Personal Computer
User's Guide

April 1999

Copyright Notice

Trademark Acknowledgement

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 UNDESIRED 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 empfehlenem 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 Réglement sur le materiel brouilleur du Canada.

Wichtege 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 bervorrufen.
6. Die Belüftungsöf fnungen dienen zur Luftzirkulation die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese öffnungen nicht adbedeckt werden.
7. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
8. Verlegen Sie die Netzanschlübleitung so, daß niemand darüber fallen Kann. Es sollte auch nichts auf der leitung abgestellt werden.
9. Alle Hinweise and Warnungen die sich am 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. Netzkable 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 einen Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm^2 einzusetzen.
15. Das CD-ROM Laufwerk ist ein Laserklasse 1 Gerät.

Sicherheitshinweise

1. Die Steckdose muß sich in der Nähe des Gerätes befinden und leicht zugänglich sein.
2. Zum Reinigen den Stecker aus der Steckdose ziehen.
   Beim Reinigen keine Flüssigreiniger oder Sprays verwenden, sondern ein angefeuchtetes Tuch.
3. Das PC gerät nicht in Naßräume oder in der Nähe von Wasser benutzen, wie z.B. Badezimmer, Schwimmbad, Spülbecken usw.. Das Eindringen von Wasser kann zur Zerstörung des Gerätes führen.
4. Das PC gerät nicht auf einer unstabilen Unterlage, wie z.B. Rollwagen, Gestell usw., aufstellen. Es könnte herunterfallen und Verletzungen oder Beschädigungen von Mensch und Gerät verursachen.
5. Die Belüftungsöffnungen nicht blockieren oder auf falscher Ober-fläche, wie Bett, Sofa usw., stellen. Durch die Blockierung kann es zur Zerstörung des Gerätes durch Überhitzung kommen.
6. Versuchen Sie niemals dieses Gerät selbst zu warten, da beim Öffnen oderAbnehmen des Gehäuses die Gefahr eines elektrischen Schlages besteht.
7. Keine Gegenstände auf das Anschlußkabel stellen, damit es nicht durch scharfe Kanten zerstört werden kann.
8. Keinerlei Gegenstände durch die Öffungen in das Gerät stecken, da es dadurch sonst zu Kurzchlüssen kommen kann.
9. Bei Störungen des Gerätes den Wartungsdienst verständigen.
10. Bei Reperaturen dürfen nur Orginalersatzteile oder Bauteile mit gleichen Eigenschaften verwendet werden. Andere Bauteile können Feuer, elektrischen Schlag oder andere Gefahren verursachen.
11. Nach Beendigung von Wartungsarbeiten oder Reperaturen durch den Kundendienst sollte die Sicherheitsprüfung durchgeführt werden.
12. Bei längerem Stillstand des Gerätes, ist diese von der Versorgungs-spannung zu trennen. Dies verhindert eine Beschädigung des Gerätes durch eine Überspannung in der Zuleitung.
13. Der arbeitsplatzbezogene Lärmschutzpegel nach DIN 45 635 ist kleiner 70dB(A).

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**.

Table of Contents

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 onto 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 Disk/s
- ☑ 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

Front Panel

CD-ROM Drive
Reads data from CD-ROM discs.

3.5" Floppy Disk Drive
Stores and retrieves data from a
floppy disk.

Power Button
Press this button to turn on your
computer. Be sure that the main power
switch at the back of your system is
already switched on.

Earphone Jack
Connects to an earphone
or headphone.

Power On LED
Lights up when system is
turned on.

Mic In Jack
Connects to an external
microphone.

HDD Access LED
Lights up when system is storing
or retrieving data from the hard
disk.

Rear Panel

Main Power Switch
This has to be switched on
before you are able to turn on
the power of your system.

PS/2 Mouse Port
The PS/2 mouse that
comes with your system is
connected to this port.

AC Power In
This is where the
female end of the
power cord is
connected.

Expansion Slots
Connectors from add-on
cards are accessible
through these slots.

PS/2 Keyboard Jack
The PS/2 keyboard that
comes with your system is
connected to this jack.

Game Port
Connects to a joystick
or MIDI device.

VGA Port
The VGA/SVGA monitor is
connected to your system
through this port.
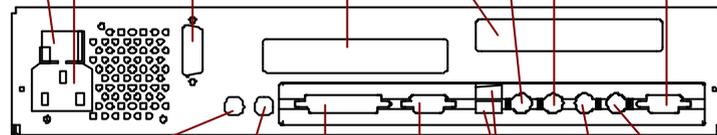
Line-in Jack
Accepts audio signals
from external sources
through this jack.

Parallel Port
Parallel device
such as parallel
printer is
connected
through this port.

USB Ports
USB (Universal
Serial Bus)
devices are
connected to your
system through
these two ports.

TV Out Port
Transmit and
receive TV signals
through this port,
using cable with
RCA jack.

Line-out Jack
Signals from system are
sent to external speakers
or audio peripheral devices
such as CD/cassette player
through this jack.

Serial Port
Serial device such as
external modem is
connected through
this port.

S-video Out Jack
Transmit and receive TV
signals through this port,
using an S-video cable.

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. You can recognize VGA port easily as only this type of connector can be fit into it.

Other monitors bundle a separate video cable. After inserting an end of the video cable to the *VGA Port*, connect the other end to the monitor.

TV Set

The TV Set is another output device. Depending on your requirements, you may want to have the output shown on TV screen. There are two types of connectors for TV that are supported by your system.

If your TV supports S-video mode, connect an end of the S-video cable to the *S-video Out Jack* at the rear of your system. The other end is connected to your TV set (refer to TV manual for proper connections).

If your TV does not support S-video, connect the video signal of the AV cable (provided with the TV set) to the *TV Out Port* at the rear of your system. Refer to TV manual for proper connections.

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 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* at the rear of your system.

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 the AC wall outlet.

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 turn on your PC. Your computer has a *Main Power Switch* at the rear panel, open this switch first. Then, 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** ──
>
> *Your system comes with an automatic voltage switching power supply. However, before turning on all other peripherals connected to this, check first if these are switched to the right **AC voltage**. Turning the system on with improper voltage setting may result in severe damages.*

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

1   Press ⌨ (Windows) key.
2   Click "Sh<u>u</u>t Down...".
3   Confirm by clicking "Yes" button.
4   Press *Main Power Switch* at the rear panel to completely turn off your system.

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:
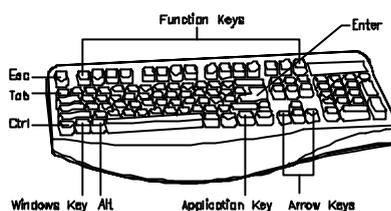
Tells the PC you have finished entering a command and you want the PC to execute it.

¿ Enter — Confirms your selection and tells the PC to proceed.

Esc — This usually returns you to the previous screen. Also used to exit a program.

Tab — 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.

F1 ~ F12 — Function keys -> These are shortcut keys for various operations, depending on the instructions set by the applications program.

Special Key Combinations

| Ctrl | + | | Holding down this key with another key at the same time gives a command to the current program. The commands are dependent on the preset settings of an application program. |

| Alt | + | | Pressing this key with an ASCII code returns the ASCII character.   Some application programs also assign preset settings to this key. |

| Ctrl | + | Alt | + | Del | 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 reads from and/or writes to 3.5" floppy disks. Maximum capacity of a floppy 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.
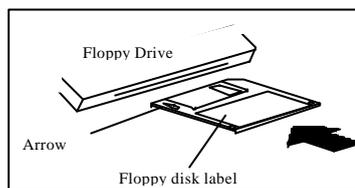
——— WARNING ———

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 drive is designated by your operating system as drive A. It is represented by **A:**. Presence of floppy disk drive is automatically detected by your system and the operating system.

Using the Hard Disk

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

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

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

Hard disk drive is designated as drive C, symbol is **C:**. Your system BIOS and Windows operating system automatically detects your hard disk drive. If it 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 face 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.
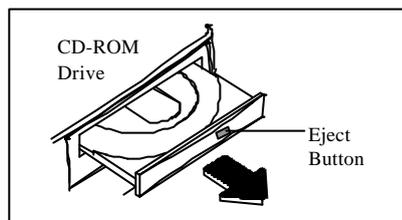
Removing a Disc

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.

CD-ROM drive is designated as **D:**. 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.

Handling CD-ROM Discs With Care

☆ Dust and smudges on the face 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.

C HAPTER 2
Specifications

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

Standard Features

☆ Socket 7 compatible processor, supports AMD K6-2, AMD K6-3 CPU, IBM 6x86MX, Cyrix MII, and Cyrix MII+ CPU

☆ Designed using VIA Apollo MVP3 chipset

☆ 0KB/512KB L2 cache factory option

☆ Two DIMM sockets, for total of 512MB using 66MHz EDO RAM; or, total of 256MB memory using 100MHz SDRAM

☆ Integrated Winbond W83977EF Super I/O controller

☆ Built-in ports: serial port, parallel port, PS/2 keyboard, PS/2 mouse, USB ports x2, VGA DB15 Port, AGP port, SIR port, microphone in, TV Out port, Game/MIDI port, audio line in, and audio line out

☆ 2MB Flash ROM with Award BIOS

☆ LPX form-factor

☆ PC health monitoring and ACPI/PC98 features

☆ Expansion slots: PCI slot x1, PCI/ISA combo slot x1

☆ Runs under Windows 95, Windows 98 and Windows NT operating system

Technical Specifications

CPU (Central Processing Unit)

Socket 7 compatible, supports:

- *AMD K6-2 300/333/350/366/380/400/450/475/500 MHz*
- *AMD K6-3 400/450/500 MHz*
- *IBM 6x86MX 300/333 MHz*
- *Cyrix MII 300/333 MHz*
- *Cyrix MII+ 366/400/450 MHz*

Chipset

VIA Apollo MVP3 chipset:

- *VT82C598MVP + VT82C596 (supports enhanced system power management, integrated keyboard controller and real-time clock)*
- *Supports 66/75/83/95/100MHz CPU/DRAM bus*

L2 Cache

- No cache standard; 512KB cache factory option
- Layout board supports 1 piece of 64Kx64

Memory

Two 168-pin 3.3V DIMM sockets, supports up to:

- *512MB using 66MHz EDO*
- *256MB using 100MHz SDRAM*

Integrated ENSONIQ 1373 Audio Chip

Integrated WINBOND W83977EF Super I/O Controller

Power Management

- APM (Advanced Power Management) 1.2 power management feature supported
- PC97/PC98 compliant and full ACPI 1.0 (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 minimizes daily LAN traffic..*
    - *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

Built-in I/Os

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

PC Health Monitoring Features

Winbond W83783 chip, monitors:
- *CPU and chassis temperature using 2 thermal inputs from remote thermistors*
- *System voltages (+5V,-5V,+12V,+3.3V) and CPU VCCcore*
- *CPU and chassis fan speed*

Power Input Requirement

100-240V~,3A; 50/60 Hz

Environmental Specifications

Ambient Temperature

Operating: *50 °F to 104 °F (10 ℃ to 40 ℃)*
Non-operating: *5 °F to 140 °F (- 15 ℃ to 60 ℃)*

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

Humidity

Operating: *15% to 80%, no condensation*
Non-operating: *10% to 90%, no condensation*

Unit Dimensions

System chassis: 385 (W) x 410 (D) x 70 (H) mm

───────────── **REMARK** ─────────────
Specifications are subject to change without prior notice.

CHAPTER 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.

Motherboard Layout
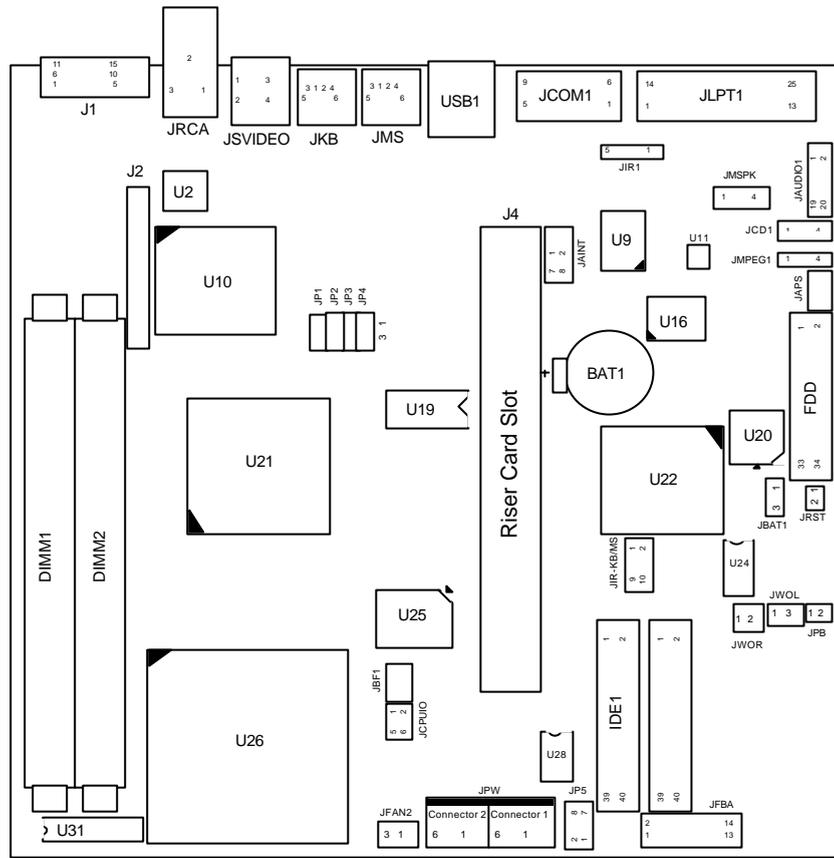
Quick Reference
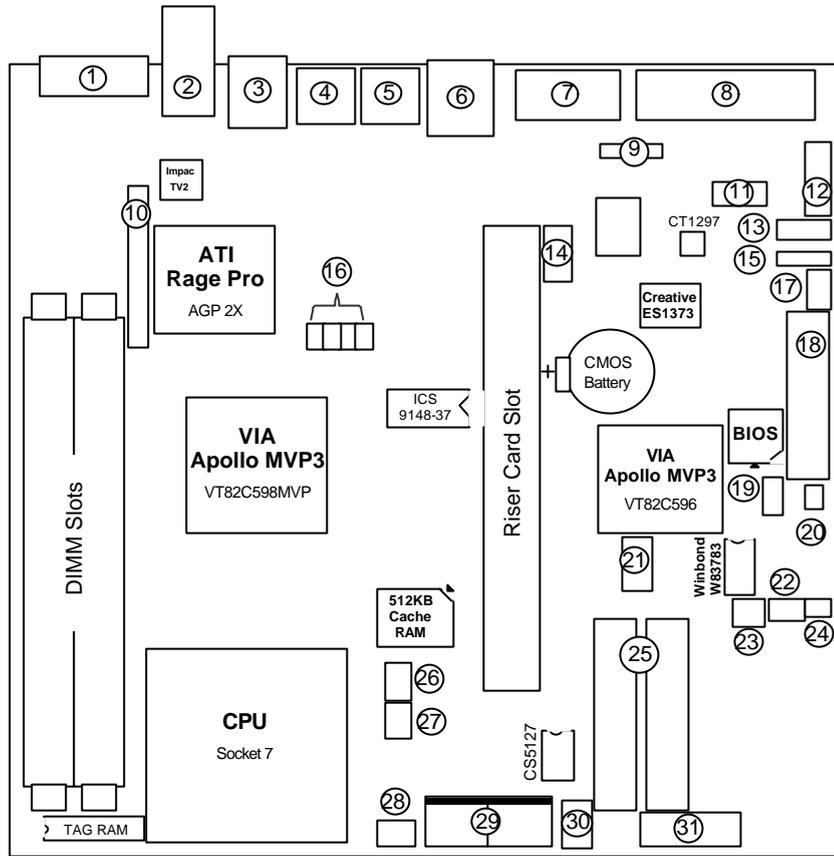
Item	Description	Function	Page
1	J1	VGA Port	3-15
2	JRCA	TV Out Port	3-16
3	JSVIDEO	S-video Out Jack	3-16
4	JKB	PS/2 Keyboard Jack	3-9
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25	IDE1, IDE2	Primary/Secondary IDE Connectors	3-13
26	JBF1	CPU Speed Ratio Jumper	3-7
27	JCPUIO	CPU I/O Voltage Select Jumper	3-8
28	JFAN2	CPU Fan Connector	3-11
29	JPW	Power Supply Connector	3-11
30	JP5	CPU Core Voltage Select Jumper	3-8
31	JFBA	Front Panel Connector	3-14

Jumper Settings

CPU Jumper Settings

Specifications on some CPU models for reference as follows:

CPU Model	CPU Freq. Ratio	Bus Freq.	CPU Core Voltage	CPU I/O Voltage
AMD K6-2 300MHz	3.0	100	2.2V	3.3V
AMD K6-2 333MHz	5.0	66		
AMD K6-2 350MHz	3.5	100		
AND K6-2 366MHz	5.5	66		
AMD K6-2 380MHz	4.0	95		
AMD K6-2 400MHz	4.0	100		
AMD K6-2 450MHz	4.5	100	2.4V	
AMD K6-2 475MHz	5.0	95		
AMD K6-2 500MHz	5.0	100		
AMD K6-3 400MHz	4.0	100		
AMD K6-3 450MHz	4.5	100		
AMD K6-3 500MHz	5.0	100		
Cyrix MII 300MHz	2.5	75	2.9V	
IBM 6X86MX 300MHz	3.0	66		
Cyrix MII 333MHz IBM 6X86MX 333MHz	3.0	83		

Example: AMD K6-2 400MHz CPU and 100MHz SDRAM
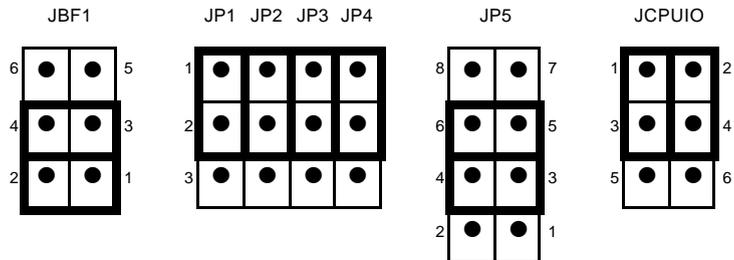
These jumpers are dependent on the specifications of CPU installed in your system.

➢ **CPU Speed Ratio Jumper (JBF1)**

CPU Freq. Ratio	JBF1		
	1-2	3-4	5-6
2.5	OFF	ON	ON
3.0	OFF	OFF	ON
3.5	OFF	OFF	OFF
4.0	ON	ON	OFF
4.5	ON	ON	ON
5.0	ON	OFF	ON
5.5	ON	OFF	OFF

➢ **Front Side Bus Frequency Jumpers (JP1, JP2, JP3, JP4)**

Bus Freq.	AGP	PCI	JP1 (SDRAM)		JP2	JP3	JP4
			1-2	2-3			
100	66	33	100	66	1-2	1-2	1-2
95	63	31	95	63	1-2	1-2	2-3
83	66	33	83	66	1-2	2-3	1-2
75	66	33	75	66	2-3	1-2	1-2
68	68	34	68		2-3	1-2	2-3
66	66	33	66		2-3	2-3	1-2
60	60	30	60		2-3	2-3	2-3

➢ **CPU Core Voltage Select Jumper (JP5)**

CPU Core Voltage	JP5			
	1-2	**3-4**	**5-6**	**7-8**
2.9V	OFF	ON	OFF	OFF
2.8V	OFF	ON	OFF	ON
2.4V	ON	OFF	OFF	OFF
2.2V	OFF	ON	ON	OFF

➢ **CPU IO Voltage Select Jumper (JCPUIO)**

CPU I/O Voltage	JCPUIO			
	1-3	**2-4**	**3-5**	**4-6**
3.3V	ON	ON	OFF	OFF
3.5V	OFF	OFF	ON	ON

Other Jumper Settings

➢ **CMOS Clear Jumper (JBAT1)**

If you need to clear contents of CMOS, set **JBAT1** to "Clear CMOS" state (short pins 2-3). The

Pin	Description
1-2	Normal
2-3	Clear CMOS

following events then occur: all contents in CMOS are cleared, default settings are loaded, an error message is shown during boot and you are requested to run BIOS Setup Utility. It is recommended to revert back to "Normal" state immediately after clearing CMOS.

➢ **PCI Audio Interrupt Select Jumper (JAINT)**

For PCI card(s) installed whose interrupt signal conflicts with that of audio interrupt, you can change the audio interrupt signal through **JAINT** jumper.

Pin	Description
1-2	-INTR_A
3-4	-INTR_B
5-6	-INTR_C
7-8	-INTR_D

Connector Pin Definitions

➢ PS/2 Keyboard Jack (JKB); PS/2 Mouse Port (JMS)

Cable from PS/2 keyboard is connected to **JKB** while cable from PS/2 mouse is connected to **JMS**.

Pin	Signal	Pin	Signal
1	DAT	2	NC
3	GND	4	5VSB
5	CLK	6	NC

➢ Serial Port Connector (JCOM1)

A serial device such as external modem is connected to **JCOM1**.

Pin	Signal	Pin	Signal
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RT1		

➢ USB Port Connectors (USB1)

The USB (Universal Serial Bus) connector, **USB1,** is a 2-layered connector mounted on the motherboard for connecting up to two USB devices.

Pin	Signal	Pin	Signal
1	VCC	2	USBDAT0-
3	USBDAT0+	4	GND
5	VCC	6	USBDAT1-
7	USBDAT1+	8	GND
9	GND	10	GND

➢ **LPT Port Connector (JLPT1)**

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	-LP_STB	2	LP_D0	15	-LP_ERR	16	-LP_INIT
3	LP_D1	4	LP_D2	17	-LP_SLIN	18	GND
5	LP_D3	6	LP_D4	19	GND	20	GND
7	LP_D5	8	LP_D6	21	GND	22	GND
9	LP_D7	10	LP_ACK	23	GND	24	GND
11	LP_BUSY	12	LP_PE	25	GND		
13	LP_SLCT	14	-LP_AFD				

JLPT 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.

➢ **Wake On LAN Connector (JWOL)**

JWOL connector allows a management application to remotely power on a computer that is originally turned off.

Pin	Signal
1	5VSB
2	GND
3	-RI

➢ **Wake On Ring Connector (JWOR)**

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

Pin	Signal
1	GND
2	-RI

➢ **IR Port Connector (JIR1)**

Connects to the IR of the system chassis. This IR feature is available only if front panel has an IR receiver.

Pin	Signal
1	VCC
2	NC
3	IRRX
4	GND
5	IRTX

➢ **CPU Fan Connector (JFAN2)**

CPU fan is connected to **JFAN2**.

Pin	Signal
1	GPO30
2	+12V
3	FANIN1

➢ **VGA Feature Connector (VFC) (J2)**

This connector is for connecting VFC compatible peripherals. VFC devices are those devices that conform to ATI Multimedia Channel (AMC) specification. Some of these devices are MPEG-2 decoder, TV tuners, etc.

➢ **Power Supply Connector (JPW)**

Pin	Connector 1		Connector 2	
	Wire Color	**Signal**	**Wire Color**	**Signal**
1	Orange	Power Good	Black	GND
2	Red	+5 Vdc	Black	GND
3	Yellow	+12 Vdc	--	NC
4	Blue	-12 Vdc	Red	+5 Vdc
5	Black	GND	Red	+5 Vdc
6	Black	GND	Red	+5 Vdc

The two 6-pin connectors from the switching power supply are connected to **JPW** of the motherboard. This power supply supports remote power on and power on through software control. You can specify a password, or define a hotkey as the power on key through BIOS Setup Utility, in Integrated Peripherals Sub-menu. It also has the option to turn off the power completely or enter suspend mode by pressing **Power Button**.

➢ **Standby Power Supply Connector (JAPS)**

The 3-pin connector from
the switching power supply
is connected to **JAPS**. This
connector controls the
standby mode of the power
supply.

Pin	Signal
1	PWR ON (Active Signal)
2	Standby 5V
3	GND

➢ **FDD Connector (FDD)**

Pin	Signal	Pin	Signal
1	GND	2	-RED_WR
3	GND	4	NC
5	NC	6	-DNSEL1
7	GND	8	-Index
9	GND	10	-MOT_A
11	GND	12	-DRV_B
13	GND	14	-DRV_A
15	GND	16	-MOT_B
17	GND	18	-DIR
19	GND	20	-STEP
21	GND	22	-WT_DT
23	GND	24	-WT_EN
25	GND	26	-Track 0
27	GND	28	-WRPROT
29	NC	30	-RDATA
31	GND	32	-HDSEL
33	GND	34	-DSKCHG

Floppy disk drive is connected to the motherboard through
a 34-pin data cable attached to **FDD**. The types of floppy
drives supported include: 360KB, 720KB, 1.2MB, 1.44MB,
or 2.88MB floppy disk drives.

➢ **Primary/Secondary IDE Connectors (IDE1, IDE2)**

Pin	Signal	Pin	Signal
1	-IDERST	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD2	14	PDD13
15	PDD1	16	PDD14
17	PDD0	18	PDD15
19	GND	20	Key
21	DDRQA	22	GND
23	-DIOWA	24	GND
25	-DIORA	26	GND
27	-DRDYA	28	NC
29	-DDACKA	30	GND
31	IRQ14	32	NC
33	PDA1	34	NC
35	PDA0	36	PDA2
37	-DCS1A	38	-DCS3A
39	-DASP0	40	GND

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. Usually, these drives are automatically detected by system BIOS. However, you can enter BIOS Setup Utility to alter settings of these drives.

➢ **Front Panel Connector (JFBA)**

JFBA connects motherboard I/O controls to the front panel.

Power LED – connects to the front panel's Power On LED. This LED is lit if the system is turned on.

Suspend Button – connects to the suspend switch of the front panel, if available. (This is a reserved function.)
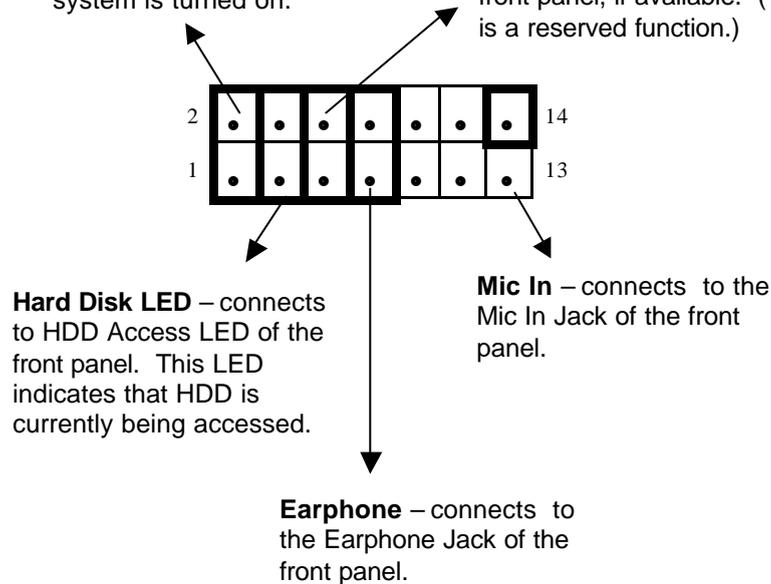
Hard Disk LED – connects to HDD Access LED of the front panel. This LED indicates that HDD is currently being accessed.

Mic In – connects to the Mic In Jack of the front panel.

Earphone – connects to the Earphone Jack of the front panel.

Function	Pin	Signal	Pin	Signal
Power LED	1	Vcc (+)	2	POW-LED (-)
HDD LED	3	GND	4	HDLED (+)
Suspend	5	GND	6	-EXTSMI
Earphone	7	RIGHTOUT	8	LEFTOUT
--	9	No Connect	10	No Connect
--	11	No Connect	12	No Connect
Mic In	13	OFF	14	MIC1

> ➤ **Power On Button Connector (JPB)**

  JPB connects to the Power Button of
  the front panel.

Pin	Signal
1	JPWBNON
2	GND

> ➤ **Hardware Reset Signal (JRST)**

  JRST is a reserved funtion. It allows
  you to connect to the Reset Switch of
  the front panel, if available.

Pin	Signal
1	JPWBN
2	GND

> ➤ **Wireless Keyboard/Mouse Connector
  (JIR-KB/MS)**

  JIR-KB/MS is also a reserved
  function. It allows you to connect to a
  wireless keyboard/mouse
  transmitter.

Pin	Signal
1	PW_GOOD
2	GND

> ➤ **VGA Port (J1)**

Pin	Signal	Pin	Signal
1	R	2	G
3	B	4	NC
5	GND	6	GND
7	GND	8	GND
9	VCC	10	GND
11	NC	12	MONTO1
13	HSYNCO	14	VSYNCO
15	MONTO2	16	GND
17	GND		

  J1 is the VGA Port where you connect the display cable to.

➢ **TV OUT Port (JRCA)**

Transmission and reception of TV
signals using RCA jack is achieved
through **JRCA**.

Pin	Signal
1	TV-B
2	GND
3	GND

➢ **S-video Out Jack (JSVIDEO)**

Transmission and reception
of TV signals using S-video
jack is achieved through
JSVIDEO.

Pin	Signal	Pin	Signal
1	GND	6	+12V
2	GND	7	TV-B
3	TV_R	8	GND
4	TV_G	9	GND
5	TV_SYNC	10	GND

➢ **Fax/Modem Speaker Connector (JMSPK)**

Microphone and
speaker signals from
add-on fax/modem
card are connected
to the system through **JMSPK**.

Pin	Signal	Pin	Signal
1	ACOR/ACOL	2	AGND
3	AGND	4	MIC2

➢ **CD Audio Input Connector (JCD1)**

Audio signals from CD-ROM
drive are connected to the
system through **JCD1**.

Pin	Signal	Pin	Signal
1	CD_R	2	AGND
3	AGND	4	CD_L

➢ **Audio Daughterboard Connector (JAUDIO1)**

Pin	Signal	Pin	Signal
1	VCC	2	VCC
3	MIDI_IN	4	AUXRO
5	JYSTK5	6	AUXLO
7	JYSTK7	8	AGND
9	JYSTK1	10	AUXRI
11	JYSTK3	12	AUXL1
13	AGND	14	JYSTK4
15	MIDI_OUT	16	JYSTK6
17	AGND	18	JYSTK0
19	JYSTK2	20	AGND

JAUDIO1 provides connection to JAUDIO1 of the audio daughterboard. This daughterboard contains Game/MIDI port, audio line in and audio line out ports, as follows:
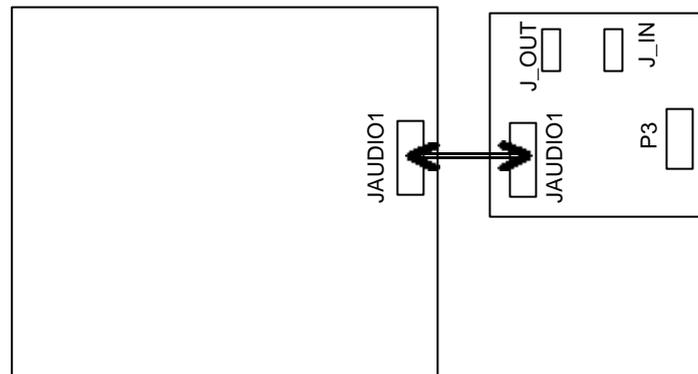
J_OUT – connects to Line Out Jack of the rear panel.
J_IN   – connects to Line In Jack of the rear panel.
P3   – connects to Game Port of the rear panel.

➢ **MPEG Sound Connector (JMPEG1)**

Sound signals from MPEG add-on
card are connected to the system
through **JMPEG1**.

Pin	Signal
1	12S_LCLK_IN
2	12S_BCLK_IN
3	12S_SER_IN
4	GND

C H A P T E R 4
B I O S   S e t u p

The Award BIOS 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:
- 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 <DEL> key immediately
to enter CMOS Setup Utility.

You have to press <DEL> 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 <DEL> key.

The following main menu appears upon entering Setup Utility:

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

   STANDARD CMOS SETUP          INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP          SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP       USER PASSWORD

   POWER MANAGEMENT SETUP       IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURATION        SAVE & EXIT SETUP

   LOAD BIOS DEFAULTS           EXIT WITHOUT SAVING

   LOAD SETUP DEFAULTS

 ESC : Quit                      ¡   ρ̂   ρ̃   †    ӧSelect Item
 F10 : Save & Exit Setup        (Shift) F2  :  Change Color

                Time, Date, Hard Disk Type...
```

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

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)   : Thu, Dec 17 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   AUTO
 Primary Slave      : Auto   0    0    0          0    0     0   AUTO
 Secondary Master   : Auto   0    0    0          0    0     0   AUTO
 Secondary Slave    : Auto   0    0    0          0    0     0   AUTO

 Drive A : 1.44M, 3.5 in.
 Drive B : None                    ┌──────────────────────────────┐
                                   │ Base Memory:      640K        │
                                   │ Extended Memory: 31744K       │
 Video   : EGA/VGA                 │   Other Memory:    384K       │
 Halt On : All Errors              │  Total Memory: 32768K         │
                                   └──────────────────────────────┘
 ESC : Quit          ¡  ρ̂  ρ̃  -¡   ö Select Item  PU/PD/+/-  : Modify
 F1  : Help          (Shift) F2  : Change Color
```

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 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

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

```
                      ROM PCI/ISA BIOS
                    BIOS FEATURES SETUP
                    AWARD SOFTWARE, INC.

 Virus Warning              : Disabled    Video BIOS Shadow      : Enabled
 CPU Internal Cache         : Enabled     C8000-CBFFF Shadow  : Disabled
 External Cache             : Enabled     CC000-CFFFF Shadow  : Disabled
 Quick Power On Self Test   : Disabled    D0000-D3FFF Shadow  : Disabled
 Boot Sequence              : A,C,SCSI    D4000-D7FFF Shadow  : Disabled
 Swap Floppy Drive          : Disabled    D8000-DBFFF Shadow  : Disabled
 Boot Up Floppy Seek        : Enabled     DC000-DFFFF Shadow  : Disabled
 Boot Up NumLock Status     : On
 Gate A20 Option            : Fast
 Me mory Parity/ECC Check : Enabled
 Typematic Rate Setting     : Disabled
 Typematic Rate (Chars/Sec): 6
 Typematic Delay (Msec)     : 250
 Security Option            : Setup       ESC : Quit         ¡ ┴ ┴ ┴  ô│Select Item
 PCI/VGA Palette Snoop     : Disabled     F1  : Help          PU/PD/+/- : Modify
 OS Select For DRAM > 64MB                : Non-OS2           F5  : Old Values
                            (Shift) F2  : Color
                                                            F6  : Load BIOS Defaults
                                                            F7  : Load Setup Defaults
```

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 External Cache	Disabled Enabled	Enables CPU internal or external cache to speed up memory access.
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 for number keys while 'Off' is for arrow keys.
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	If the typematic rate is enabled, this option sets the rate at which

	10 12 15 20 24 30	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	Sets the level of system security. 'System' requires supervisor or user password during system boot. 'Setup' requires password to access BIOS Setup Utility. Supervisor password provides access to all BIOS settings while user password allows changing user password only.
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.
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. '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.
CC000-CFFFF Shadow		
D0000-D3FFF Shadow		
D4000-D7FFF Shadow		
D8000-DBFFF Shadow		
DC000-DFFFF Shadow		

Chipset Features Setup

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    : Disabled

SDRAM Cycle Length      : 3              AutoDetect DIMM/PCI Clk : Enabled
DRAM Read Pipeline      : Enabled        CPU Warning Temperature : Disabled
                                         Current System Temp.    : 32c J89c  K
Cache Rd+CPU Wt Pipeline : Enabled       Current CPU Temperature : 44c J111c
Cache Timing            : Fast           Current CPU FAN Speed    : 4720
RPM
Video BIOS Cacheable    : Enabled        Vcore : 2.22 V    +3.3V  :  3.37 V
System BIOS Cacheable   : Enabled        + 5 V  :  5.08 V  +12 V  : 12.34 V
Memory Hole At 15Mb Addr.: Disabled      -12 V  :-12.28 V
AGP Aperture Size       : 64M


                                         ESC: Quit          ¡ p̄ p̄ †   Select Item
                                         F1  : Help          PU/PD/+/- : Modify
                                         F5  : Old Values    (Shift) F2  : Color
                                         F6  : Load BIOS Defaults
                                         F7  : Load Setup Defaults
```

WARNING: Before You Start Changing ———

*C*hanging these specs to incorrect values may cause system malfunction. If you are not sure of the changes, reload BIOS Defaults or Setup Defaults to revert to previous settings.

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

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 System 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.
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.
AGP Aperture Size	128M 64M 32M 16M 8M 4M	Specifies the amount of memory that can be used by AGP card.
OnChip USB	Enabled	Enables or disables USB functions in DOS mode.

USB Keyboard Support	Disabled	Enables or disables USB keyboard support if 'OnChip USB' is 'Enabled'.
Auto Detect DIMM/PCI Clk	Enabled Disabled	Allows the system to auto detect DIMM and PCI frequency.
CPU Warning Temperature	Disabled 50℃ /122℃ **K** 53℃ /127℃ **K** 56℃ /133℃ **K** 60℃ /140℃ **K** 63℃ /145℃ **K** 66℃ /151℃ **K** 70℃ /158℃ **K**	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 CPUFAN Speed		
Vcore		
+3.3V		
+5V		
+12V		
-12V		

Power Management Setup

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
 DMA/master          : OFF
 Wake On LAN/Ring    : Disabled       ESC : Quit       ¡ ρ̃ ρ̃ †  ¿Select Item
 RTC Alarm Resume    : Disabled       F1  : Help           PU/PD/+/- : Modify
                                      F5  : Old Values   (Shift) F2  : Color
                                      F6  : Load BIOS Defaults
                                      F7  : Load Setup Defaults
```

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. 'Alway 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

Suspend Mode	6 Min 8 Min 10 Min 20 Min 30 Min 40 Min 1 Hour	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.
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		
Wake On LAN/Ring	Disabled Enabled	'Enabled' allows you to wake up the system through LAN/modem or RTC alarm.
RTC Alarm Resume		
Date (of Month)	0 ⋮ 31	Indicates the day of the month and time of the day to wake up the system. Setting 'Date' to '0' means that system will be awaken at the defined 'Time' every day.
Time (hh:mm:ss)	Hour:min:sec	
Primary INTR	ON OFF	Specifies if a system in power saving mode has to monitor interrupt activities or not.

IRQ3 (COM 2)	Primary	If 'Primary INTR' is 'On' and corresponding interrupt signal is detected:
IRQ4 (COM 1)		
IRQ5 (LPT 2)		
IRQ6 (Floppy Disk)		
IRQ7 (LPT1)		
IRQ8 (RTC Alarm)		
IRQ9 (IRQ2 Redir)		
IRQ10 (Reserved)		
IRQ11 (Reserved)		
IRQ12 (PS/2 Mouse)		
IRQ13 (Coprocessor)		
IRQ14 (Hard Disk)		
IRQ15 (Reserved)		

PNP/PCI Configuration

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      : Yes      CPU to PCI Write Buffer  : Enabled
 Resources Controlled By : Auto   PCI Dynamic Bursting    : Enabled
 Reset Configuration Data : Disabled  PCI Master 0 WS Write    : Enabled
                                   PCI Delay Transaction    : Enabled
                                   PCI#2 Access #1 Retry    : Disabled
                                   AGP Master 1 WS Write    : Enabled
 Disabled                          AGP Master 1 WS Read         :


                                   PCI IRQ Actived By: Level
                                   Assign IRQ For USB    : Enabled
                                   Assign IRQ For VGA    : Enabled


                                   ESC : Quit      ¡ þ þ † ¢Select Item
                                   F1  : Help           PU/PD/+/- : Modify
                                   F5  : Old Values   (Shift) F2 : Color
                                   F6  : Load BIOS Defaults
                                   F7  : Load Setup Defaults
```

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 re-configuration of a newly installed add-on card causes such a serious conflict that the OS cannot boot.

IRQ-3 assigned to	PCI/ISA PnP	If 'Resource Controlled By' is set to 'Manual', each IRQ and DMA channel can be 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-1 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#2 Access #1 Retry		
AGP Master 1 WS Write		
AGP Master 1 WS Read		

PCI IRQ Actived By	Level Edge	Indicates how PCI IRQ signals are to be activated.
Assign IRQ For USB	Enabled Disabled	System automatically assigns IRQ for USB, VGA, and ACPI.
Assign IRQ For VGA		

Load BIOS Defaults

The BIOS defaults have been set by the manufacturer and represent settings that 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 default settings (except Standard CMOS Setup settings) 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 that provide 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 (except Standard CMOS Setup settings) and discard changes currently made. Press 'N' to continue making changes in the Setup Utility.

Integrated Peripherals

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      Onboard Serial Port 2  : 2F8/IRQ3
OnChip IDE Second Channel  : Enabled      UART Mode Select       : IrDA
IDE Prefetch Mode          : Enabled      RxD , TxD Active       : Hi, Lo
IDE HDD Block Mode         : Enabled      IR Transmission delay  : Enabled
IDE Primary Master PIO     : Auto         Onboard Parallel Port  : 378/IRQ7
IDE Primary Slave   PIO    : Auto         Parallel Port Mode     : SPP
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
Init Display First         : PCI Slot

POWER ON Function          : Hot KEY
                                          ESC : Quit           ¡ ρ ρ †  Select Item
Hot Key Power ON           : Ctrl-F1      F1  : Help         PU/PD/+/- : Modify
KBC input clock            : 8 MHz        F5  : Old Values    (Shift) F2 : Color
Onboard FDC Controller     : Enabled      F6  : Load BIOS Defaults
Onboard Serial Port 1      : 3F8/IRQ4     F7  : Load Setup Defaults
```

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	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.
POWER ON Function	Password Hot KEY BUTTON ONLY	If Main Power Switch of the rear panel is turned on, this item allows user to turn on the computer through: 'Password' -> Entering the user-defined password; 'Hot KEY' -> Pressing the user-selected hotkey function; 'BUTTON ONLY' -> Pressing the Power Button on the front panel.
KB Power ON Password	<Enter>	User-defined 5-character password to turn on the system if 'POWER ON Function' is set to 'Password'.
Hot Key Power ON	Ctrl-F1 ⋮ Ctrl-F12	Selects the particular hotkey function to turn on the system if 'POWER ON Function' is set to 'Hot KEY'.
KBC input clock	6 MHz 8 MHz 12 MHz 16 MHz	Sets the frequency of the keyboard clock.

Onboard FDC Controller	Disabled Enabled	Enables the floppy drive controller on the motherboard.
Onboard Serial Port 1	3F8/IRQ4 2F8/IRQ3 3E8/IRQ4	Specifies the base I/O port address and interrupt signal of serial port 1.
Onboard Serial Port 2	2E8/IRQ3 Disabled Auto	
UART Mode Select	IrDA ASKIR	Sets the infrared (IR) mode of serial port 2 if 'Onboard Serial Port 2' is not 'Disabled'.
RxD, TxD Active	Hi, Lo Lo, Hi Lo, Lo Hi, Hi	Sets IR's IRRX and IRTX pin as active high or low.
IR Transmission Delay	Enabled Disabled	Enables or disables transmission delay of IR signals.
Onboard Parallel Port	Disabled 3BC/IRQ7 278/IRQ5 378/IRQ7	Sets the base I/O port address and interrupt signal for parallel port.
Parallel Port Mode	SPP EPP 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 protocal and provides symmetric bidirectional communication.
ECP Mode Use DMA	1 3	Selects DMA channel for ECP parallel port mode.
Parallel Port EPP Type	EPP 1.7 EPP 1.9	Selects type of EPP parallel mode.

Supervisor Password
User Password

These items control BIOS and system security features. It
allows you to set passwords, change, or disable passwords for
system and setup level.

If 'Security Option' of 'BIOS Features Setup' sub   -menu is set to
'System', you will be required to enter either supervisor or user
password during boot. If this item is set to 'Setup', you will be
required to enter password only if BIOS Setup Utility is invoked.
In this case, entering supervisor password allows you to alter
settings in BIOS while entering user password allows you to
change user password only, other settings cannot be modified.

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

<div align="center">**Enter Password:**</div>

Type in your password and press <Enter>. Then, your
confirmation will be required:

<div align="center">**Confirm Password:**</div>

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

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 BIOS Setup Utility.

Exit Without Saving

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

REMARK
Setup menus are subject to change without prior notice.

C H A P T E R 5
I n s t a l l a t i o n

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

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.
- Avoid touching pins of chips or modules.
- Do not put the 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 installed.

CPU Installation

1 Locate CPU socket on the motherboard. Refer to *Motherboard Layout* section of *Chapter 3: Connectors and Jumpers* for its position.

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

Fan & Heat
Sink Latch

Fan & Heat
Sink Latch

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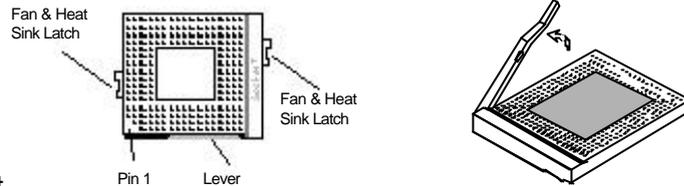
3 Insert the CPU gently but firmly into the CPU socket. Make sure that the CPU pins align with the socket pinholes. Do not insert it forcibly. (Your CPU fits into the socket in only one way. Note that the notched corner of the CPU should be aligned to pin 1 of the socket. Be careful not to bend any pins.)

Notched
Corner
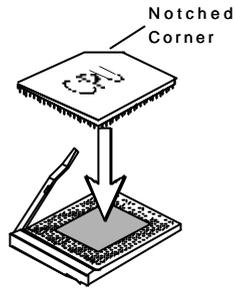
4 Pull down the lever back to its original position.

5 Set the jumpers to the right frequency and voltage.   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 three DIMM slots for the installation of system memory.

1 Locate the DIMM sockets on the motherboard. Refer to *Motherboard Layout* section of *Chapter 3: Connectors and Jumpers* for its position.

2 Press the clips on both sides of the DIMM socket outward to release it.
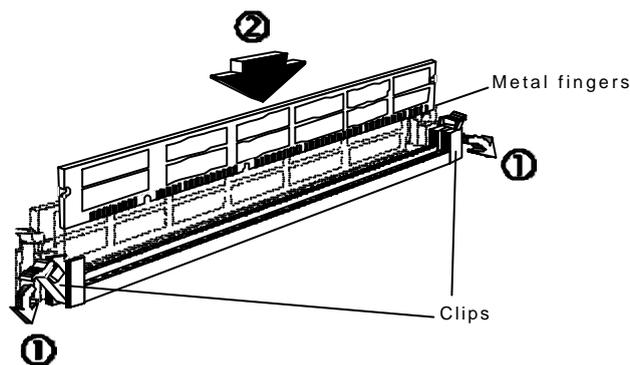
3 Insert the DIMM vertically with its metal fingers aligned with the socket's grooved slot.

4 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.)
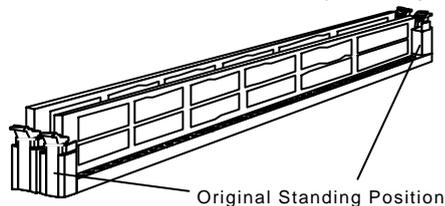
5   To ensure proper operation, check if the clip is properly locked onto the hollow of the DIMM. If not, press slightly to lock it.

———————— **Reminder: Installing a DIMM** ————————

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

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

The succeeding sections provide installation procedures for different storage devices. Your system chassis provides drive bays for:

> Exposed 5.25" Drive   x1
> Exposed 3.5" Drive   x1
> Enclosed 3.5" Drive   x1

Removing System Cover

WARNING: Before Removing System Cover

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

---

1 Remove the three mounting screws (A, B, C) at the rear of the system.

2 Slide the cover backwards (in the direction of arrow ①) until it is cleared from the system.

3 Lift up the cover (arrow ②).

Cover Mounting Screws (X3)

A , B , C

4 Find a suitable location to place your cover and its three mounting screws.
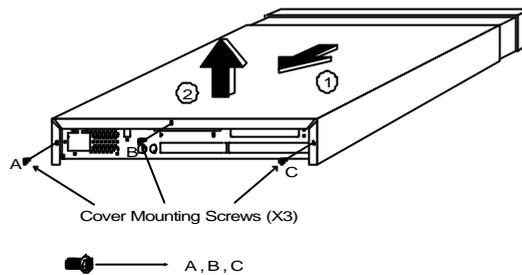
Installing Add-On Cards

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.

Expansion slots are provided by your system through a riser
card. These include one PCI slot and one PCI/ISA slot.
Therefore, you can install maximum of two PCI cards at a time;
or, one PCI and one ISA card.

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 any
     jumper on the motherboard has to be set.

9 Restore system cover.

Installing Internal 3.5" HDD

1   Remove system cover.

2   Unscrew the mounting screw (D) of the support beam, as
       shown. Slide it a little towards the left, then push it
       backward to remove it out of the system.
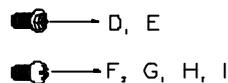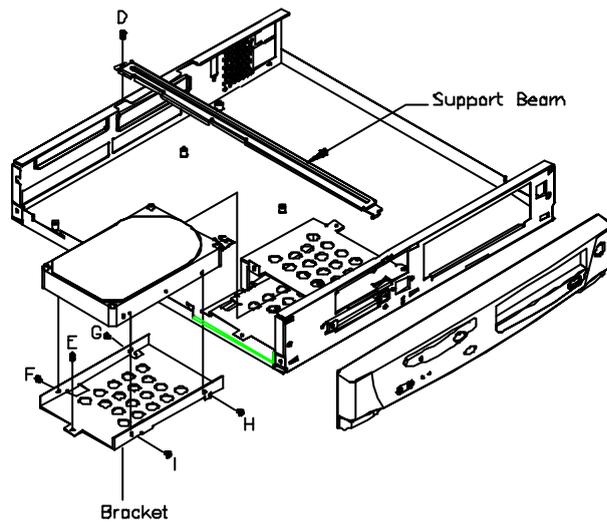
3   Locate the 3.5" HDD, if installed, or the HDD bracket.

4   Unscrew the bracket mounting screw (E) of the HDD
       bracket. Then, slide this bracket to the left until it clears out
       of the chassis.

5   If HDD is installed, detach the signal and the power cable
       from it and remove the four screws (F, G, H, I). Then, take
       it out of the bracket.

6   Install the new HDD onto the bracket and secure with four screws (F, G, H, I), two on each side.

7   Re-install this bracket back to the system and secure its mounting screw (E).

8   Connect the data signal cable from IDE1 connector of the motherboard.

9   Connect a power signal cable from the power supply.

10   Re-install the support beam and secure its mounting screw (D) to the chassis.

11   Restore system cover and necessary cabling connections.

12   Your system automatically detects your HDD. If you need to manually configure this, refer to *Chapter 4: BIOS Setup* for more details.

Installing 3.5" FDD

1   Remove system cover.

2   Unscrew the mounting screw (D) of the support beam. Slide it a little towards the left, then push it backward to remove it out of the system.
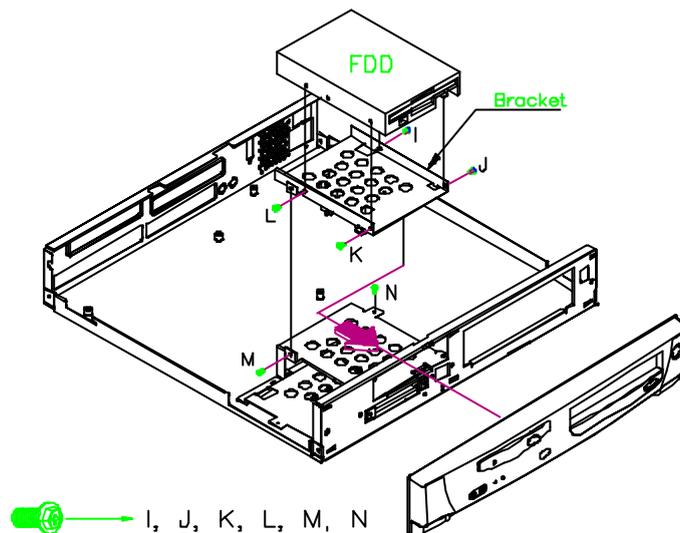
3   Locate the 3.5" FDD, if installed, or the 3.5" FDD bracket.

4   Unscrew two bracket mounting screws (M, N) of the FDD bracket and remove this out of the chassis.

5   If an FDD is installed, detach the signal and power cable from it and remove four screws (I, J, K, L). Then take it out of the bracket.

6 Install the new FDD onto the FDD bracket and secure with four screws (I, J, K, L), two on each side.

7 Re-install the bracket back to the chassis and secure with its mounting screws (M, N).

8 Connect the mini-size power signal cable from the power supply to the drive.

9 Connect the data signal cable from FDD of the motherboard to the drive.

10 Restore system cover and necessary cabling connections.

11 Your system automatically detects your 3.5" floppy disk drive. If you need to manually configure this, refer to *Chapter 4: BIOS Setup* for more details.

Installing 5.25" CD-ROM Drive

1   Remove system cover.

2   Locate the 5.25" CD-ROM drive, if installed, or the
       CD-ROM bracket, as shown.
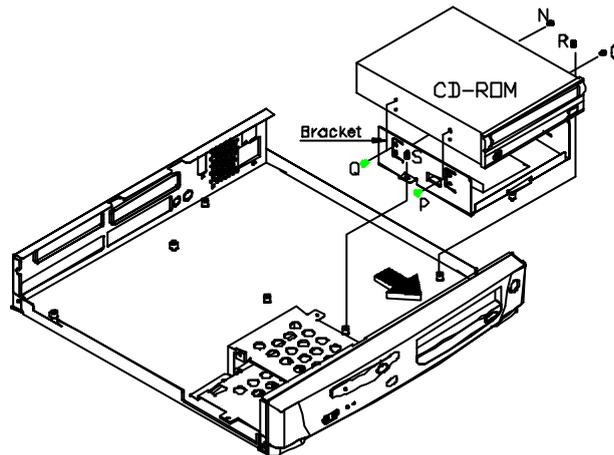
3   Unscrew two bracket mounting screws (R, S) of the 5.25"
       CD-ROM bracket to remove it.

4   If CD-ROM drive is installed, detach first the signal and the
       power cable from the drive. Then, remove two screws (O,
       P, Q, R) from each side.

5   Install the CD-ROM drive onto the CD-ROM bracket and
       secure with two screws on each side (O, P, Q, R).

6   Re-install this bracket and screw back the two bracket
       mounting screws (R, S).

7   Connect a power signal cable from the power supply to the
       drive.

8   Connect the data signal cable from IDE2 of the
       motherboard to the drive.

9   Restore system cover and necessary cabling connections.

10   Your system automatically detects your CD-ROM drive. If
       you need to manually configure this, refer to *Chapter 4:
       BIOS Setup* for more details.

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 on Monitor or TV

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 or TV not properly connected.	Check video cable connection. Refer to manual of monitor or TV if necessary.
Computer is in sleep or suspend mode.	Press a key on the keyboard to wake it up.
Brightness control is not adjusted properly.	Adjust 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.

Make sure that your TV is properly connected. If there is still no display on TV, perform the following steps to check if your TV display is enabled:

1 Press ⊞ (Windows) key or click **Start** menu.
2 Select **Settings**, then select **Control Panel**.
3 Click **Display** icon.
4 Choose **Setting** tab then click **Advanced** button.
5 Select **ATI Displays** tab.
6 There should be a checkmark on the white box beside **Television**. If there is no checkmark, click on this white box to enable TV display.
7 Click **OK** button.
8 Click **OK** button again to complete the operation.

If problem still persists, contact your dealer for assistance.

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.

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 in the floppy disk. Remove this disk and press any key to continue the boot procedure.

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.

CD-ROM Errors

CD-ROM disc not detected.

Check if the disc is inserted properly into the CD drawer with its label facing up and that 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, 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. If reading failed, 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   Check your printer device driver.
required.
                                           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   Turn off your system and check
connected.   printer cable connections.

Inaccurate System Clock

System clock is not properly   Enter BIOS Setup Utility and set
set.   system clock to current time and
                                           date.

On-board Lithium battery is   Contact your dealer to replace it.
used up or exhausted.