to replace it.