SAHARA

SYSTEM USER GUIDE

FCC NOTICE

CLASS B REGULATIONS

U. S. A.

FEDERAL COMMUNICATIONS COMMISSION RADIO FREQUENCY INTERFERENCE STATEMENT

> **NOTE :** 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 off and on, 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 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.
>
> Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

CANADA

CANADIAN DEPARTMENT OF COMMUNICATIONS RADIO INTERFERENCE REGULATIONS CLASS B COMPLIANCE NOTICE

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numriques de la classe B prescrites dans le Réglement sur le brouillage radioélectrique édicté par le ministére des Communications du Canada.

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SAFETY INSTRUCTIONS

Battery Warning

WARNING : The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion and risk of personal injury if the battery is incorrectly replaced or mistreated. Do not attempt to recharge the battery, disassemble it, remove it, immerse it in water, or dispose of it in fire.

This computer has been tested for conformity to international safety regulations. Like any electronic device, however, the computer should be used with care. To protect yourself from possible injury and to minimize the risk of damage to the computer, read and follow these safety instructions:

General Guidelines

■ Read all of these instructions.
■ Save these instructions for later use.
■ Follow all warnings and instructions marked in the computer.
■ Except as explained elsewhere in this manual, do not attempt to service the computer yourself. Opening or removing these covers that are marked "Do Not Remove" might expose you to dangerous voltage points or other risks. Refer all servicing of marked compartments to a qualified personnel.

Installation Restrictions

■ Do not use the computer near water.
■ Do not place the computer on an unstable cart, stand, or table. The computer might fall and be seriously damaged.
■ Do not block or cover the ventilation slots on the cover or cabinet of the computer. Air must be allowed to circulate through these slots in order to ensure that the computer operates properly and does not overheat.
■ Install the computer near an electrical outlet for ease of access. Use the plug of the power cord to disconnect power from the computer.
■ Do not place the computer near or over a radiator or heat register or in direct sunlight. Place the computer in a small enclosure only if proper ventilation is provided.
■ Do not permit anything to rest on the power cord. Do not locate the computer where people can walk on its power cord.
■ Do not plug the computer into the same circuit with radio or television receivers.

■ Wear a static wrist strap which fits around your wrist and is connected to a natural earth ground.
■ Touch a grounded or anti-static surface or a metal fixture such as a water pipe.
■ Avoid contacting the components on add-on cards, boards and modules and the "gold finger" connectors plugged into the expansion slot. It is best to handle system components by their mounting bracket.

Electrical Restrictions

> **WARNING :** This equipment is designed for connection to a grounded (earthed) outlet. The grounding type plug is an important safety feature. To reduce the risk of electrical shock, damage to your equipment, or loss of your data, do not disable this feature.

Power Cord Set Requirements

The power cord set (appliance coupler, flexible, and wall plug) you received with your computer meets the requirements for use in the country where you purchased your equipment.

Power cord sets for use in other countries must meet the requirements of the country where you use the computer. For more information on power cord set requirements, contact your FIC authorized dealer, reseller, or service provider.

General Requirements

The requirements listed below are applicable to all countries:

1. The length of the power cord set must be at least 6.00 feet (1.8 m) and a maximum of 9.75 feet (3.0 m).
2. All power cord sets must be approved by an acceptable accredited agency responsible for evaluation in the country where the power cord set will be used.
3. The power cord set must have a minimum current capacity of 10A and a normal voltage rating of 125 or 250 volts AC, as required by each country's power system.
4. The appliance coupler must meet the mechanical configuration of an EN 60 320./IEC 320 Standard Sheet C13 connector, for mating the appliance inlet on the computer.

Country-Specific Requirements

Power Cord Set Requirement		
Country	*Accredited Agency*	*Applicable Note Numbers*
Australia	EANSW	1
Austria	OVE	1
Belgium	CEBC	1
Canada	CSA	2
Denmark	DEMKO	1
Finland	FIMKO	1
France	UTE	1
Germany	VDE	1
Italy	IMQ	1
Japan	JIS	3
The Netherlands	KEMA	1
Norway	NEMKO	1
Sweden	SEMKO	1
Switzerland	SEV	1
United Kingdom	BSI	1
United States	UL	2

NOTE:

1. Flexible cord must be <HAR> Type HO5VV-F, 3-conductor. 1.0 mm^2 conductor size. Power cord set fittings (appliance coupler and wall plug) must bear the certification mark of the agency responsible for evaluation in the country where it will be used.

2. Flexible cord must be Type SVT or equivalent. NO. 18 AWG, 3-conductor. Wall plug must be a two-pole grounding type with a NEMA 5-15P (15A. 125V) or NEMA 6-15P (15A 250V) configuration.

3. Appliance coupler, flexible cord, and wall plug must bear a "T" mark and registration number in accordance with the Japanese Dentori Law. Flexible cord must be Type VCT or VCTF, 3-conductor, 0.75mm^2 conductor size. Wall plug must be a two-pole grounding type with a Japanese Industrial Standard C8303 (15A, 125V) configuration.

Battery (Lithium)

> **NOTE :** The following caution statement is located in the service and operating manual or adjacent the battery.

1. English

> **"CAUTION:** DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS"

2. French

> IL Y A DANGER D'EXPLOSION S'IL Y A REMPLACEMENT INCORRECT DE LA BATTERIE. REMPLACER UNIQUEMENT A VEC UNE BATTERIE DU MÊME TYPE OU D'UN TYPE RECOMMANDÉ PAR LE CONSTRUCTER. METTER AU RÉBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS DU FABRICANT"

3. German

> **"VORSICHT !** Explisionsgefahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlenem ähnlichen Typ.
> Entsorgung gebrauchter Batterien navh Angaben des Herstellers.

4. Swedish

> " Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en ekvivalent typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt fabrikantens instruktion. "
> *(If the battery is placed in an area not accessible to the user even English text can be used.)*

5. Danish

> " Lithiumbatteri- Eksplosionsfare ved fejlagtig håndtering. Udskiftning må kum ske med batteri af samme fabrikat og type. Lever det brugte batteri tilbage til leverandoren. "
> *(The size of the warning must be a minimum of 26x52 mm., the background shall be yellow color with black frame, and the text in black color. A white background is acceptable in the User's instruction and in the Service Manual.)*

6. Norwegian

> " Ekspolsjonsafe ved feilaktig skifte av batteri. Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabriknten. Brukte batterier kasseres i henhold til fabrikantens instruksjoner. "
> *(Danish or Swedish text can also be accepted.)*
> *(If the battery is placed in an area not accessible to the user even English text can be used.)*

7. Finnish

> " Paristo voi räjähtää, jos se on virheellisesti asennettu. Vaihda paristo ai-nostaan laitevalmistajan suosittelemaan tyyppiin. Hävitä käyteet paristo valmistajan ohjeiden mukaisesti. "
> **(***If the battery is placed in an area accessible to the user, the warning text has to be both in Swedish and Finnish.)*
> *(If the battery is placed in an area not accessible to the user, even Swedish or English text can be used.)*

Operating and Maintenance Guidelines

■ Never spill liquids or push objects of any kind into the computer through cabinet slots. Liquids and foreign objects might touch dangerous voltage points or short out parts, creating a risk of fire or electrical shocks.

■ Keep the area around the computer free from static electricity and magnetic fields. Before you touch the computer, discharge static electricity on your body by touching a metallic surface.

■ Operate the computer only when the cover is in the closed position.

■ Do not turn the computer on and off in rapid succession. Doing so might damage data in the configuration files and on the hard fixed disk drive.

■ Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls might result in damage and often requires extensive work by a qualified technician to restore the product to normal operation.

■ Clean the display and computer periodically with a damp cloth. Do not use liquid or aerosol cleanser. Unplug the computer from its electrical outlet before cleaning it.

■ Prepare the computer before moving it by taking the following actions:
  – Lock the cabinet cover.
  – Insert an old diskette in each floppy diskette drive.
  – Disconnect external peripheral devices.

- ◼ Unplug the computer from the wall outlet and refer servicing to qualified service personnel under any of the following conditions:
  - – The cord or plug is damaged or frayed.
  - – Liquid has been spilled into the computer.
  - – The computer has been exposed to rain or water.
  - – The computer does not operate normally even when the operating instructions are followed.
  - – The computer has been dropped or the cabinet has been damaged.
  - – The computer exhibits a distinct change in performance, indicating a need for servicing.

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Chapter 1

GETTING STARTED

Introduction to the SAHARA System

The unique design of the **SAHARA** System combines state-of-the-art electronics with a sophisticated compact form factor to provide you with a smaller personal computer that is both fast and powerful. Defining the next-generation of corporate computing, the **SAHARA** System integrates the high-performance of an Intel Pentium® II CPU and enhanced IDE hard disk drive to provide extra processing power as well as the high-speed data access you need to handle all your computing requirements. The use of integrated input/output connectors results in reduced emissions and more input/output space at the rear.

The **SAHARA** System can be customized to perform a vast array of data transfer and simplified networking tasks. The **SAHARA** system not only employs the latest breakthroughs in personal computing technology but also complies with accepted industry standards for maximum compatibility. And with its integrated management technology, the **SAHARA** System allows centralized control of diagnostics and upgrades across the network, significantly lowering maintenance costs.

The **SAHARA** System's ultra-slim profile hides a revolutionary mainboard that packs in powerful multimedia performance including AGP for fast 3D graphics performance, soft DVD support, and 3D Sound Blaster Pro™ compatible audio, allowing you to take advantage of the fascinating world of multimedia education and home entertainment. Choose from hundreds of interactive CD-ROM titles and watch a vivid, colorful world open up before your eyes, allowing you to enjoy high quality audio with all your games, applications, and digital recordings. It also has a Line-In port, a Speaker-Out port and an External Microphone port allowing you to use a wide variety of audio software.

The **SAHARA** System not only employs the latest breakthroughs in personal computing technology but also complies with accepted international safety, regulatory and ergonomic standards for maximum compatibility.

The **SAHARA** System comes with two serial ports, two USB ports, one parallel port with ECP/EPP, one Audio connector (Line-In, Line-Out, MIC-In), one RJ45 LAN connector, two PS/2 connectors, one D-sub 15-pin female VGA port, one Game/MIDI port (optional), one IrDA port (optional), and two expansion slot openings, allowing you to connect your computer to a wide variety of input-output devices such as mice, printers, modems, and graphics tablets. This User Guide is provided to help you get the most out of your new investment. It describes all the features of the **SAHARA** System in an easy-to-read yet thorough manner. The primary goals of this chapter are (1) to introduce the computer's features and (2) to identify the computer's external components. The chapter begins with instructions for unpacking your new **SAHARA** System.

Unpacking the SAHARA System

Before unpacking the **SAHARA** System, prepare a suitable workspace for your computer. Provide a steady, level and clean surface, near an electrical wall outlet. If you are using a Fax/Modem, make sure that the workspace is located near a telephone jack. Also ensure that the computer has enough space around it to allow for airflow, especially at the rear of the computer near the fan. If the computer does not have enough ventilation, internal components can become overheated and may become damaged.

Note: Using a computer for extended periods of time, a poor workstation set-up, and incorrect work habits can create health problems. The science of *ergonomics* studies the relationship between health and a suitable work environment. For more information on ergonomics, contact your nearest computer bookstore, or local library.

When opening the box for your computer, make sure that you do not damage the box. You may need it in the future for shipping or storing your **SAHARA** System.

When you have unpacked your computer, make sure the following items are included in the box and are in good condition. If you find that any of these items are missing or appear damaged, contact your **SAHARA** System dealer immediately.

Item Checklist

- ☑ **SAHARA** System Unit

- ☑ AC Power Cord

- ☑ one IDE Ribbon Cable

- ☑ one IDE Power Cord

- ☑ one CD-ROM Drive Ribbon Cable

- ☑ one CD-ROM Drive Connector Adaptor

- ☑ Heatsink with Fan (for system using Pentium® II or Mendocino™ CPU)
  or Passive Heatsink (for system using Celeron™ CPU)

- ☑ Screw Kit

- ☑ This User's Manual

- ☑ Support Drivers and Utilities CD-ROM Disc

- ☑ System Stand Foot Set

- ☑ Rubber Foot Set

Remove the items from the shipping carton and protective packaging. Do not throw away the packing material or shipping carton in case you need to ship or store the components of the computer for future use.

Setting Up the SAHARA System

Place the computer system in a site that is clean, well-ventilated and near a grounded (three-pronged) outlet. If the computer does not have enough ventilation, internal components may overheat and become damaged. If you are using a Fax/Modem make sure the workspace is near a telephone jack.

Note!
If the line voltage in your area is unreliable, you may want to use a voltage regulator to protect the system from possible harmful effects caused by sudden electrical surges.

Although the computer system is designed and built to work and last for a long time, you may do well to heed the following precautions to get the most out of the system:

■ Avoid placing the system on an unstable stand or surface subject to bumps and violent shaking.

■ Avoid food, smoke, or traffic areas that may expose the system to liquid and food spills, cigarette ashes and dust.

■ Do not subject the system to extreme temperatures and humidity.

■ Occasionally clean the computer with a soft cloth moistened with water. Do not use soap or liquid cleaners on the display monitor.

Note:

Unless you are a qualified technician, never tinker with any of the components inside the system unit, display monitor and keyboard. Irresponsible use of the system will invalidate the warranties and may cause you unnecessary harm.

Note!

In order to save valuable working space on your desktop, it is advised that the system be placed in a vertical position as opposed to the horizontal position.
In case system will be placed flat on a horizontal position, attached the Rubber Foot Set to the system chassis cover (see section on Attaching the Rubber Foot Set on the following page) and make sure that the system cover's ventilation air holes are not blocked (e.g., display monitor, paper, etc.) and that the computer has enough space around it to allow for airflow, especially at the rear of the computer near the fan. If the computer does not have enough ventilation, internal components can become overheated and may be damaged.

A Look at the Front of the Computer

Refer to the following illustration to identify components located at the front of the **SAHARA** System.
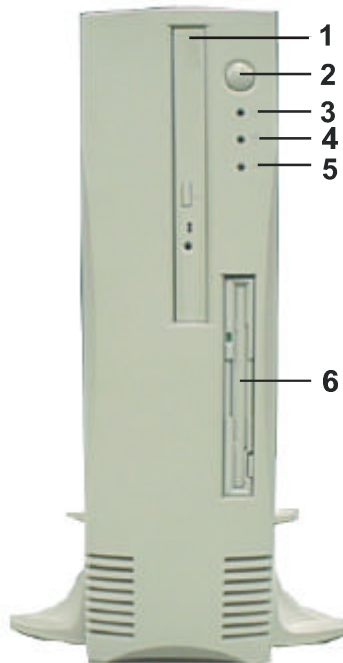
1. **12.7mm Slim CD-ROM Drive**
   The CD-ROM drive is located near the top of the **SAHARA** System.

2. **Power Button**
   Press this button to turn on and off and reset your computer.

3. **Power LED**
   When this green LED is lit, it indicates that system power is on.

4. **Hard Disk Drive Access LED**
   When lit this green LED indicates that the hard disk drive (HDD) is being accessed.

5. **LAN Active LED**
   When lit this amber LED indicates that the system is currently online or connected to the Network.

6. **Floppy Disk Drive**
   The 3½" slim floppy disk drive (FDD) unit is located below the CD-ROM drive.

Attaching the Rubber Foot Set

Attach the four rubber foot set by peeling it off from the backing tape and sticking it on the four indentations found on the system chassis cover.
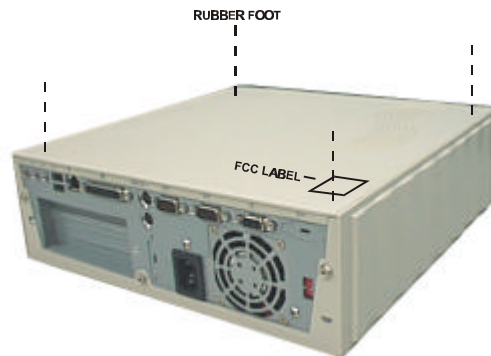
A Look at the Rear of the Computer

The rear of the **SAHARA** System is where you connect power, peripheral devices such as a Fax/Modem or printer, input devices such as a PS/2 keyboard, and output devices such as your display monitor. Refer to the following for an explanation of each of the rear components:
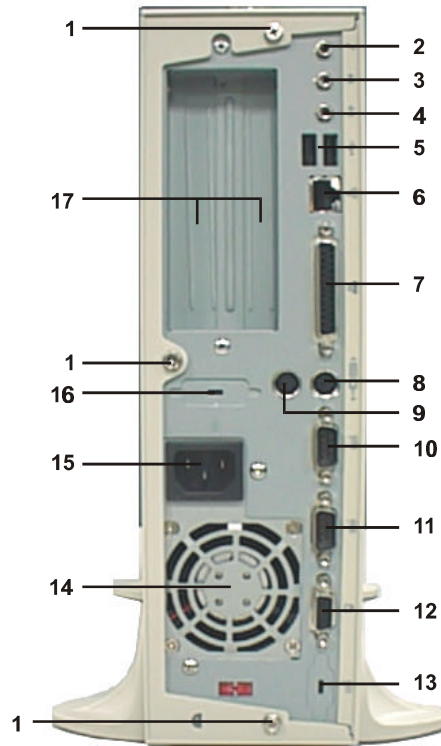
Rear of the SAHARA System

1. **Rear Panel Screws**
   Use a Philips screwdriver to remove the three rear panel screws and turn counter clockwise to release the chassis cover.

2. **Microphone Jack**
   Plug the microphone to this jack for inputing voice.

3. **Line-In Jack**
   This socket allows tape players or other audio sources to be recorded by your computer or played through the Line-Out jack.

4. **Line-Out Jack**
   Connect audio devices, such as a speaker to this port.

5. **USB Ports**
Provides fast and convenient Plug and Play peripheral connections outside your computer, allowing you to take full advantage of the universal functionality and flexibility of USB technology. Connect a USB hub to these ports.

6. **RJ45 LAN Cable Socket**
The LAN cable is plugged into this socket.

7. **Parallel Port**
This connector allows the system to link with a parallel device such as a printer through a printer cable.

8. **PS/2 Keyboard Connector**
This connector is used to connect the PS/2 keyboard to the system.

9. **PS/2 Mouse Connector**
This connector is used to connect the PS/2 mouse to the system.

10. **COM2 Port**
Allows the connection of devices that take serial ports such as a modem. It is recommended to connect your serial mouse to the COM1 port and your fax/modem to the COM2 port.

11. **COM1 Port**
Allows the connection of devices that take serial ports such as a serial mouse.

12. **VGA Port**
Connect the display monitor to this port.

13. **IrDA Port** (future option)
Connect the IR device to this port.

14. **Power Supply Fan**
This fan is used to cool the AC power supply. Ensure that there is free air flow around the cooling fan.

15. **AC-In Socket**
Connect the computer's AC power cord to this socket. Ensure that the power cord is connected to a stable AC power source.

16. **Game Port** (future option)
Connect the joystick to this port.

17. **Adapter Panel**
Behind this panel is the expansion slot where an adapter or add-on card can be installed.

Display

The system comes with an integrated AGP-based ATI RAGE IIC/PRO AGP controller chip. This VGA controller offers output pixel data rates with non-interlaced screen resolutions of up to 1600x1200x65k colors at a refresh rate of 76Hz (2MB SGRAM upgradable to 8MB). The AGP controller enables the system to have a higher performance under Windows and other GUI (Graphics User Interface) environments, plus optimizations which result in even more impressive 2D and 3D performance.

The RAGE IIC/PRO delivers 3D performance unmatched in its class, along with a comprehensive list of 3D features including perspectively correct texturing, mip-mapping, bilinear and trilinear filtering, z-buffering, video texturing, Gouraud shading, and alpha blending.

The RAGE IIC/PRO incorporates excellent video support, suitable for MPEG-2 content and video conferencing acceleration. In addition to offering increased performance and design flexibility, the RAGE IIC/PRO adds full PCI Power Management support.

General Features

- PCI version 2.1 with full bus mastering and scatter/gather support
- Fully PC97 and PC98 compliant
- Full power management including PCI Power Management registers
- Triple 8-bit palette DAC with gamma correction for true WYSIWYG color. Pixel rates up to 200MHz
- Supports DRAM, EDO DRAM (including single-cycle operation), SDRAM and SGRAM across a 64-bit interface at up to 83MHz
- Supports block write feature of SGRAM for improved performance
- Integrated hardware diagnostic tests performed automatically upon initialization

2D Acceleration

- Hardware acceleration of Bitblt, Line Draw, Polygon/Rectangle Fill, Bit Masking, Monochrome Expansion, Panning/Scrolling, Scissoring, full ROP support and hardware cursor

- Game acceleration (including support for Microsoft's DirectDraw): Double Buffering, Virtual Sprites, Transparent Blit, Masked Blit and Context Chaining
- Acceleration in 8/16/24/32 bpp modes. Packed pixel support (24bpp) enables true color in 1MB configurations

3D Acceleration

- Complete 3D primitive support: points, lines, triangles, lists, strips and quadrilaterals and BLTs with z compare
- Comprehensive enhanced 3D feature set:
  - Full screen or window double buffering for smooth animation
  - Hidden surface removal using 16-bit z-buffering
  - Sub-pixel and sub-texel accuracy
  - Gouraud and specular shaded polygons
  - Perspectively correct mip-mapped texturing with chroma-key support
  - Support for single pass bi- and tri-linear texture filtering
  - Full support for Direct3D texture lighting
  - Special effects such as complete alpha blending, fog, video textures and texture lighting
  - Dithering support in 16bpp for near 24bpp quality in less memory
- Extensive 3D mode support

Motion Video Acceleration

- Smooth video scaling and enhanced YUV to RGB color space conversion for full-screen/full-speed video playback
- True colour overlay accepts video streams at full MPEG-2 width, up to 720 pixels
- Supports multi-stream video for video conferencing and other applications
- Filtered horizontal and vertical, up and down scaling enhances playback quality
- Special filter circuitry eliminates video artifacts caused by displaying interlaced video on non-interlaced displays
- Intercast capable video capture interface

■ Bus master engine includes bi-directional planar YUV to packed format converter for superior MPEG playback and video conferencing acceleration

■ Hardware mirroring for flipping video images in video conferencing systems

■ Supports graphics and video keying for effective overlay of video and graphics

■ YUV to RGB color space converter with support for both packed and planar YUV

Software Support

■ Register-compatible with VGA standards, BIOS-compatible with VESA Super VGA

■ Full-featured, yet simple Windows utilities:

- ATI DeskTop supports panning and scrolling across a virtual workspace

- Calibration utility for WYSIWYG color

■ Drivers meet Microsoft's rigorous WHQL criteria and are suitable for systems that bear the "Designed for Windows NT and Windows 95" logo

Software	DOS	Win 3.x	Win 95	Win NT	Mac OS	OS/2
2D Software Support [1]						
Accelerated driver	VESA [2]	✓	✓	✓	✓	✓
Video Software Support						
Microsoft DirectDraw			✓			
Microsoft ActiveMovie			✓			
MPEG-1 software playback	✓	✓	✓			
MPEG-2 software playback			✓			
3D Software Support						
Microsoft Direct3D			✓			
QuickDraw 3D RAVE			✓	✓	✓	
OpenGL [3]			✓	✓		
Heidi				✓		
ATI 3D CIF [4]			✓			
NOTES: 1 - Additional 3rd parties (including SCO Unix and UNIXWARE) 2 - Direct BIOS support 3 - Includes NT 3.51 CD and NT 4.0 MCD 4 - ATI 3D API for the 3D RAGE family						

Display Capabilities

Depending on the memory configuration, the ATI RAGE IIC/PRO can give a maximum resolution of 1600x1200 at 65K colors and a refresh rate of 76Hz. The following table shows resolution/color as a function of memory size and refresh rate. It also gives a breakdown of the use of memory in various 3D applications.

DISPLAY SCREEN RESOLUTION	256 COLORS			HIGH COLOR			TRUE COLOR		
	2MB —	4MB —	6MB/ 8MB	2MB —	4MB —	6MB/ 8MB	2MB —	4MB —	6MB/ 8MB
640 x 480	200	200	200	200	200	200	200	200	200
800 x 600	200	200	200	200	200	200	200	200	200
1024 x 768	150	150	150	150	150	150	—	—	—
1152 x 864	120	120	120	120	120	120	—	—	—
1280 x 1024	100	100	100	—	100	100	—	—	—
1600 x 1200	85	85	85	—	85	85	—	—	—

Audio

The onboard CrystalClear™ CS4235 chip includes an integrated FM synthesizer and a Plug-and-Play interface. In addition, it includes hardware master volume control as well as extensive power management and 3D sound technology. It is compatible with the Microsoft® Windows Sound System™ standard and will run software written to the Sound Blaster™ and Sound Blaster Pro™ interfaces. It is fully compliant with Microsoft's PC97 and PC98 audio requirements.

Features

■ Compatible with Sound Blaster™, Sound Blaster Pro™, and Windows Sound System™

■ Advanced MPC3-compliant input and output mixer

■ Enhanced stereo full duplex operation

■ Dual type-F DMA support

■ Integrated CrystalClear™ 3D stereo enhancement

■ Internal default PNP resources

Ethernet PCI Bus (LAN)

The onboard Intel 82558 chip is a fully integrated 10BASE-T/100BASE-TX LAN controller. It consists of both the MAC controller and the 10/100 Mbps physical layer interface. Its true 32-bit architecture enables it to perform high speed data transfers on the PCI bus using four DMA channels. Its sophisticated microcode-based engine enables the 82558 chip to process high level commands and perform multiple operations without CPU intervention. Its 3 Kbyte Transmit and Receive FIFOs provide large on-chip storage space for both transmitted and received frames. The 82558 chip provides full support for both half duplex and full duplex operation, as well as support for full duplex flow control.

Features

- Internal transmit and receive FIFOs (3 Kbytes each)
- FLASH support up to 64 Kbytes
- EEPROM support
- ACPI and PCI Power Management standards compliant
- Remote Wake Up (Magic Packet) support
- Full or half duplex capable at 10 or 100 Mbps

GETTING READY TO GO

Introduction

This chapter provides you with the necessary information and instructions you need to set up the new **SAHARA** System. This chapter also guides you through starting up the computer for the first time and doing basic operations. Setting up the computer involves the following steps:

■ Connecting a display monitor to the computer

■ Connecting a keyboard to the computer

■ Connecting a PS/2 mouse to the computer

■ Connecting any other peripherals that you may have including a printer, a serial mouse, audio equipment or a USB peripheral

■ Plugging in and turning on the computer

System Connections

The **SAHARA** System should look like the following figure after all the initial connections are in place.
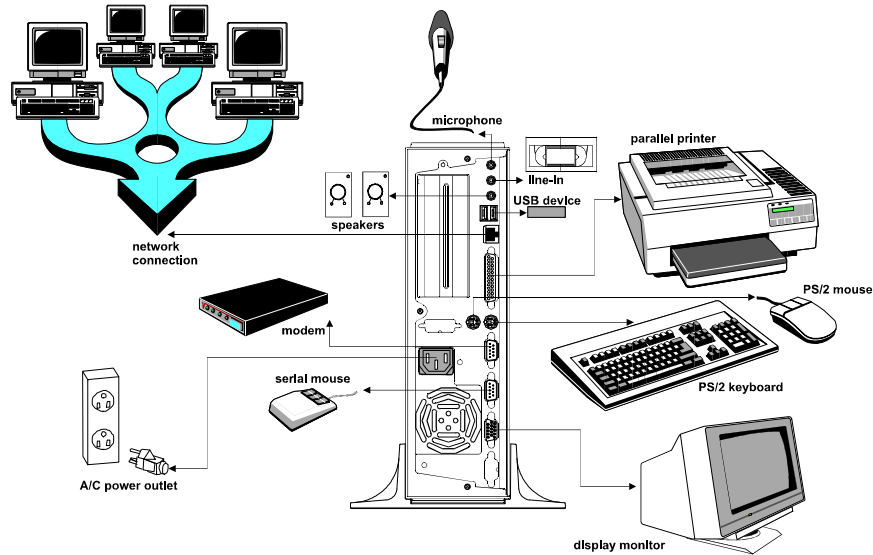
Operating System

A computer starts up only when there is an **operating system** (O/S) existing on its hard disk or when a system diskette is in its primary drive, normally designated as drive A. Think of the operating system or user interface as the translator between the computer chip and you. The computer chip sits there with its tremendous computing power, but it needs a way to tell you what is going on and you need a way to tell it what you want it to do. You communicate through the user interface.

Most computers are sold with an operating system pre-installed. If this is true of your computer, you can **be sure that the hard disk is pre-formatted and contains the files necessary for booting**.

If the hard disk is not yet formatted and the O/S not yet installed into it, read carefully the related manuals for instructions in the proper hard disk formatting and running of the Setup program of MS-DOS.

The computer automatically loads the O/S after you turn it on. This process is called **booting**.

If you are booting from a system diskette, see the section on Diskette Operations to know how to insert diskettes into the drive.

If you are booting from the hard disk, proceed with the following instructions.

Diskless LAN Station Setup

After completing the system connections described in the Section **System Connections** on page 15. You can link with your local area network by simply following the steps listed in Appendix C.

Power-On Operations

1. Turn on the computer by pressing the power button.

    Each time the system power is turned on, the system runs a series of tests, commonly referred to as POST (Power-On-Self-Test) which checks the status of major computer devices that include the mainboard, memory, video, key-board, and disk drive. Some status messages of POST appear on the screen.

    POST compares the current hardware setup status with the default configuration information pre-entered into the system BIOS Setup. (See Chapter 4 for details on the BIOS Setup settings.)

2. When POST detects a mismatch between the actual hardware configuration and the BIOS Setup default settings, error messages indicating invalid configuration appears on the screen. Normally, the message specifies the cause of the problem, thereby giving you a hint on how to fix the problem.

    When you see such an error message, refer to Chapter 5 on Troubleshooting Tips in this manual to know how to solve the problem. If the error message persists or if the problem is not discussed in the Troubleshooting Tips chapter, consult your dealer or a qualified service technician for assistance.

3. When no mismatch is found and POST successfully completes its check, the computer first tries to boot from drive A. If there is no diskette in drive A, the computer boots from the hard disk, usually designated as drive C.

    When the computer boots from the hard disk that has an operating system properly installed on it, the system prompt, usually the **C:>** prompt appears.

    The appearance of the **C:>** prompt signifies successful booting or start-up of the system. You could now start installing or using the application programs like MS-Windows.

Diskette Operations

Inserting/Removing Diskettes

Floppy disks are the portable storage system for your computer, similar to file folders for your work. On floppy disks you can store the projects created in the computer, make an extra copy or carry them to another computer.

When you are starting up the system for the very first time, the disk drives probably will have the cardboard head protector inserted into the drive.

1. Remove the cardboard head protector from the disk drive. Press the eject button to pull out the cardboard. Keep the cardboard for future use in case you may have to move the system.

2. If the system does not have a hard disk and an operating system, insert a system diskette (that comes with the operating system diskettes and contains the COMMAND.COM file).

   When you insert a diskette in the floppy disk drive (FDD), insert the diskette with the label side up and the metal plate first into the drive until the diskette locks in place.

3. To remove a diskette from the FDD, press the diskette eject button to make the diskette come out partway out of the drive and gently pull out the diskette by hand.

Note: *When the system is accessing the drive (indicated by the lit in-use indicator), be careful not to remove a diskette or accidentally press the power button. Doing so may destroy the data on the diskette and may damage the drive mechanism.*
Even though the 3.5-inch floppy diskette are encased in a hard plastic coating, they should be treated with care.

Diskette Types

The type of diskette that you can use in a disk drive depends on the drive size. See the following table to know the drive/diskette compatibility features:

DRIVE CAPACITY	DISKETTE DENSITY	READ/WRITE
High Capacity	High Density	Yes/Yes
1.44MB 3.5 inch		Yes/Yes*
Standard Capacity	High Density	No/No
720KB 3.5 inch	Standard Density	Yes/Yes

Note: ** To format a standard-density diskette in a high-capacity drive, you must include certain parameters in the formatting command. Refer to the operating system documentation for details.*
Note that the capacity of a standard-density diskette will not change when it is formatted in a high-capacity drive.
A standard-capacity disk drive might not be able to read a standard-capacity diskette that was written or formatted in a high-density drive.

Backing Up Master Diskettes

Master diskettes are the original diskettes of the operating system or software programs. As a safeguard against unexpected damage or alterations, make back up copies of the master diskettes and use the backup diskettes for everyday operation. Store the master diskettes in a safe place. Consult the MS-DOS or MS-Windows documentation to know how to properly back up diskettes.

The hard disk has a much larger capacity and faster access speed than the floppy disk drive. For your convenience, you are advised to copy frequently-used program files from your MS-DOS or utility diskettes or other application programs into your hard disk so you can run the programs from there.

One of the most important uses of floppy disks is to back up your work so that if anything happens to the copy that is on the hard drive (hard drives can crash and erase all your work) you have a copy. Get in the habit of making backup copies of your work often. Store a copy at another location for extra protection. As folks in the computer world always say, "It isn't a question of *if* your hard drive will crash, only a question of *when*."

Resetting the Computer

You may re-start the system (that is, go through booting and POST operations again) without turning the computer power off and on again. There are two ways to do this:

1. Press the Reset button on the front panel of the system.
2. Press <**Ctrl**> + <**Alt**> + <**Del**> keys simultaneously.

Power-Off Operations

If you are using a DOS-based program:

1. Save the data and exit to the system prompt.
2. Remove the diskette, if any, from the disk drive.
3. Turn off the computer by pressing the Power Button.
4. Turn off the power of any connected external devices.

If you are using any MS Windows-based program, make sure you shut it down first before turning off system power:

1. Save and close any open files. Though most programs will remind you to save your work if you forget, taking the initiative to save your work is a good habit to form.
2. Click the Close button for the program window.
3. If you have no unsaved documents, the program closes and you return immediately to the Windows desktop.
4. If you have an unsaved work or a work containing unsaved changes, the program asks you whether to save it. Click on "Yes" to save it or on "No" to abandon it.
5. If you click on "Yes" and the document has never been saved before, the Save As dialog box appears. Name and save your work.
6. To turn off your computer after closing the program, it's very important to shut down Windows first. Click the Start button, then click on the Shut Down option to display the Shut Down Windows dialog box.
7. Click the "Yes" button, then wait until you see the message "It's now safe to turn off your computer." before you turn the computer off.

Note: *If you have to turn the computer on again immediately after turning it off, wait for at least five seconds. Turning the computer off and on rapidly can damage it.*

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MAKING UPGRADES EASY

Before You Begin

We recommend that you contact your **SAHARA** System reseller for carrying out any system upgrades. The following upgrades to the system are best if attempted only by a qualified technician.

Make sure you have a stable and clean working environment. Dust and dirt can get into computer components and cause malfunction. Use containers to keep small components separated. Many of the screws on the computer are of different sizes; if you place them together you may spend a lot of time trying to track down the correct screw when you are assembling the computer back together. Also, placing all small components in a safe container keeps them from getting lost. Having adequate lighting and using proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat tipped screwdriver
- A set of jeweler's screwdriver
- A multimeter (not always required)
- A grounding strap

Most of the electrical connections can be disconnected by using your fingers. It is recommended that you do not use needle-nosed pliers to disconnect connections as this can damage the soft metal or plastic parts of the connectors. Many connectors have tabs to keep them secure. After the tabs are disengaged the connector should easily slide out. You can use a small screwdriver to gently pry some of the connectors loose. If the connector does not come out easily, make sure that nothing is obstructing it, and gently rock it back and forth in its slot until it loosens enough to come out. Do not force it!

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

Removing the Chassis Cover

1. Turn the power of the system unit off and all connected peripherals.

2. Disconnect all power cords and cables from the system unit.

3. Remove the system unit from its base and place it on a flat and stable surface.
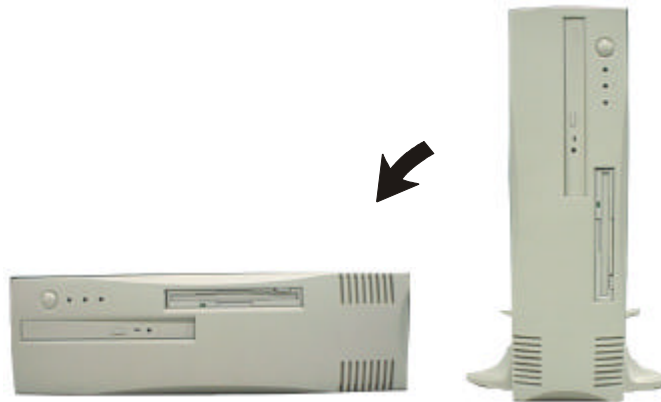
4. Loosen the three screws securing the chassis cover with a Philips screw-driver.

5. Grasp the cover with both hands. Slide the cover towards you and pull upward until it slides off the chassis.

Removing the Front Panel Chassis

The **SAHARA** System's innovative design features a slide out front panel chassis giving direct access to the mainboard for optimized final configuration, while making upgrades and servicing quick and easy. Utilizing the highest quality, industry-standard components, the **SAHARA** System eases the workload of the system administrator while increasing up-time for the corporate user.

1. Using a screwdriver, remove the two screws holding the front panel chassis.
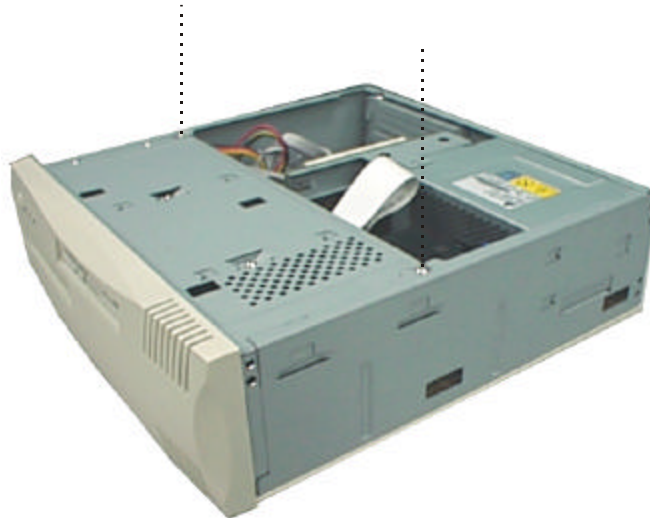
2. Slide the front panel chassis away and place it slightly in front of the main body, taking care not to damage the sensitive FFC-cable of the slim floppy disk drive and other system and mainboard components.

Installing the Hard Disk Drive (HDD)

To install a Hard Disk Drive, please refer to the following steps:

1. Remove the front panel chassis (see previous section "**Removing the Front Panel Chassis**").

2. Disconnect the FFC-cable of the slim floppy disk drive from the mainboard by pulling up both sides of the 26 pin block connector to release it.
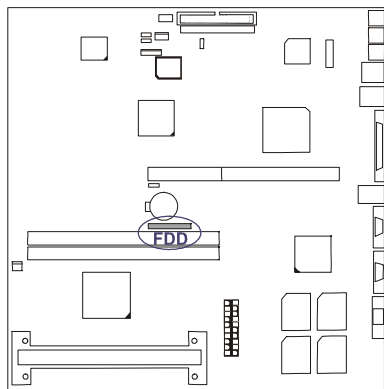
3. Pull out the LED wires plugged to the F_PNL connector.
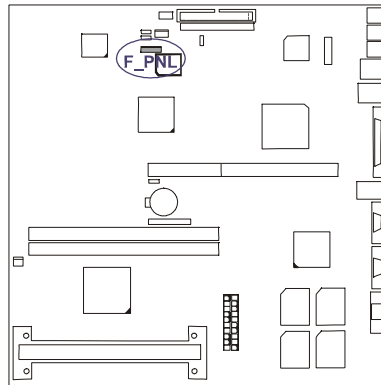
4. Slide the new HDD on to the HDD holder and secure the four screws (two screws on one side and two screws underneath) to hold the hard disk drive in place.

Side screw

2 screws underneath

Side screw
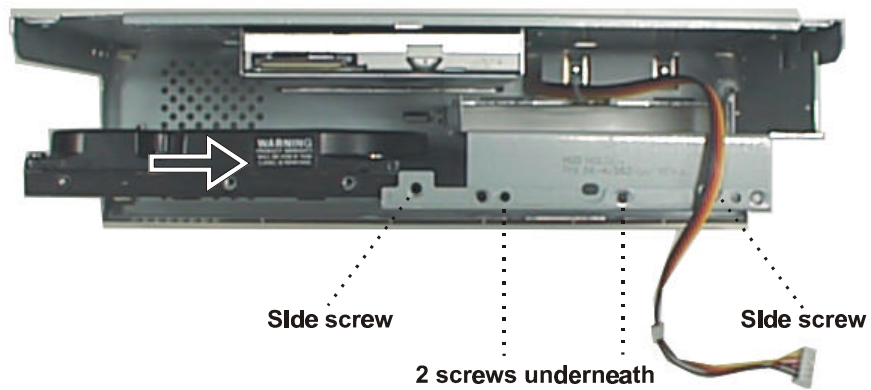
5. Connect one end of the IDE ribbon cable onto the hard disk drive, taking care to align the ribbon cable with the red stripe on to pin-1 of the hard disk drive connector (the side nearest the power plug connector).

6. Connect the power cord coming from the power supply to the DC power connector located at the back of the HDD.
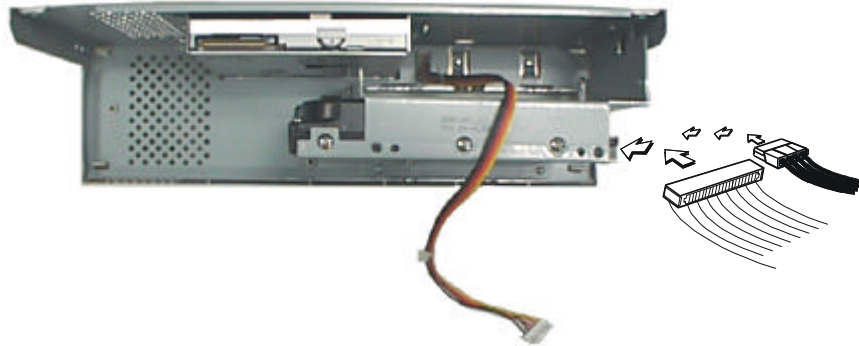
7. Place the front panel chassis slightly in front of the main chassis.

8. Connect the other end of the provided IDE hard disk ribbon cable onto the PRIMARY connector on the mainboard, taking care to align the ribbon cable with the red stripe on to pin-1 of the PRIMARY connector. Pin-20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin-20 plugged.
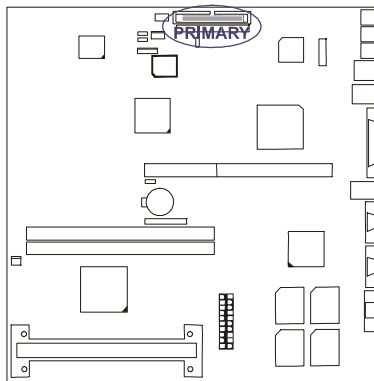
9. Connect the power cord coming from the DC power connector located at the back of the HDD to the HDD_PW connector.
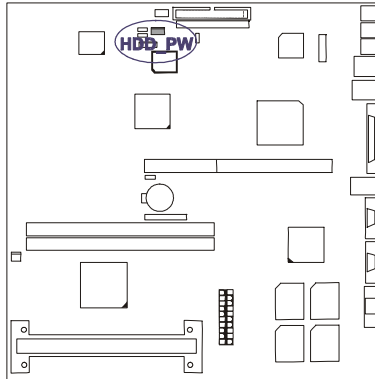
10. Connect the FFC-cable of the slim floppy disk drive to the 26-pin FDD block connector on the mainboard by inserting the silver-finger contact and press down the FDD connector on both sides to lock it in place.

Note! *The FFC-cable should always be inserted with the side with the exposed silver-finger in contact with the FDD connector pins.*
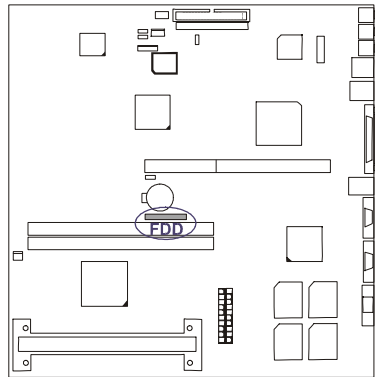
11. Plug in the LED wires to the F_PNL connector.
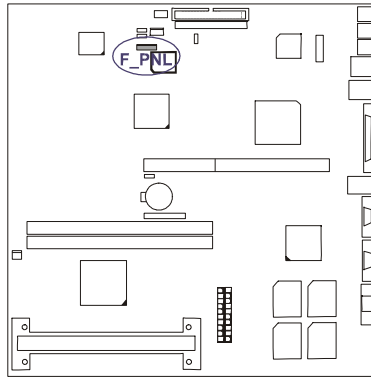
12. Push the front panel chassis all the way into the main chassis and secure the two screws to fix the front panel chassis in place.
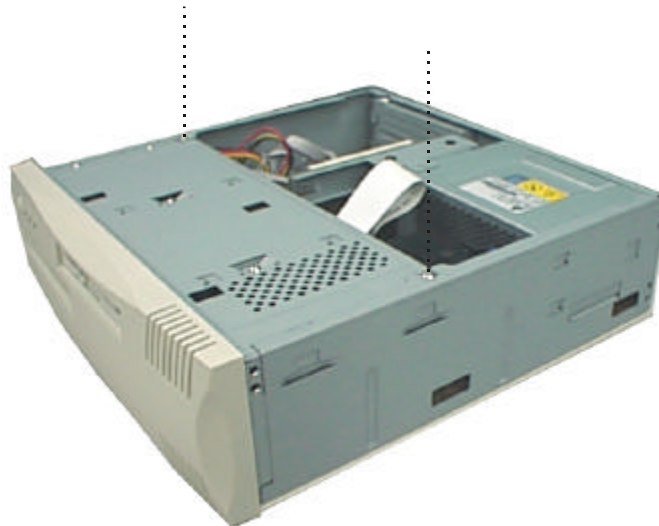
Installing the CD-ROM Drive

To install a CD-ROM drive, refer to the following steps:

1. Remove the front panel chassis (see previous section "**Removing the Front Panel Chassis**").

2. Disconnect the FFC-cable of the slim floppy disk drive from the main-board by pulling up both sides of the 26 pin block connector to release it.
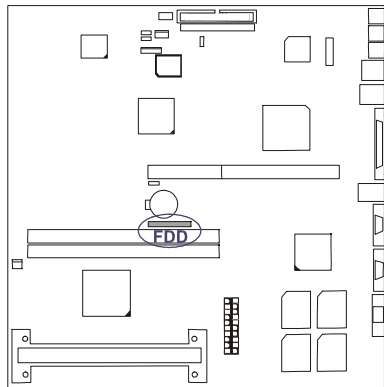
**3.** Pull out the LED wires plugged to the F_PNL connector.
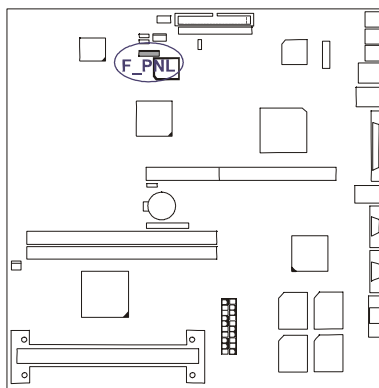
4. Attach the L-shaped metal bracket by matching the two screw holes of the metal bracket to the first and last screw holes of the group of four screw hole on the right underside portion of the slim CD-ROM drive and securing the two screws to it.
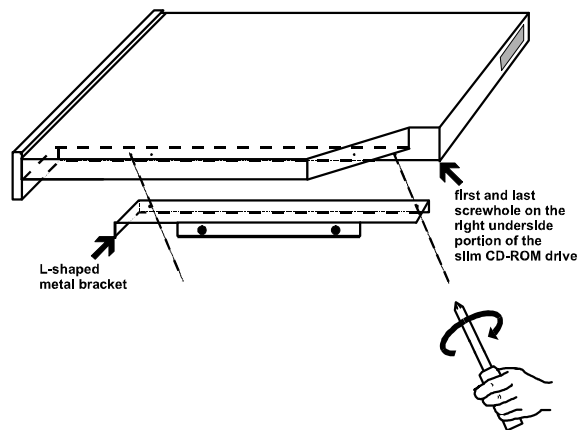
5. In case this is the first time that a CD-ROM drive is to be installed into the system, remove the front panel plastic cover of the CD-ROM drive bay by pushing outwards from the inside with your fingers.

6. Slide the new slim CD-ROM drive on to the CD-ROM drive holder, from the inside of the front panel chassis towards the front, and secure the four screws (two mini-screws on one side first and then the two regular-size-screws on the other) to hold the CD-ROM drive in place.
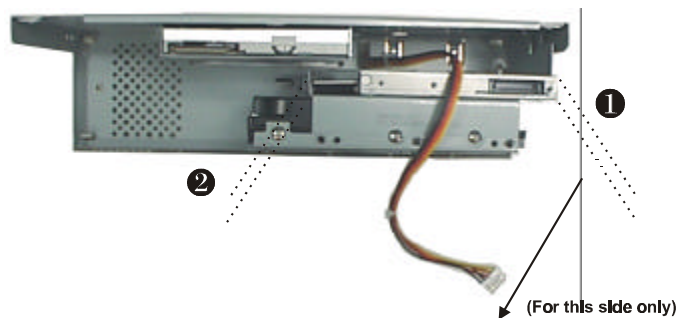
NOTE: Use P2 * 3(L) Nickel (color: Black) for Panasonic (Matsushita) brand. Use P2 * 2(L) Nickel Stainless for Mitsumi brand.

7. Attach the CD-ROM drive adaptor to the CD-ROM drive adaptor con-
nector located at the back of the slim CD-ROM drive, by (a.) first securing
the copper hexagonal bolt to the rear of the slim CD-ROM drive by hand
and, (b.) securing the two mini-screws from the CD-ROM drive adaptor
into the copper hexagonal bolt with a mini-screwdriver.
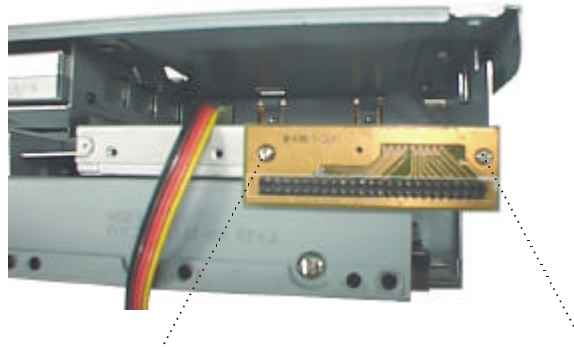
8. Connect one end of the CD-ROM drive ribbon cable onto the slim CD-
ROM drive, taking care to align the ribbon cable with the red stripe on to
pin-1 of the CD-ROM drive adaptor connector.
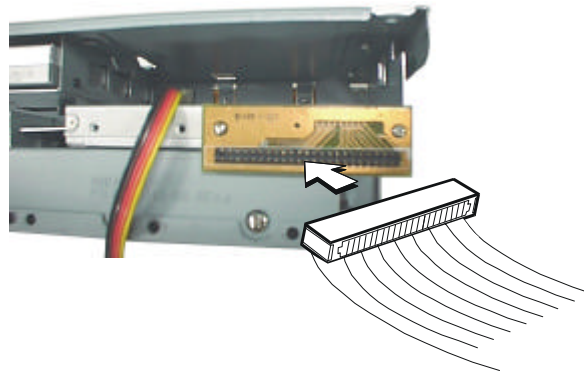
9. Place the front panel chassis slightly in front of the main chassis.

10. Connect the other end of the provided CD-ROM drive ribbon cable onto the CD_ROM connector on the mainboard, taking care to align the ribbon cable with the red stripe on to pin-1 of the CD_ROM connector.
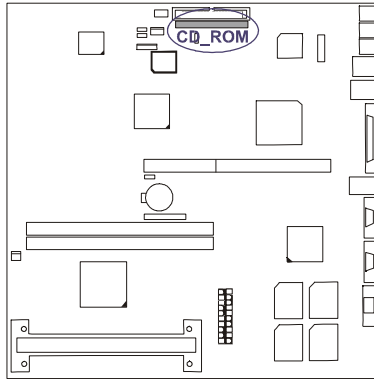
11. Connect the FFC-cable of the slim floppy disk drive to the 26-pin FDD block connector on the mainboard by inserting the silver-finger contact and press down the FDD connector on both sides to lock it in place.

The FFC-cable should always be inserted with the side with the exposed silver-finger in contact with the FDD connector pins.
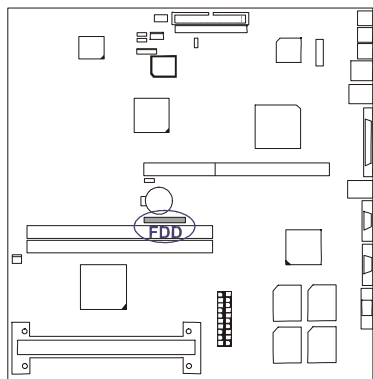
12. Plug in the LED wires to the F_PNL connector.
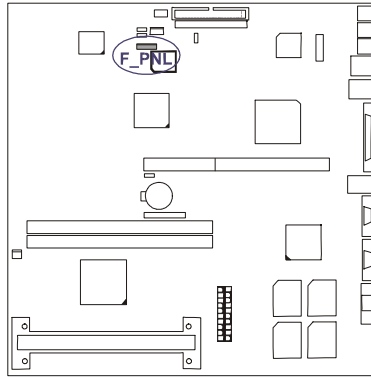
13. Push the front panel chassis all the way into the main chassis and secure the two screws to fix the front panel chassis in place.

Re-installing the Chassis Cover

To re-install the chassis cover follow these steps:

1. Place the chassis cover onto the chassis until it is positioned in place.

2. Fasten the three screws to secure the chassis cover with a Philips screw-driver.

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BIOS SETUP

The system comes with the Award BIOS chip that contains the ROM Setup information of the system. This chip serves as an interface between the processor and the rest of the system's components. This chapter explains the information contained in the Setup program and tells you how to modify the settings according to the system configuration.

The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the system lets you run this program. This appears during the Power-On-Self-Test (POST). Press the <**Delete**> key to call up the Setup utility. If you are a little bit late pressing the mentioned key(s), POST will continue with its test routines, thus preventing you from calling up Setup. If you still need to call Setup, reset the system by simultaneously pressing the <**Ctrl**>, <**Alt**> and <**Delete**> keys, or by pushing the Reset button on the system case.

Main CMOS Setup

When you run Setup, the CMOS SETUP UTILITY main program screen will appear with the following options:

```
                    ROM PCI/ISA BIOS (2A69JF09)
                        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                          ↑ ↓ → ←  : Select Item          │
│ F10 : Save & Exit Setup             (Shift)F2 : Change Color        │
│                                                                      │
│                                                                      │
└─────────────────────────────────────────────────────────────────────┘
```

A section at the bottom of the above screen displays the control keys for this screen. Take note of these keys and their respective uses. Another section just below the control keys section displays information on the currently highlighted item in the list.

Load Defaults

The "Load BIOS Defaults" option loads the minimized settings for troubleshooting. "Load Setup Defaults" on the other hand, is for loading optimized defaults for regular use. Choosing defaults at this level will modify all applicable settings.

Standard CMOS Setup

The "Standard CMOS Setup" option allows you to record some basic system hardware configuration and set the system clock and error handling. If the mainboard is already installed in a working system, you will not need to select this option anymore. However, if the configuration stored in the CMOS memory on the mainboard gets lost or damaged, or if you change the system hardware configuration, you will need to re-specify the configuration values. The configuration values usually get lost or corrupted when the power of the onboard CMOS battery weakens.

```
                        ROM PCI/ISA BIOS (2A69JF09)
                            STANDARD CMOS SETUP
                            AWARD SOFTWARE, INC.


     Date (mm:dd:yy) : Fri, Aug 21 1998
     Time (hh:mm:ss) : 10 : 49 : 14

     HARD DISKS          TYPE   SIZE   CYLS HEAD PRECOMP LANDZ SECTOR  MODE

     Primary Master   : Auto      0      0    0       0     0      0  AUTO



     Drive A : 1.44M, 3.5 in.

     Floppy 3 Mode Support : Disabled       Base Memory:      0K
                                        Extended Memory:      0K
     Video   : EGA/VGA                     Other Memory:    512K
     Halt On : All Errors                 _____
                                          Total Memory:    512K

     ESC : Quit              ↑ ↓ → ←  : Select Item    PU/PD/+/- : Modify
     F1  : Help              (Shift)F2 : Change Color
```

The above screen provides you with a list of options. At the bottom are the control keys for this screen. Take note of these keys and their respective uses. User-configurable fields appear in a different color. If you need information on the selected field, press the <**F1**> key. The help menu will then appear to provide you with the information you need. The memory display at the lower right-hand side of the screen is read-only and automatically adjusts accordingly.

Date

To set the date, highlight the "Date" field and then press the page up/page down or +/– keys to set the current date. Follow the month, day and year format. Valid values for month, day and year are: Month: (1 to 12), Day: (1 to 31), Year: (up to 2079).

Time

To set the time, highlight the "Time" field and then press the page up/page down or +/– keys to set the current time. Follow the hour, minute and second format. Valid values for hour, minute and second are: Hour: (00 to 23), Minute: (00 to 59), Second: (00 to 59) time, just press the <**Enter**> key twice if you do not want to modify the current time.

Note: *To bypass the date and time prompts, create an AUTOEXEC.BAT file. For information on how to create this file, refer to the MS-DOS manual.*

Hard Disk Drive

This field records the specifications for all non-SCSI hard drives installed in the system. The onboard PCI IDE connectors only provides a Primary channel for connecting to one IDE hard disk.

For IDE hard disk drive setup, you can:

■   Use the Auto setting for detection during bootup.

■   Use the IDE HDD AUTO DETECTION in the main menu to automatically enter the drive specifications.

■   Enter the specifications yourself manually by using the "User" option.

The entries for specifying the hard disk type include CYLS (number of cylinders), HEAD (number of read/write heads), PRECOMP (write precompensation), LANDZ (landing zone), SECTOR (number of sectors) and MODE. The SIZE field automatically adjusts according to the configuration you specify. The documentation that comes with the hard disk should provide you with the information regarding the drive specififcations.

The MODE entry is for IDE hard disks only, and can be ignored for MFM and ESDI drives. This entry provides four options: *Normal*, *Large*, *LBA*, or *Auto*. Set MODE to *Normal* for IDE hard disk drives smaller than 528MB; set it to *LBA* for drives over 528MB that support Logical Block Addressing (LBA) to allow larger IDE hard disks; set it to *Large* for drives over 528MB that do not support LBA. *Large* type of drive can only be used with MS-DOS and is very uncommon. Most IDE drives over 528MB support the *LBA* mode.

Auto Detection of Hard Disks on Bootup

For the Primary Master field, you can select *Auto* under the TYPE and MODE fields. This will enable auto detection of your IDE drive during Bootup. This will allow you to change the hard drive (with the power off) and then power on without having to reconfigure the hard drive type. If you use an older hard drive which do not support this feature, then you must configure the hard drive in the standard method as described above by the "User" option.

After the IDE hard disk information has been entered into BIOS, new IDE hard disks must be partitioned (such as with FDISK) and then formatted before data can be read from and written on. Primary IDE hard drives must have its partition set to active (also possible with FDISK).

Drive A

This field records the type of floppy drive installed in the system. The available options for drive A are: *1.44MB, 3.5 in.* (default for Drive A); *360KB, 5.25 in.*; *1.2MB, 5.25 in.*; *720KB, 3.5 in.*; *None*; *2.88MB, 3.5 in.* To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left- or right-arrow key.

Floppy 3 Mode Support

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

Video

Stay with the default value of *EGA/VGA*. The options are: *EGA/VGA* (default); *Mono* (for Hercules or MDA); *CGA 40*; and *CGA 80*.

Halt On

This field determines which types of errors will cause the system to halt. Choose from *All Errors* (default); *No Errors*; *All, But Keyboard*; *All, But Diskette*; and *All, But Disk/Key*.

BIOS Features Setup

The "BIOS Features Setup" option consists of configuration entries that allow you to improve the system performance, or lets you set up some system features according to your preference. Some entries here are required by the mainboard's design to remain in their default settings.

```
                    ROM PCI/ISA BIOS (2A69JF09)
                       BIOS FEATURES SETUP
                       AWARD SOFTWARE, INC.

  Virus Warning            : Disabled   Video  BIOS Shadow  : Enabled
  CPU Internal Cache       : Enabled
  External Cache           : Enabled
  Quick Power On Self Test : Enabled
  Boot From LAN First      : Disabled
  Boot Sequence            : A,CDROM,C
  Boot Up Floppy Seek      : Enabled
  Boot Up NumLock Status   : On
  Security Option          : Setup
  PS/2 mouse function control: Enabled

  OS Select For DRAM > 64MB  : Non-OS2


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

A section at the lower right of the screen displays the control keys you can use. Take note of these keys and their respective uses. If you need information on a particular entry, highlight it and press the <**F1**> key. A pop-up help menu will appear to provide you with the information you need. <**F5**> loads the last set values, <**F6**> and <**F7**> loads the BIOS default values and Setup default values, respectively.

Virus Warning
This field protects the boot sector and partition table of the hard disk against accidental modifications. Any attempt to write to them will cause the system to halt and display a warning message. If this occurs, you can either allow the operation to continue or use a bootable virus-free floppy disk to reboot and investigate the system. This setting is recommended because of conflicts with new operating systems. Installation of new operating systems require that you disable this to prevent write errors. The options are: *Disabled* (default); *Enabled*.

CPU Internal Cache
When enabled, improves system performance. Disable this item when testing or troubleshooting. The options are: *Enabled* (default); *Disabled*.

External Cache

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When enabled, supports an optional cache SRAM. The options are: *Enabled* (default); *Disabled*.

Quick Power On Self Test

When enabled, allows the BIOS to bypass the extensive memory test. The options are: *Enabled* (default); *Disabled*.

Boot From LAN First

This field allows the system to first look for an operating system at the LAN (Local Area Network) if you have a pre-boot LAN card installed in your system that is connected to a network server which supports this function. The options are: *Enabled* (default); *Disabled*.

Boot Sequence

Allows the system BIOS to first try to boot the operating system from the selected disk drive. The options are: *A, CDROM, C* (default); *CDROM, C, A*; *C only; A C; C, A.*

Boot Up Floppy Seek

When enabled, assigns the BIOS to perform floppy diskette drive tests by issuing the time-consuming seek commands. The options are: *Enabled* (default); *Disabled*.

Boot Up Numlock Status

When set to On, allows the BIOS to automatically enable the NumLock Function when the system boots up. The options are: *On* (default); *Off*.

Security Option

Allows you to set the security level of the system. The options are: *Setup* (default); *System*.

PS/2 Mouse Function Control

This item allows the PS/2 mouse to have exclusive use of IRQ12. The options are: *Enabled* (default); *Disabled*.

OS Select For DRAM > 64MB

If the operating system (OS) you are using is OS2, select the option *OS2*; otherwise, stay with the default setting of *Non-OS2*. The options are: *Non-OS2* (default); *OS2*.

Video BIOS Shadow

When *Enabled*, it allows the BIOS to copy the video ROM code of the add-on video card to the system memory for faster access. The options are: *Enabled* (default), *Disabled*.

Chipset Features Setup

The "Chipset Features Setup" option controls the configuration of the system's chipset. Control keys for this screen are the same as for the previous screen.

```
                    ROM PCI/ISA BIOS (2A69JF09)
                       CHIPSET FEATURES SETUP
                        AWARD SOFTWARE, INC.

 DRAM Data Integrity Mode : Non-ECC    CPU Clock Frequency      : 66 MHz
 8 Bit I/O Recovery Time  : 1          Spread Spectrum          : Disabled
 16 Bit I/O Recovery Time : 1          CPU Warning Temperature  : Disabled
 Memory Hole At 15M-16M   : Disabled   Current System Temp.     :
 AGP Aperture Size (MB)   : 64         Current CPU Temperature  :
                                       Current CPUFAN Speed     :
                                       Vcore  :         +3.3V  :
                                       + 5 V  :         +12 V  :
                                       -12 V  :-         - 5 V  :-



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

DRAM Data Integrity Mode (available only if the mainboard uses the Intel 440LX AGPset)

This item provides software configurability for selecting between ECC (ECC generation and checking/correction) mode or non-ECC mode of operation of the DRAM interface. The options are: *Non-ECC* (default); *ECC* (set only if the onboard chip is the Intel® 82443LX and installed DIMM is with parity check).

8 Bit I/O Recovery Time

This item sets the timing for 8-bit ISA cards. The options are: *1* (default); *2* to *8*; *NA*.

16 Bit I/O Recovery Time

This item sets the timing for 16-bit ISA cards. The options are: *2* (default); *1* to *4*; *NA*.

Memory Hole At 15M-16M

When *Enabled*, the memory hole at the 15MB address will be relocated to the 15~16MB address range of the ISA cycle when the processor accesses the 15~16MB address area. When *Disabled*, the memory hole at the 15MB address will be treated as a DRAM cycle when the processor accesses the 15~16MB address. The options are: *Disabled* (default), *Enabled*.

AGP Aperture Size (MB)

This item allows you to select the main memory frame size for use by the onboard RAGE IIC AGP chip. The options are: *64* (default); *128*; *256*; *4*; *8*; *16*; *32*.

CPU Clock Frequency

This item allows you to set the ratio of the CPU external clock to the PCI bus clock. The options are: *66 MHz* (default); *50 MHz; 68 MHz; 60 MHz, 75MHz*.

Spread Spectrum

This item allows you to take advantage of the center spread-type or down spread-type of spread spectrum. The options are: *Disabled* (default), *Enabled*.

CPU Warning Temperature

This item allows you to set the maximum allowable CPU temperature for system to perform normally. When CPU temperature exceeds this temperature, system will proceed to enter Standby Mode of operation causing system to slowdown. The options are *Disabled* (default); $50^0C/122^0F$; $53^0C/127^0F$; $56^0C/133^0F$; $60^0C/140^0F$; $63^0C/145^0F$; $66^0C/151^0F$; $70^0C/158^0F$.

Current System Temp / Current CPU Temperature / Current CPU Fan Speed / VCORE / +3.3(V) / +5.0(V) / +12(V) / −12(V) / −5.0(V)

These items allow end users and technicians to monitor data provided by the BIOS on this mainboard. It is not user-configurable.

Power Management Setup

The "Power Management Setup" option allows you to reduce the power consumption of the system. This feature turns off the video display and shuts down the hard drive after a period of inactivity.

```
               ROM PCI/ISA BIOS (2A69JF09)
                 POWER MANAGEMENT SETUP
                  AWARD SOFTWARE, INC.

Power Management     : User Defined    ** Reload Global Timer Events **
PM Control by APM    : Yes             IRQ[3-7,9-15],NMI   : Enabled
Video Off Method     : DPMS            Primary IDE 0       : Disabled
Video Off After      : Suspend         Primary IDE 1       : Disabled
MODEM Use IRQ        : 3               Secondary IDE 0     : Disabled
Standby Mode         : Disable         Secondary IDE 1     : Disabled
Suspend Mode         : Disable         Floppy Disk         : Disabled
HDD Power Down       : Disable         Serial Port         : Enabled
Throttle Duty Cycle  : 62.5%           Parallel Port       : Disabled
VGA Active Monitor   : Disabled
Soft-Off by PWR-BTTN : Instant-Off
CPUFAN Off In Suspend: Enabled
Resume by Ring       : Disabled
Resume by LAN        : Enabled
Resume by Alarm      : Disabled
                                     ESC : Quit        ↑↓→← : Select Item
                                     F1  : Help        PU/PD/+/- : Modify
                                     F5  : Old Values  (Shift)F2 : Color
                                     F6  : Load BIOS  Defaults
                                     F7  : Load Setup Defaults
```

Power Management

This field acts as the master control for the power management modes. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is almost the same as *Max Saving* except that this time the system inactivity period is longer; *Disabled* disables the power saving features; *User Defined* allows you to set power saving options according to your preference. The options are*: User Defined* (default*); Min Saving*; *Max Saving*.

PM Control by APM

The option *No* allows the BIOS to ignore the APM (Advanced Power Management) specification. Selecting *Yes* will allow the BIOS to wait for APM's prompt before it enters Standby mode or Suspend mode. If the APM is installed, it will prompt the BIOS to set the system into the power saving mode after all tasks are done. The options are: *Yes* (default); *No*.

Video Off Method

The option *V/H SYNC+Blank* allows the BIOS to blank off screen display by turning off the V-Sync and H-Sync signals sent from the add-on VGA card. *DPMS* allows the BIOS to blank off screen display via the add-on VGA card which supports DPMS (Display Power Management Signaling function). *Blank Screen* allows the BIOS to blank screen display by turning off the red-green-blue signals. The options are: *DPMS* (default); *Blank Screen*, *V/H SYNC+Blank*.

Video Off After

This item allows you to activate the video off feature for the display monitor power management. The options are: *Suspend* (default); *Standby; NA*.

MODEM Use IRQ

This feature allows you to select the IRQ# to meet the modem's IRQ#. The options are: *3* (default); *NA*; *4*; *5*; *7*; *9*; *10*; *11*.

Standby Mode/Suspend Mode

Sets the period of time after which Standby/Suspend Mode activates. At *Max Saving*, Standby/Suspend Mode will activate after 1 minute. At *Min Saving*, Standby/Suspend Mode will activate after 1 hour. If Power Management option is set at User Defined, user has the option to set it at *10 Sec*; *20 Sec*; *30 Sec*; *40 Sec*; *1 Min*; *2 Min*; *4 Min*; *6 Min*; *8 Min*; *10 Min*; *20 Min*; *30 Min*; *40 Min*; or *1 Hour*. The default value is *Disabled* (default).

HDD Power Down

This option shuts down any IDE hard drives in the system after a period of inactivity. The time period is user-configurable from 1 to 15 minutes. This feature does not affect SCSI hard drives. The options are: *Disabled* (default); *1 Min*; . . . *15 Min*.

Throttle Duty Cycle

This item allows you to set the speed at which the system clock runs during power saving mode. The settings are expressed as the ratio between the normal and power down clock speed. The options are: *62.5%* (default); *75.0%; 12.5%; 25.0%; 37.5%; 50.0%.*

VGA Active Monitor

When disabled, it allows the system to enter Power Management Mode even if the display monitor is currently active (e.g., running a screensaver program, etc.). The options are: *Disabled* (default); *Enabled*.

Soft-Off By PWR-BTTN

The option *Delay 4 Sec*. allows the system to have a power-off delay of 4 seconds upon pressing the power button. The option *Instant-Off* allows the system to shutdown immediately upon pressing the power button. The options are: *Instant-Off* (default); *Delay 4 Sec*.

CPUFAN Off In Suspend

When enabled, allows the CPU fan to shutdown when system is in Suspend Mode. The options are: *Enabled* (default), *Disabled*.

Resume By Ring

If this feature is enabled, the system can be turned on from the power-off state by remote phone call via the modem. The options are: *Disabled* (default); *Enabled*.

Resume By LAN

If this feature is enabled, the system can be turned on from the power-off state by a remote computer via the LAN. The options are: *Enabled* (default); *Disabled*.

Resume By Alarm

If this feature is enabled, BIOS allows you to set the time the system will be turned back on from the power-off state. The options are: *Disabled* (default); *Enabled*.

Date (of month) Alarm (available only if Resume By Alarm is Enabled)

Allows you to set the date when system will be turned back on from the power-off state. The options are: *0* (default); *1* to *31*.

Time (hh:mm:ss) Alarm (available only if Resume By Alarm is Enabled)

Allows you to set the specific hour, minute, and second of the day when system will be turned back on from the power-off state. The options are: hh: *7* (default); *0* to *23*; mm: *0* (default); *1* to *59*; ss: *0* (default); *1* to *59*.

IRQ [3-7, 9-15], NMI

When enabled, this item allows the system to reset power management timer when system activity at IRQ3 to 7 or IRQ9 to 15 is detected. The options are: *Enabled* (default); *Disabled*.

Primary IDE 0

When enabled, this item allows the system to reset power management timer when system activity at the primary (master) IDE is detected. The options are: *Disabled* (default); *Enabled*.

Primary IDE 1

When enabled, this item allows the system to reset power management timer when system activity at the primary (slave) IDE is detected. The options are: *Disabled* (default); *Enabled*.

Secondary IDE 0

When enabled, this item allows the system to reset power management timer when system activity at the secondary (master) IDE is detected. The options are: *Disabled* (default); *Enabled*.

Secondary IDE 1

When enabled, this item allows the system to reset power management timer when system activity at the secondary (slave) IDE is detected. The options are: *Disabled* (default); *Enabled*.

Floppy Disk

When enabled, this item allows the system to reset power management timer when system activity at the floppy disk drive is detected. The options are: *Disabled* (default); *Enabled*.

Serial Port

When enabled, this item allows the system to reset power management timer when system activity at the serial port is detected. The options are: *Enabled* (default); *Disabled*.

Parallel Port

When enabled, this item allows the system to reset power management timer when system activity at the parallel port is detected. The options are: *Disabled* (default); *Enabled*.

PNP/PCI Configuration Setup

The "PNP and PCI Setup" option configures the PCI Bus slots. All PCI Bus slots on the system use INTA#, thus all installed PCI cards must be set to this value.

```
               ROM PCI/ISA BIOS (2A69JF09)
                  PNP/PCI CONFIGURATION
                  AWARD SOFTWARE, INC.

 PNP OS Installed        : No      Slot 1 Use IRQ No.  : Auto
 Resources Controlled By : Auto    Slot 2 Use IRQ No.  : Auto
 Reset Configuration Data : Disabled  LAN Use IRQ No.     : Auto

                                   PCI IRQ Activate By : Level
                                   Init Primary Display:   PCI
                                   Assign IRQ for VGA  : Enabled




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

PNP OS Installed

When Plug and Play operating systems (OS) are installed, interrupts may be reassigned by the OS when *Yes* is selected. When a non-Plug and Play OS is installed or to prevent reassigning of interrupt settings, select *No* here. The options are: *No* (default); *Yes*.

Resources Controlled By

If set at *Auto*, BIOS automatically arranges all system resources for you. If there are conflicts or you are not satisfied with the configuration settings, simply set all the resources by selecting *Manual*. The options are: *Auto* (default); *Manual*.

Reset Configuration Data

When *Enabled*, this feature allows the system to clear the last BIOS configuration data and reset them with the default BIOS configuration data. The options are: *Disabled* (default); *Enabled*.

IRQ-3; -4; -5; -7; -9; -10; -11; -12; -14; -15; DMA-0; -1; -3; -5; -6; -7 Assigned to (available only if Resources Controlled By is set at Manual)

These options allow you to set whether a particular IRQ# or DMA# is used by a PCI/ISA PNP or Legacy ISA card. The options are: *PCI/ISA PNP* (default); *Legacy ISA*.

Slot 1/2 Use IRQ No.

These options allow you to set how IRQ use is determined for each PCI slot. The default setting for each field is *Auto*, which uses auto-routing to determine IRQ use. The options are: *Auto* (default), *3*, *4*, *5*, *7*, *9*, *10*, *11*, *12*, *14*, *15*.

LAN Use IRQ No.

This option allow you to set how IRQ use is determined for the onboard integrated PCI-based Intel 82558 Ethernet LAN controller. The default setting for this field is *Auto*, which uses auto-routing to determine IRQ use. The options are: *Auto* (default), *3*, *4*, *5*, *7*, *9*, *10*, *11*, *12*, *14*, *15*.

PCI IRQ Activated By

If the IDE card is triggered by edge, set it at *Edge*. The options are: *Level* (default); *Edge*.

Init Primary Display

This feature allows you to set the primary graphics adapter used in the system. The options are: *PCI* (default), *AGP*.

Assign IRQ For VGA

If the onboard RAGE IIC/PRO AGP chip you are using does not need an IRQ, select *Disabled*, thereby releasing an IRQ for system use. The options are: *Enabled* (default), *Disabled*.

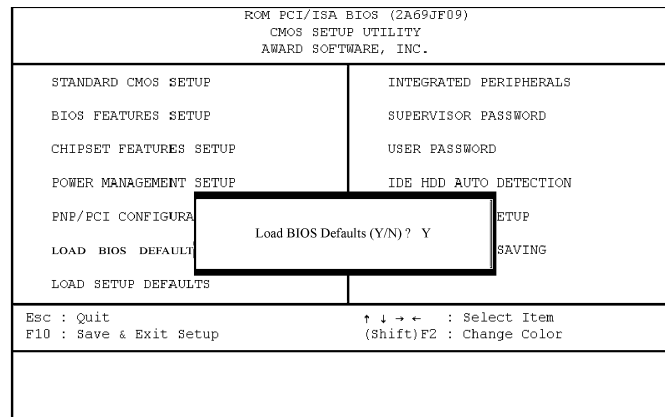### Used MEM Base Addr (available if Resources Controlled By is set at Manual)

This field allows you to set the base address and block size of a Legacy ISA card that uses any memory segment within the *C800*, *CC00*, *D000*, *D400*, *D800*, and *DC00* address range. If you have such a card, and you are not using an ICU to specify its address range, select a base address from the six available options and the next field will then appear for selecting the block size. The options are: *N/A* (default); *C800*; *CC00*; *D000*; *D400*; *D800*; *DC00*.

Used MEM Length (available if Used MEM Base Addr is not set at N/A)

If you have more than one Legacy ISA card in the system that requires to use the aboved address range, you can increase the block size to either *8K*, *16K*, *32K*, or *64K*. If you are using an ICU to accomplish this task, leave the aboved option Used MEM Base Addr at *N/A*. The options are: *8K* (default); *16K*; *32K*; *64K*.
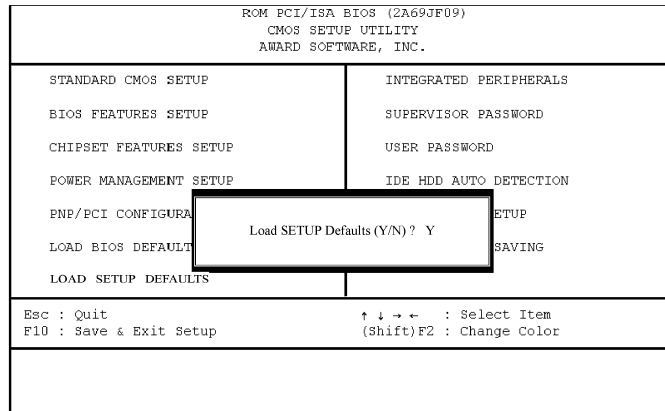
Load BIOS Defaults

The "Load BIOS Defaults" option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high performance features. To load these default settings, highlight "Load BIOS Defaults" on the main screen and then press the <**Enter**> key. The system displays a confirmation message on the screen. Press the <**Y**> key and then the <**Enter**> key to confirm. Press the <**N**> key and then the <**Enter**> key to abort. This feature does not affect the fields on the Standard CMOS Setup screen.

```
                     ROM PCI/ISA BIOS (2A69JF09)
                         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 CONFIGURA                          ETUP

      LOAD  BIOS  DEFAULT    Load BIOS Defaults (Y/N) ?  Y     SAVING

      LOAD SETUP DEFAULTS

   Esc : Quit                     ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup        (Shift)F2 : Change Color
```

Load Setup Defaults

The "Load Setup Defaults" option allows you to load the default values to the system configuration fields. These default values are the optimized configuration settings for the system. To load these default values, highlight "Load Setup Defaults" on the main screen and then press the <**Enter**> key. The system displays a confirmation message on the screen. Press the <**Y**> key and then the <**Enter**> key to confirm. Press the <**N**> key and then the <**Enter**> key to abort. This feature does not affect the fields on the Standard CMOS Setup Screen.
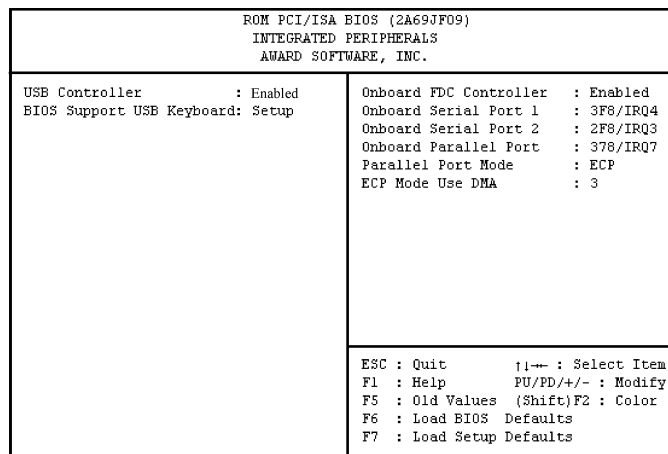
```
                    ROM PCI/ISA BIOS (2A69JF09)
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP              INTEGRATED PERIPHERALS

   BIOS FEATURES SETUP              SUPERVISOR PASSWORD

   CHIPSET FEATURES SETUP           USER PASSWORD

   POWER MANAGEMENT SETUP           IDE HDD AUTO DETECTION

   PNP/PCI CONFIGURA                          ETUP
                       Load SETUP Defaults (Y/N) ?  Y
   LOAD BIOS DEFAULT                           SAVING

   LOAD  SETUP  DEFAULTS

 Esc : Quit                   ↑ ↓ → ←  : Select Item
 F10 : Save & Exit Setup      (Shift)F2 : Change Color
```

Integrated Peripherals

```
                    ROM PCI/ISA BIOS (2A69JF09)
                      INTEGRATED PERIPHERALS
                      AWARD SOFTWARE, INC.

 USB Controller        : Enabled    Onboard FDC Controller  : Enabled
 BIOS Support USB Keyboard: Setup   Onboard Serial Port 1   : 3F8/IRQ4
                                    Onboard Serial Port 2   : 2F8/IRQ3
                                    Onboard Parallel Port   : 378/IRQ7
                                    Parallel Port Mode      : ECP
                                    ECP Mode Use DMA        : 3

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

USB Controller

Disable this option if you are not using the onboard USB feature. The options are: *Enabled* (default); *Disabled*.

BIOS Support USB Keyboard (available only when USB Controller is enabled)

When the USB devices cannot be detected automatically by the system BIOS or some driver diskettes came with the USB devices, set it at *DOS* to allow for the installation of the drivers. The options are: *Setup* (default); *DOS*.

Onboard FDC Controller

When *Enabled*, the floppy disk drive (FDD) controller is activated. The options are: *Enabled* (default); *Disabled*.

Onboard Serial Port 1

If serial port 1 uses the onboard I/O controller, you can modify the serial port parameters. If an I/O card needs to be installed, COM3 and COM4 maybe needed. The options are: *3F8/IRQ4* (default); *Disabled*; *3E8/IRQ4*; *2F8/IRQ3*; *2E8/IRQ3*.

Onboard Serial Port 2

If serial port 2 uses the onboard I/O controller, you can modify the serial port parameters. If an I/O card needs to be installed, COM3 and COM4 may be needed. The options are: *2F8/IRQ3* (default); *Disabled*; *3E8/IRQ4*; *2E8/IRQ3*; *3F8/IRQ4*.

Onboard Parallel Port

Allows you to select from a given set of parameters if the parallel port uses the onboard I/O controller. The options are: *378/IRQ7* (default); *Disabled*; *278/IRQ5*; *3BC/IRQ7*.

Parallel Port Mode (available if Onboard Parallel Port is not set at Disabled)

Allows you to connect with an advanced printer. The options are: *ECP* (default); *EPP*; *SPP; ECP+EPP*.

ECP Mode Use DMA (available if Parallel Port Mode is set at ECP or ECP+EPP)

This feature allows you to select the Direct Memory Access (DMA) channel. The options are: *3* (default); *1*.

Supervisor Password and User Password

These two options set the system passwords. "Supervisor Password" sets a password that will be used to protect the system and the Setup utility; "User password" sets a password that will be used exclusively on the system. By default, the system comes without any passwords. To specify a password, highlight the type you want and then press the <**Enter**> key. A password prompt appears on the screen. Taking note that the password is case sensitive, and can be up to 8 alphanumeric characters long, type in your password and then press the <**Enter**> key. The system confirms your password by asking you to type it again. After setting a password, the screen automatically reverts to the main screen.

To implement the password protection, specify in the "Security Option" field of the BIOS Features Setup screen when the system will prompt for the password. If you want to disable either password, press the <**Enter**> key instead of entering a new password when the "Enter Password" prompt appears. A message confirms the password has been disabled.

IDE HDD Auto Detection

The "IDE HDD Auto Detection" option detects the parameters of an IDE hard drive and automatically enters them into the Standard CMOS Setup screen. To accept the optimal entries, press the <**Y**> key or else select from the numbers displayed under the OPTIONS field. If you accept the values, the parameters will appear listed beside the drive letter on the screen. The process then proceeds to the next drive letter. Pressing the <**N**> key to skip rather than to accept a set of parameters causes the program to enter zeros after that drive letter.

When auto-detection is completed, the program automatically enters all entries you accepted on the field for that drive in the Standard CMOS Setup screen. Skipped entries are ignored and are not entered in the screen.

If you are auto-detecting a hard drive that supports the LBA mode, three lines will appear in the parameter box. Choose the line that lists LBA for an LBA drive. Do not select Large or Normal.

The auto-detection feature can only detect one set of parameters for a particular IDE hard drive. Some IDE drives can use more than one set. This is not a problem if the drive is new and there is nothing on it.

Note: *If the hard drive was already formatted on an older previous system, incorrect parameters may be detected. You will need to enter the correct parameters manually or use low-level format if you do not need the data stored on the hard drive.*

If the parameters listed differ from the ones used when the drive was formatted, the drive will not be readable. If the auto-detected parameters do not match the ones that should be used for your drive, do not accept them. Press the <**N**> key to reject the presented settings and enter the correct ones manually from the Standard CMOS Setup screen.

Save and Exit Setup

Select this option to save into the CMOS memory all modifications you specified during the current session. To save the configuration changes, highlight the "Save & Exit Setup" option on the main screen and then press the <**Enter**> key.

```
                    ROM PCI/ISA BIOS (2A69JF09)
                         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 CONFIGURA                              ETUP
                        SAVE to CMOS and EXIT (Y/N) ?  Y
    LOAD BIOS DEFAULT                              SAVING

    LOAD SETUP DEFAULTS

  Esc : Quit                     ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup        (Shift)F2 : Change Color
```

Exit Without Saving

Select this option to exit the Setup utility without saving the modifications you specified during the current session. To exit without saving, highlight the "Exit Without Saving" option on the main screen and then press the <**Enter**> key.

```
                    ROM PCI/ISA BIOS (2A69JF09)
                        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 CONFIGURA                              ETUP

     LOAD BIOS DEFAULT       Quit Without Saving (Y/N) ?  Y     SAVING

     LOAD SETUP DEFAULTS

   Esc : Quit                      ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup         (Shift)F2 : Change Color
```

Note: *Default values of the various Setup items on this chapter may not be the same ones shown on the monitor screen.*

TROUBLESHOOTING

The system is built to last long and perform its multi-functions with utmost efficiency. It is also user-friendly, both in its normal operations and when it encounters a system problem. It alerts you to possible problems by way of screen messages that also give you the correct instructions to solve the problem.

This chapter offers some possible solutions to potential problems that you might have with the computer.

Determining Problem Causes

To facilitate troubleshooting when encountering problems while operating the computer, it is important to find out if the cause is software-related or hardware-related. It is suggested that you record the observations of events immediately prior to and during the time you encounter the problem.

If the problem is software-related, consult the software manual of the application you are using. If the problem is hardware-related, it may be due to improper installation and/or incorrect configuration. If it is due to improper installation, then any or a combination of the following corrective procedures should solve the problem:

■ Check the installation or connection to see if it is correctly done or firmly in place.

■ Check if the installation calls for a change in jumper settings or DIP switch settings.

■ Read the document accompanying the hardware option you installed for any special instructions or troubleshooting actions.

BIOS-Related Errors

When BIOS detects an error during system startup or during POST (Power-On-Self-Test), the display monitor normally shows the message that tells the cause of the problem and also suggests on how to solve it. These kinds of error messages will ask you to run Setup and correct the settings in that program according to actual configuration. (Please read Chapter 4 on BIOS Setup.)

The following information lists some of the common configuration-related errors and gives the corresponding procedures to solve them.

Error Message: CMOS BATTERY HAS FAILED

Cause: The CMOS battery is no longer functional.

Action: Replace it.

Error Message: CMOS CHECKSUM ERROR

Cause: BIOS checksum of CMOS is incorrect. This may be caused by a weak battery.

Action: Check the battery and replace it, if necessary.

Error Message: DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER

Cause: No boot device was found.

Action: Insert a system disk into Drive A and press <**Enter>** key. If you boot from the hard disk, make sure that the controller is installed properly and all cables are correctly attached.

Error Message: DISK DRIVES OR TYPES MISMATCH ERROR – RUN SETUP

Cause: The type of disk drive installed in the system is different from that defined in CMOS.

Action: Run Setup to reconfigure disk drive type.

Error Message: DISPLAY SWITCH IS SET INCORRECTLY

Cause: Display switch on the mainboard is set at color. This message indicates a different switch setting than indicated in Setup.

Action: First, determine the correct setting; then either change the jumper setting, or run Setup to re-select a proper video option.

Error Message: DISPLAY TYPE HAS CHANGED SINCE LAST BOOT

Cause: Since the last power-on of the system, the display adapter has changed.

Action: Run Setup to re-select a proper video option.

Error Message: ERROR ENCOUNTERED INITIALIZING HARD DRIVE
/ ERROR INITIALIZING HARD DISK CONTROLLER

Cause: Hard disk cannot be initialized.

Action: Ensure that the hard disk controller is installed properly and all cables are properly connected. Ensure the correct hard disk type is set in the BIOS Setup. Check that if any jumper related to the hard disk needs to be reconfigured.

Error Message: FLOPPY DISK CNTRLR ERROR
/ NO CNTRLR ERROR / NO CNTRLR PRESENT

Cause: Cannot find or initialize the floppy disk drive (FDD) controller.

Action: Ensure that the FDD controller is installed properly. If no floppy disk drive is installed, run Setup and set the Diskette Drive at NONE.

Error Message: KEYBOARD ERROR / NO KEYBOARD PRESENT

Cause: Cannot initialize the keyboard.

Action: Make sure the keyboard is attached properly and that no keys are being pressed during boot.

Error Message: MEMORY SIZE HAS CHANGED SINCE LAST BOOT

Cause: Memory has been added or removed since last bootup but system has not recognized it.

Action: Run Setup and enter the new memory size in the memory fields.

Error Message: MEMORY VERIFY AT . . .

Cause: Indicates an error verifying a value already written to memory.

Action: Use the specified location along with the system's memory map to locate the bad chip.

Error Message: PRESS A KEY TO REBOOT

Cause: This message is displayed when an error occurs that requires you to reboot.

Action: Press any key so that the system will reboot.

Error Message: PRESS F1 TO DISABLE NMI, F2 TO REBOOT

Cause: BIOS detects a Non-Maskable Interrupt condition.

Action: Press **F1** to disable NMI or **F2** to reboot the system without disabling NMI.

Error Message: RAM – CHECKING FOR SEGMENT . . .

Cause: Indicates an error in the RAM module.

Action: Change the malfunctioning RAM module.

Error Message: SYSTEM HALTED, (CTRL–ALT–DEL) TO REBOOT

Cause: Indicates the present boot attempt has been aborted and the system must be re-booted.

Action: Press <**CTRL**> + <**ALT**> + <**DEL**> keys simultaneously.

SYSTEM SPECIFICATIONS

Product Features

Key features of the **SAHARA** System include:

■ **Mainboard Chipset Architecture**
Intel 440LX(EX) AGPset

■ **Processors**
The onboard Retention Mechanism supports:

Intel Pentium® II CPU speed 233/266/300/333MHz processors
Intel Celeron™ CPU speed 266/300/333MHz processors
Intel Mendocino™ CPU speed 300/333MHz processors

■ **Onboard LAN Controller**
Integrated PCI-based Intel 82558 10/100Mbps Ethernet controller

■ **Onboard VGA Controller**
Integrated AGP-based ATI RAGE IIC/PRO AGP controller with onboard
2MB SGRAM (upgradable to 8MB)

■ **Onboard Audio Controller**
Integrated ISA-based CrystalClear™ CS4235 3D audio
Sound Blaster™, Sound Blaster Pro™ and Windows Sound System™
compatible

■ **BIOS (Basic Input Output System)**
AWARD BIOS with 2MB Flash EEPROM, DMI 2.0 compliant

■ **Floppy Disk Drive**
3.5-inch Slim 1.44MB (Megabytes) capacity

■ **Hard Disk Drive** (Optional)
3.5-inch Ultra DMA/33 S.M.A.R.T. HDD up to 12GB

- **System Memory**
  Supports up to 256MB SDRAM or EDO DRAM via two 168-pin DIMM sockets, including ECC memory

- **Cache Memory**
  Supports 512KB ultra-fast Level II cache on CPU cartridge

- **Riser Card**
  One PCI slot and one shared PCI/ISA slot

Note!

The maximum card cage load should not exceed +5V, 1A; +12V, 1A in combination.

- **Input/Output Interface**
  Two serial ports, one parallel port with ECP/EPP, two USB ports, one RJ45 LAN connector, two PS/2 connectors, one D-sub 15-pin female VGA port, one optional Game port, one optional IrDA port, one Mic-in; one Line-in; one Line-out for Audio

- **CD-ROM Drive**
  12.7mm Slim 20X/24X CD-ROM or DVD-ROM drive

Technical Specifications

- **Dimensions**
  310(L) x 300(H) x 88(W) mm

- **Power Supply**
  100 to 240 VAC (Universal input), 85 Watt or
  115/230 VAC, 90 Watt

- **Environment Air Temperature**
  Operating: 5 ^{o}C to 35 ^{o}C / Storage: –29 ^{o}C to 65 ^{o}C

- **System Operating Environment**
  The recommended system operating room temperature is between 5^{0}C and 35^{0}C. In the event that the system is to function as a workstation or server, it is imperative that periodic inspection of the CPU fan and the power supply fan be undertaken. Please consult the local dealer for more information.

- **Humidity**
  Operating: 0 % to 80 % / Storage: 0 % to 95 %

Appendix B

INSTALLATION PROCEDURES

The **SAHARA** System has several user-adjustable jumpers on the mainboard that allow you to configure the system to suit your requirements. This chapter contains information on the various jumper settings on the mainboard.

To set up your computer, you must complete the following steps:

- Step 1 -
  Set system jumpers
- Step 2 -
  Install system RAM modules
- Step 3 -
  Install the Central Processing Unit (CPU)
- Step 4 -
  Install expansion cards
- Step 5 -
  Connect ribbon cables, cabinet wires, and power supply
- Step 6 -
  Set up BIOS software (see Chapter Four)
- Step 7 -
  Set up supporting software tools (see Appendix C)

Excessive torque may damage the mainboard. When using an electric screwdriver on the mainboard, make sure that the torque is set to the allowable range of 5.0 ~ 8.0kg/cm.
Mainboard components contain very delicate Integrated Circuit (IC) chips. To prevent static electricity from harming any of the mainboard's sensitive components, you should follow some precautions whenever working on the computer:
1. Unplug the computer when working on the inside.
2. Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
3. Wear an anti-static wrist strap which fits around the wrist.
4. Place components on a grounded anti-static pad or on the bag that came with the component whenever the components are separated from the system.

1). Set System Jumpers

Jumpers are used to select the operation modes for your system. Some jumpers on the board have three metal pins with each pin representing a different function. A "1" is written besides pin 1 on jumpers with three pins. To **set** a jumper, a black cap containing metal contacts is placed over the jumper pin/s according to the required configuration. A jumper is said to be **shorted** when the black cap has been placed on one or two of its pins. The types of jumpers used in this manual are shown below:

Jumper Cap   3-pin Jumper   2-pin Jumper   Jumper Block

2 1   3 2 1   "□" stands for pin 1
Jumper are shown like above

Jumper cap like above   3 2 1

Jumpers in a Block
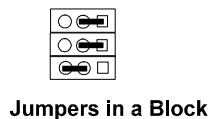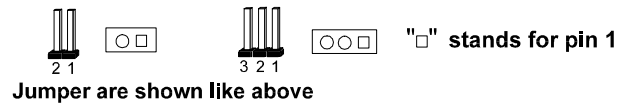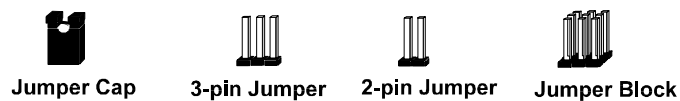
Note! *Users are not encouraged to change the jumper settings not listed in this manual. Changing the jumper settings improperly may adversely affect system performance.*

Components That Concern Installation
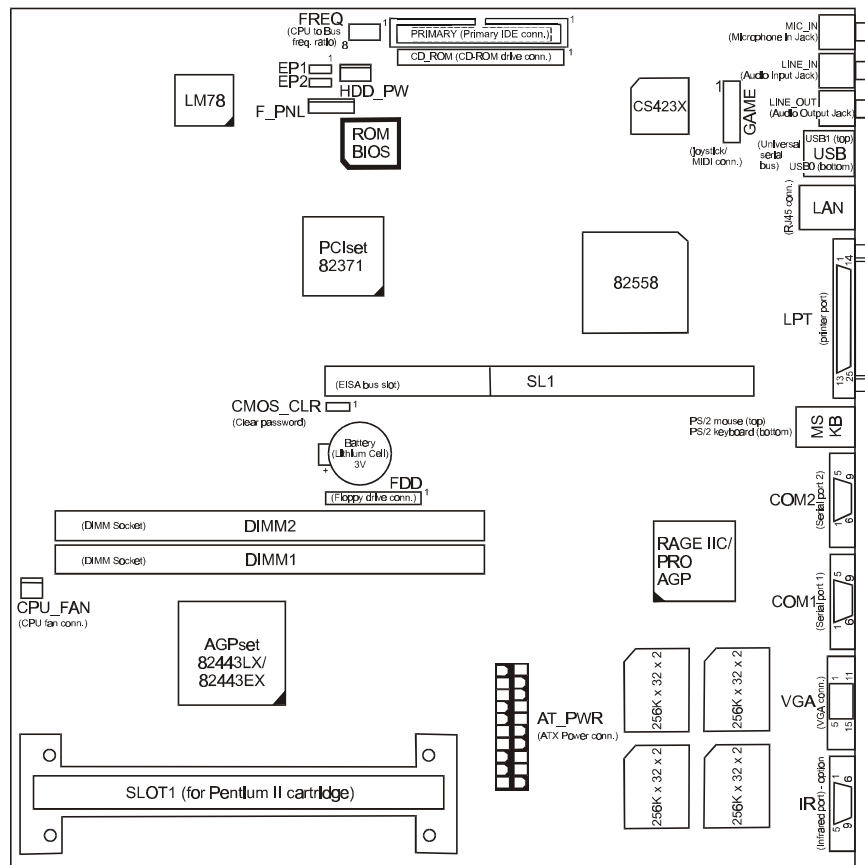
ONBOARD MARK	MEANING	PAGE
CMOS_CLR	Clear CMOS Data	69
EP1, EP2	Flash ROM Type Select	69
FREQ	CPU to Bus Frequency Ratio Select	75
DIMM1, DIMM2	DIMM Memory Module Support	70
SL1	EISA Bus Expansion Slot (32-bit)	75
SLOT1	Central Processing Unit (CPU) Cartridge Support	72
AT_PWR	ATX Power Connector	88
CD_ROM	CD-ROM Drive Connector	87
COM1, COM2	Serial Port	79
CPU_FAN	CPU Fan Connector	84
F_PNL	Connectors for LEDs and Switches on Front Panel	87
FDD	Floppy Diskette Drive Connector	85
GAME	Joystick/MIDI Connector	83
HDD_PW	Hard Disk Drive Power Connector	86
IR (option)	Infrared Port Module	82
KB	PS/2 Keyboard Connector	80
LAN	RJ45 Connector	82
LINE_IN	Audio Line-In Jack	81
LINE_OUT	Audio Line-Out Jack	81
LPT	Parallel Port	80
MIC_IN	Audio Microphone Jack	81
MS	PS/2 Mouse Connector	80
PRIMARY	IDE Device Connector	86
USB	Universal Serial Bus Connector	81
VGA	VGA Connector	83

CMOS Clear: CMOS_CLR

This jumper allows you to enable or to disable the CMOS clear feature. When set at Enable, the original CMOS configuration will be replaced with whatever CMOS parameters are being entered. When set at Disable, the original CMOS configuration will not be affected. If you need to set the CMOS configuration, keep this jumper at Enable.
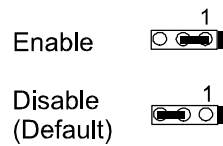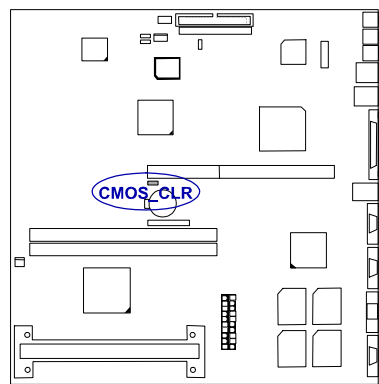
Flash ROM Type Select: EP1, EP2

These two jumpers allow you to configure the flash ROM chip. This jumper setting was installed with the manufacturer's default. If you want to know the flash ROM type installed on this mainboard, partially remove the sticker on top of the chip.
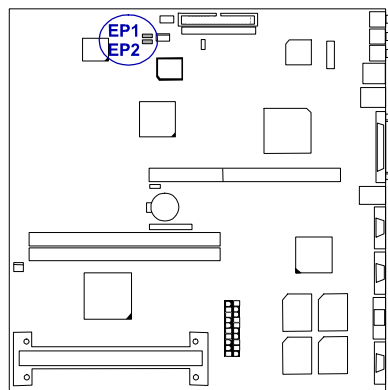
1MB Flash ROM	EP1	EP2
ATMEL AT29C010 SST 29EE010 AMD 28F010		
INTEL 28F001 MXIC 28F1000		

2MB Flash ROM	EP1	EP2
ATMEL AT29C020 SST 29EE020 AMD 28F020		
INTEL 28F002 MXIC 28F2000		

2). Install RAM Modules

SDRAM

The working space of the computer is the Random Access Memory (RAM). The system cannot act upon data unless it is loaded into RAM. When more memory is added, the working memory of the computer is larger, thereby increasing total performance. The mainboard RAM is comprised of two 168–pin Dual In–line Memory Modules (DIMMs). Each DIMM socket is able to support up to 128MB lightning-fast SDRAM.

SDRAM is an advanced new memory technology that helps boost overall system performance with its ability to synchronize all operations with the processor clock signal. This makes the implementation of control interfaces easier, and speeds up column access time. SDRAM features an on–chip burst counter that can be utilized to increment column addresses for very fast burst access, which means that SDRAM allows new memory access to be initiated before the preceding access has been finished.

Before making DRAM upgrades you should verify the type and speed of the RAM currently installed from your dealer. Installing mixtures of RAM types other than those described in this manual will have unpredictable results.

DIMM

RAM Module Configuration

The mainboard provides two onboard DIMM sockets allowing 3.3V (unbuffered) SDRAM DIMM modules. Either 8, 16, 32, 64, or 128MB DIMM can be installed on these two sockets. The maximum total memory supported is up to 256MB.

Memory Socket	Memory Module		Total Memory
DIMM Sockets 1&2 (DIMM1 & DIMM2)	8MB, 16MB, 32MB, 64MB, 128MB 168-pin 3.3V EDO/SDRAM DIMM	x2	
	Total System Memory (Max 256MB)	=	

Or one 256MB DIMM on either DIMM1 or DIMM2.

Memory Socket	Memory Module		Total Memory
DIMM Sockets 1/2 (DIMM1 or DIMM2)	256MB 168-pin 3.3V EDO/SDRAM DIMM	x1	256MB
	Total System Memory (Max 256MB)	=	256MB

> **Note:** *This mainboard supports DIMMs with access speeds of 10ns, 12ns, and 15ns. ECC memory and parity check is also supported.*
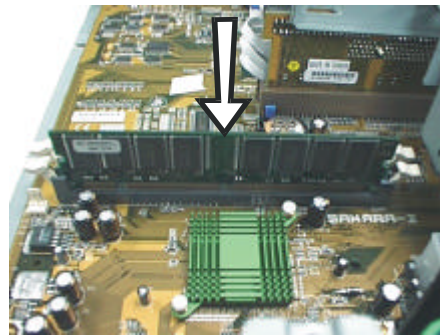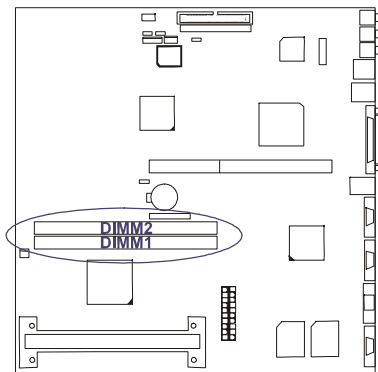
Install DIMMs

SDRAM DIMM modules have different pin contact on each side and therefore have a higher pin density. Complete the following procedures when installing DIMMs:

> **Note:** *Do not use memory modules with more than 24 chips per module. Modules with more than 24 chips exceed the design specifications of the memory subsystem and will be unstable.*
> *The notch on the DIMM module will shift between left, center, or right to identify the type and also to prevent the wrong type from being inserted into the DIMM slot on the mainboard. Ask your retailer for the specifications before purchasing.*

1. Locate the DIMM slots on the mainboard. (See the following figure.)

2. Install the DIMM straight down into the DIMM slot with both hands.

3. The clip on both ends of the DIMM slot will close up to hold the DIMM in place when the DIMM touches the slot's bottom.

Remove DIMMs

Press the clips with both hands to remove the DIMM.

3). Install the Central Processing Unit (CPU)

If the mainboard is for the Pentium® II CPU, then it comes with an onboard Retention Mechanism, a Heatsink with Fan, and two clips for attaching the Heatsink with Fan to the CPU cartridge. If any piece is missing, please contact your local system dealer to help you. If the mainboard is for the Celeron™ CPU, then it comes with an onboard Retention Mechanism, a Passive Heatsink, and a clip for attaching the Passive Heatsink to the CPU.

Note!

The Retention Mechanism is already installed onboard by the manufacturer.

CPU Cartridge and Heatsink with Fan Installation (for Pentium® II CPU)

To install the CPU cartridge and Heatsink with Fan, refer to the following steps:

1. Peel off the backing tape located on the flat side of the Heatsink with Fan.

2. Carefully position the Heatsink with Fan on the center of the CPU cartridge, taking care to align the two protruding knobs of the Heatsink with Fan to the holes on the thermal plate side of the CPU cartridge, with the fan on the right side facing you.

3. Push in both ends of each of the heatsink clip into the CPU cartridge thereby, fixing the Heatsink with Fan onto the CPU cartridge.

4. Slide the CPU module together with the heatsink into the Retention Mechanism Assembly located on SLOT1 of the mainboard.
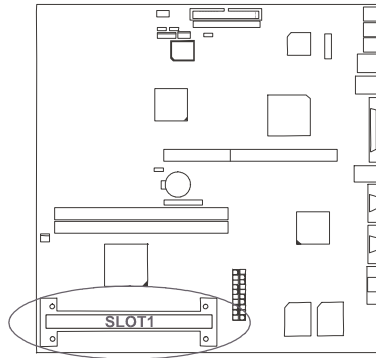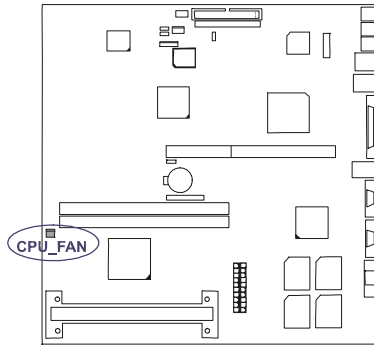

5. Press the buttons on either end of the CPU module.

If the Heatsink with Fan is not mounted tightly against the CPU cartridge, the CPU will overheat.

6. Plug the heatsink fan power cord into the CPU_FAN connector on the mainboard.

CPU and Passive Heatsink Installation (for Celeron™ CPU)

To install the CPU and Passive Heatsink, refer to the following steps:

1. Peel off the backing tape located on the flat side of the Passive Heatsink.

2. Carefully position the Passive Heatsink on the center of the front of the CPU, and on its backside, push in both ends of the heatsink clip taking care to align it to the holes of the CPU thereby, fixing the Passive Heatsink onto the CPU.

3. Slide the CPU together with the Passive Heatsink into the Retention Mechanism Assembly located on SLOT1 of the mainboard.
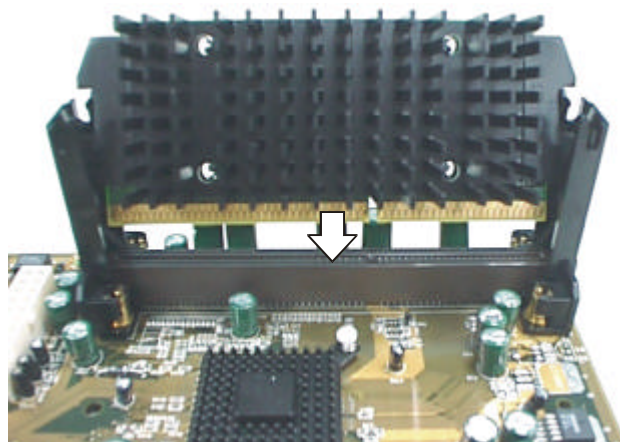
>
>
> *If the Passive Heatsink is not mounted tightly against the CPU cartridge, the CPU will overheat.*

CPU to Bus Frequency Ratio: FREQ

This jumper is used set the ratio of the internal frequency of the CPU to the bus clock.
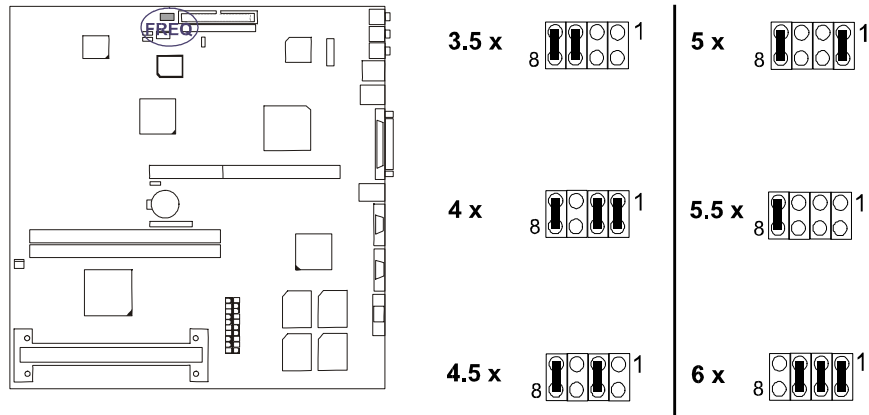

Intel Pentium II CPUs

FREQUENCY	BUS FREQUENCY	RATIO
333 MHz	66 MHz	5 x
300 MHz	66 MHz	4.5 x
266 MHz	66 MHz	4 x
233 MHz	66 MHz	3.5 x

4). Install Expansion Cards

>
>
> *Make sure to unplug the power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both the mainboard and expansion cards.*

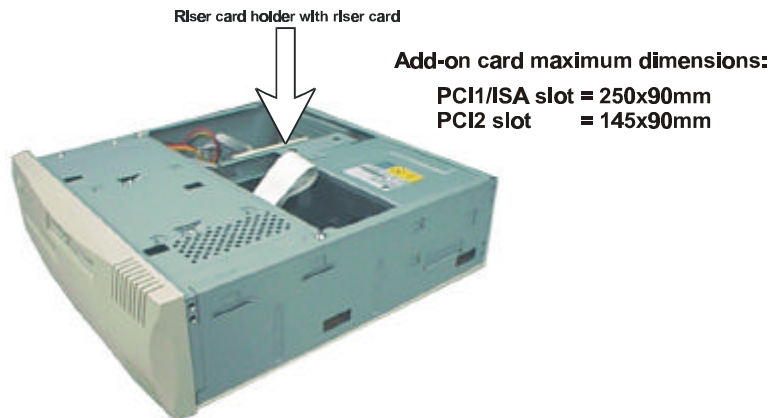The mainboard features one 32-bit EISA bus expansion slot.
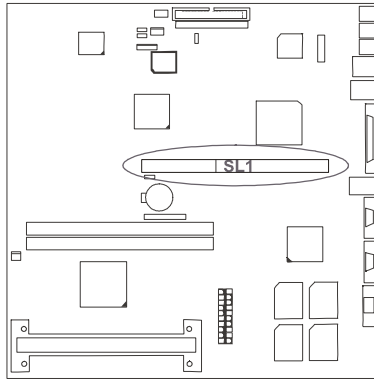
This section describes how to connect an expansion card to the system's riser card. An expansion card is a printed circuit board that, when connected to the mainboard, allows you to increase the capabilities of the system. For example, expansion cards can provide video and sound capabilities.

Note!

Always turn the system power off before installing or removing any device. Always observe static electricity precautions. See "Handling Precautions" at the start of this manual.

To install an expansion card, follow the steps below:

1. Remove the computer chassis cover (see Chapter 3 "Removing the Chassis Cover") and locate the riser card on the EISA expansion slot (SL1).

Riser card holder with riser card

Add-on card maximum dimensions:
PCI1/ISA slot = 250x90mm
PCI2 slot   = 145x90mm

2. Remove the corresponding slot cover from the computer chassis. Unscrew the mounting screw that secures the slot cover and swing open the slot holder securing plate prior to pulling the slot cover out from the computer chassis. Keep the slot cover mounting screw nearby.
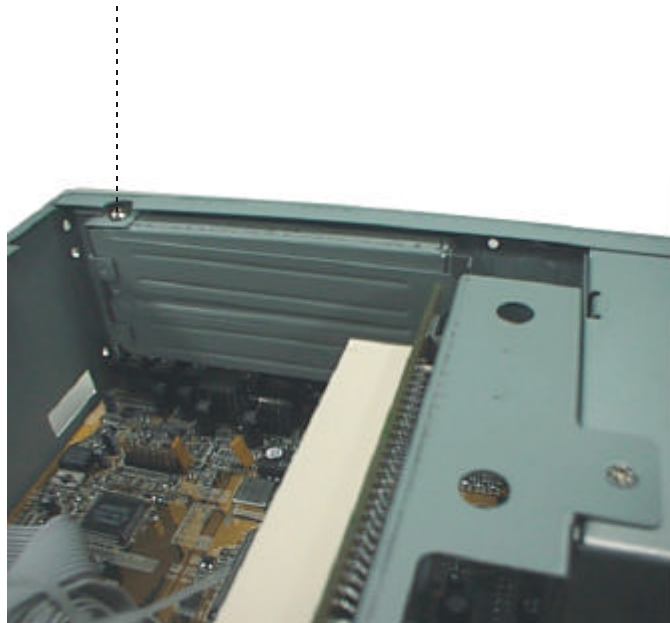
3. Read the expansion card documentation on any hardware and software settings that may be required to setup the specific card.

4. Set any necessary jumpers on the expansion card.

5. Select an empty expansion slot on the riser card.

6. Holding the edge of the peripheral card, carefully align the edge connector with the expansion slot.

7. Push the card firmly into the slot. Push down on one end of the expansion card, then the other. Use this "rocking" motion until the add–on card is firmly seated inside the expansion slot.

8. Swing close the slot holder securing plate and secure the board with the mounting screw removed in Step 2. Make sure that the card has been placed evenly and completely into the expansion slot.
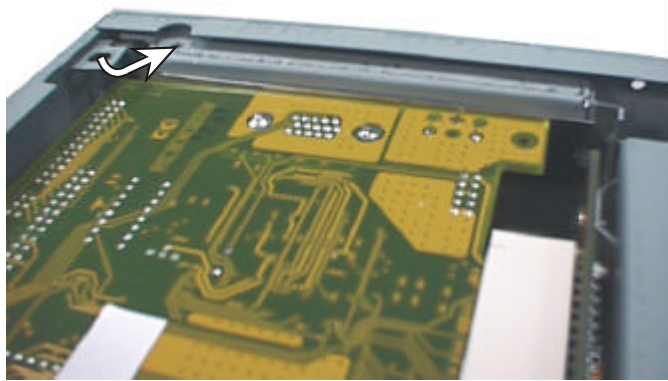
9. Replace the computer system's cover. (See Chapter 3 "Re-installing the Chassis Cover".)

10. Setup the BIOS if necessary.

11. Install the necessary software drivers for the expansion card.

# 5). Connect Cables and Power Supply

Connectors

Note: *Some pins are used for connectors or power sources. These are clearly separated from jumpers. Placing jumper caps over these will cause damage to the mainboard.*

Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. The four corners of the connectors are labeled on the mainboard. Pin 1 is the side closest to the power connector on hard drives and floppy drives.

Connectors allow the mainboard to link electronically with other parts of the system. Some malfunctions encountered may be caused by loosed or improper connections. Ensure that all connections are in place and firmly attached.

Serial Port Connectors: COM1, COM2

These two 9–pin D-sub male connectors allow you to connect with your devices that use serial ports, such as a serial mouse or a modem. Usually, it is recommended to connect the serial mouse to COM1 and the fax/modem to COM2.
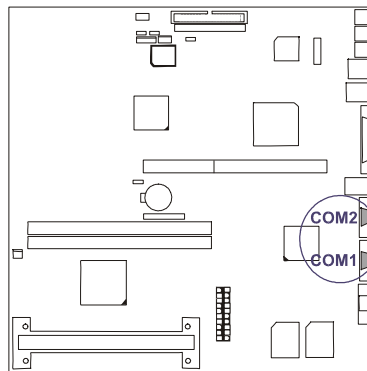
PS/2 Keyboard and Mouse Connector: MS, KB

These two 6–pin female connectors are used for your PS/2 keyboard and PS/2 mouse. The PS/2 keyboard connector is for a standard keyboard using a PS/2 plug (mini DIN). This connector will not allow standard AT size (large DIN) keyboard plugs. You may use a DIN to mini DIN adapter on standard AT keyboards.
The system will direct IRQ12 to the PS/2 mouse if one is detected. If not detected, expansion cards may be using IRQ12.
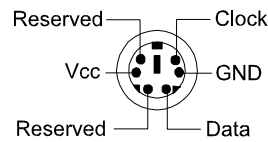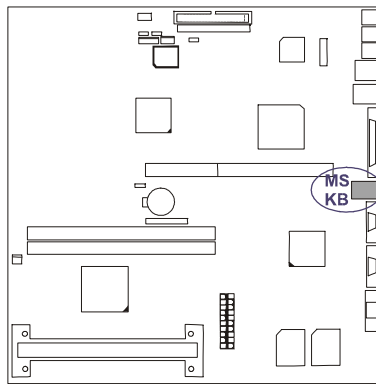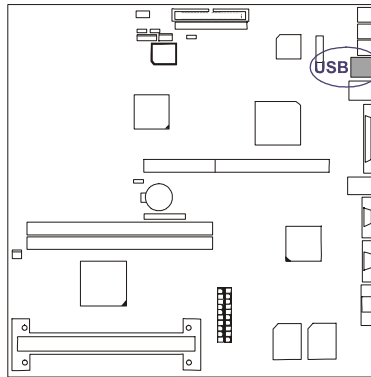

Printer Connector: LPT

This 25–pin D-sub female connector is attached to your printer. Serial printers must be connected to the serial port.
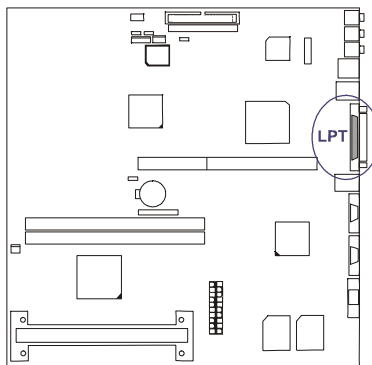
Universal Serial Bus Connectors: USB

These two connectors are used for linking with USB peripheral devices.

Audio Port Connectors: LINE_OUT, LINE_IN, MIC_IN

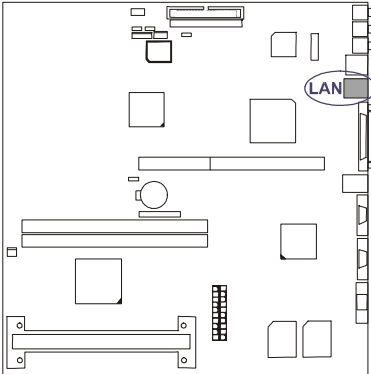LINE_OUT can be connected to headphones or preferably powered speakers. LINE_IN allows tape players or other audio sources to be recorded by your computer or played through the LINE_OUT. MIC_IN allows microphones to be connected for inputing voice.
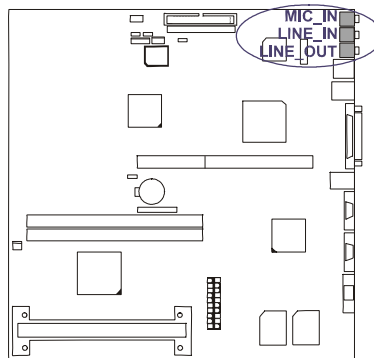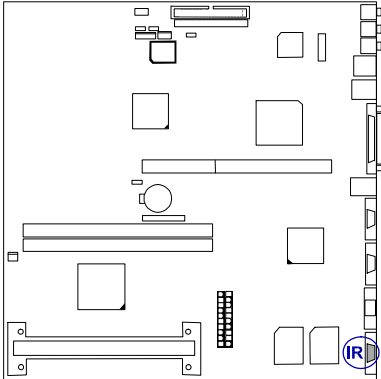
RJ45 Connector: LAN

This connector allows you to connect to the LAN cable for network connections.

Infrared Connector: IR (optional)

This 9-hole D-sub female infrared (SIR) port allows transmission of data to another system which also supports the IR feature.

Your system may or may not have this connector.

VGA Connector: VGA

The 15-hole D-sub female connector is linked to the VGA monitor by a cable.
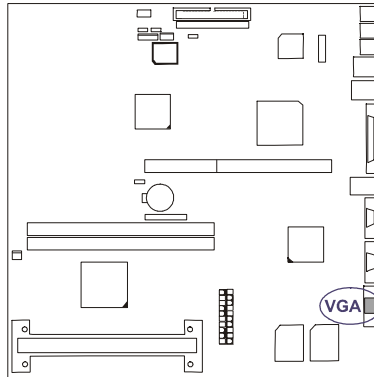
Joystick/MIDI Connector: GAME

This 16-pin male connector allows you to connect a 15-hole female D-sub game port adapter cable which in turn allows you to use game joysticks or game pads for playing games. Connect MIDI devices for playing or editing audio.
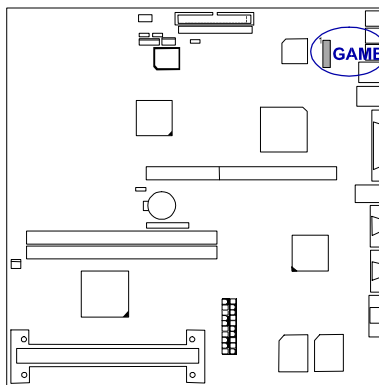
CPU Fan Connector: CPU_FAN

This connector is linked to the CPU fan. When the system is in suspend mode, the CPU fan will turn off; when it reverts back to full–on mode, the fan will turn back on. The picture below shows the type of CPU fan with heatsink for your system.
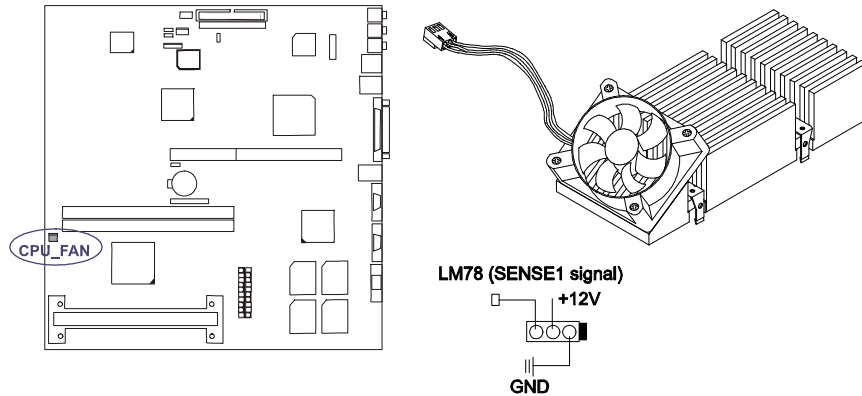
Note! *Without sufficient air circulation, the Pentium® II CPU cartridge may overheat and cause damage to both the CPU cartridge and the mainboard.*
Damage may occur to the mainboard and/or the CPU fan if these pins are incorrectly used. These are not jumpers, do not place jumper caps over these pins.

Floppy Diskette Drive Connector: FDD

This 26–pin block connector connects to your slim floppy disk drive using the FFC-cable that is provided with this mainboard. Insert one end of the silver-finger contact and press down the FDD connector on both sides to lock it in place. After connecting the single end to the mainboard, connect the other end to the floppy drive.

Note. *The FFC-cable should always be inserted with the side with the exposed silver-finger in contact with the FDD connector pins.*
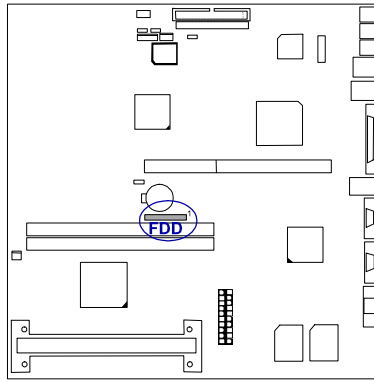
IDE HDD Device Connector: PRIMARY

This connector, which supports the provided IDE hard disk ribbon cable, is used for your IDE hard disk drive. After connecting the single end to the mainboard, connect the other plug to the other end of your hard disk. Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged.
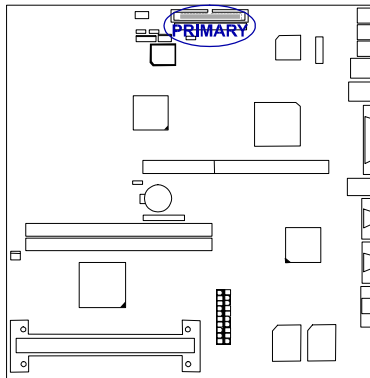
Hard Disk Drive Power Connector: HDD_PW

This allows you to connect one end of the hard disk drive power cord to the 4 pin block connector (HDD_PW) on the mainboard and the other end to the rear of the hard disk drive.
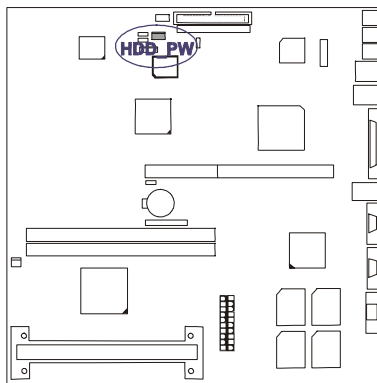
CD-ROM Drive Connector: CD_ROM

This connector, which supports the provided CD-ROM drive ribbon cable, is used for your slim CD-ROM drive. After connecting the single end to the mainboard, connect the other plug to the other end of your CD-ROM drive.
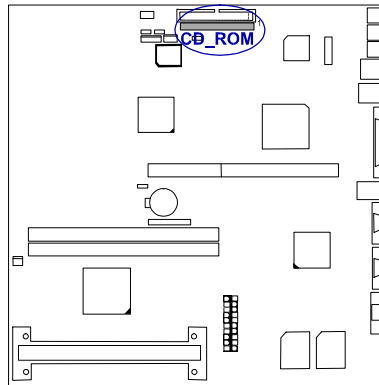
Front Panel Block Connector: F_PNL

This block connector includes: RESET, POWER LED, IDE LED, LAN LED, and POWER BUTTON connectors.
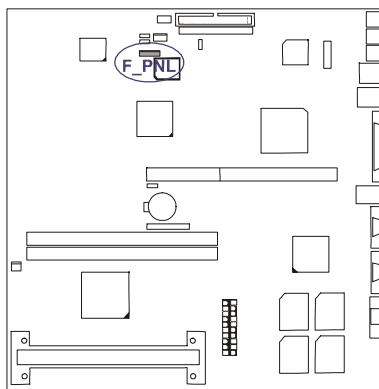
F_PNL connector

GROUND (1) – Connects to ground.
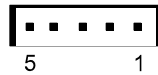
POWER LED (2) – The system power LED lights when the system is powered on.

```
 5      1
```

IDE LED (3) – This connector supplies power to the cabinet's IDE activity LED. Indicates the IDE HDD I/O (read and write activity by devices connected to the Primary IDE connector) is being accessed when LED is lit.

LAN LED (4) – This connector supplies power to the cabinet's LAN activity LED. Indicates the LAN (Local Area Network) is being accessed when LED is lit.

POWER BUTTON (5) – This connector connects to the case-mounted power switch for powering on or off the system.

ATX Power Connector: AT_PWR

This 20-pin male block connector is connected to the ATX power supply. The plug from the power supply will only insert in one orientation because of the different hole sizes. Find the proper orientation and push down firmly making sure that the pins are aligned.
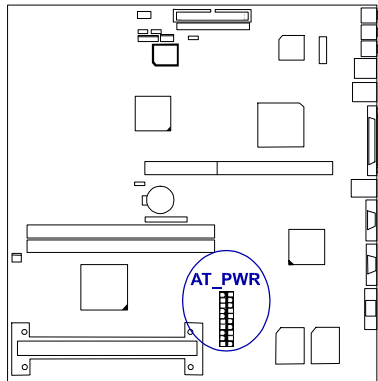
+3.3V	11	1	+3.3V
-12V	12	2	+3.3V
GND	13	3	GND
-PWR_ON	14	4	+5V
GND	15	5	GND
GND	16	6	+5V
GND	17	7	GND
-5V	18	8	PWR_GOOD
+5V	19	9	5V_VR
+5V	20	10	+12V

Note:

Your SAHARA System's power supply does not support –5V. The system mainboard's special design under LDCM testing for –5V will show normal.

DRIVER UTILITIES

Starting Installation

Insert the CD-ROM disk to start software installation and **run LANDesk® Client Manager (LDCM) software first.** Start each of them by clicking on the wanted software item(s) on the main menu.

LANDesk® Client Manager

The LDCM software for Win 95/NT must be installed in order to use the hardware manager.

Two Options of the LDCM Setup

LDCM Local Setup — install software to monitor the *local* system client. Recommended settings can be auto-detected or changed. The installation is straight forward.

1. Select *LDCM Local Setup* in the main menu.

2. Follow the step-by-step installation process.

3. Reboot the system.

LDCM Administrator Setup — install software to monitor PC systems on the *network* server within the same bridge address with local software installed. The installation is straight forward.

1. Select *LDCM Administrator Setup* in the main menu.

2. Follow the step-by-step installation process.

3. Reboot the system.

The administrator should install both the Local and Administrator Software. (Hint: first install the *Local Setup*, then the *Administrator Setup.*)

Desktop Management Interface (DMI)

The mainboard supports DMI within the BIOS level and provides a DMI Configuration Utility to maintain the Management Information Format Database (MIFD). DMI is able to auto-detect and record information pertinent to a computer's system such as the CPU type, CPU speed, internal/external frequencies, and memory size. The onboard BIOS will detect as many system information as possible and store these collected information in a 4KB block in the mainboard's Flash EPROM and allow the DMI to retrieve data from this database. Unlike other BIOS software, the BIOS on the mainboard uses the same technology implemented for Plug and Play to allow dynamic real-time updating of DMI information versus creating a new BIOS image file and requiring the user to update the whole BIOS. The DMI Configuration Utility also allows the system integrator or end user to add additional information into the MIFD such as serial numbers, housing configurations, and vendor information. Those information not detected by the mainboard BIOS has to be manually entered through the DMI Configuration Utility and updated into the MIFD. The DMI Configuration Utility provides the same reliability as PNP updating and will prevent the refreshing failures associated with updating the entire BIOS.

Starting DMI

1. Format a bootable system diskette and copy the DMICFG.EXE file from the CD-ROM disc to the floppy diskette.

2. Reboot the system by using this bootable system diskette to enter Real mode (DOS).

3. After the DOS prompt appears, type *DMICFG* and press <**Enter**> key. The following display will appear onscreen.

```
┌─────────────────────────────────────────────────────────────────────┐
│    Award  DMI  Configuration  Utility  V1.08u,  Copyright  Award  Software  Inc.  1996    │
├─────────────────────────────────────────────────────────────────────┤
│  [Edit DMI]   [Add DMI]   [Load DMI FILE]   [Save DMI FILE]          │
│ △┌──────────────┐ ┌──────────────────────────────────────────────┐ │
│  │    BIOS      │ │           === Display Component ===           │ │
│ □│   System     │ │                                              │ │
│  │  Base Board  │ │   Type  :  BIOS Information                   │ │
│  │Enclosure/Chassis│ │   Handle  :  0000                          │ │
│  │  Processor   │ │     Vendor Name  :  Award Software Internation al,  Inc. │ │
│  │Memory Controller│ │   BIOS Version  :  v4.51PG                  │ │
│  │ Memory Module│ │   BIOS starting Address Segment  :  E000      │ │
│  │ Memory Module│ │   BIOS Build Date  :  12/16/97                │ │
│  │ Memory Module│ │   BIOS Characteristics  :  Press [ENTER] for d etail │ │
│  │    Cache     │ │   Size of BIOS ROM  :  0128K                  │ │
│  │    Cache     │ │                                              │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ Port Connector│ │                                             │ │
│  │ System Slots │ │                                              │ │
│ ▽│ System Slots │ └──────────────────────────────────────────────┘ │
│ ↑↓←→-Move cursor  ENTER-Accept  DEL -Delete  ESC-Abort&Exit          │
└─────────────────────────────────────────────────────────────────────┘
```

Edit DMI — a menu like the above figure appears onscreen. It provides recorded data about your computer system. This feature allows you to select editable DMI items by pressing the arrow keys. The button *Press [ENTER] for detail* will cause a pop-up sub-menu to appear. Use the <+> or <–> keys to change configurations. Press <**Esc**> key to abort the configuration and exit or press <**Enter**> key to save and exit. The screen field under *Show Only Component* means that the items are automatically detected by BIOS. The screen menu under *Edit Component* indicates the items are user-configurable.

Add DMI — This menu allows users to add new information such as Manufacturer Name, Product Name, etc.

Load DMI File — If users need the old DMI information, use this feature to load the DMI information.

Save DMI File — If users need to keep the DMI information that was just changed, use this feature to save the new DMI information.

Intel PIIX IDE Bus Master Driver

The mainboard package includes the Bus Master IDE Driver in the software utility disk for Windows® 95/NT and OS/2 to improve the overall system performance. Read the related README files first before installing it. This system mainboard supports Ultra DMA/33 but Windows® 95 does not recognize it. When the operating system detects the mainboard and the IDE Bus Master Driver is not installed, the system will treat it as a standard dual PCI IDE controller, not allowing you to take advantage of the Ultra DMA feature. (The attached peripheral devices must support UDMA.)

The installation process is straight forward. Start by clicking on the *IDE Bus Master* item on the main menu. There is no option to be selected while the installation is proceeding. After the installation process, the system should be rebooted.

BIOS Flash Software

The mainboard package provides a BIOS flash software tool in the software utility CD-ROM disc. This software is used for upgrading the current BIOS used.

1. Run the CD-ROM disc and click on *Browse CD.*

2. Select *Flash* and choose the BIOS vendor that provided the BIOS chip on this mainboard.

3. Print the related README file and read it first.

Do not turn off or reset the computer during the flash process or if there is a problem.

If you encounter problems while downloading the new BIOS, DO NOT turn off the system since this might prevent your system from booting up. Just repeat the process and if the problem still persists, upload the original BIOS file you saved to disk.

Note: *If the Flash utility was not able to successfully write to Flash ROM a complete BIOS file, the system may not be able to boot up. If this happens, the system will require service from your dealer.*

VGA Display Drivers

The ATI RAGE IIC/PRO for Win 95, Win 3.1, Win NT 4.0, Win NT 3.51, and OS/2 VGA drivers have been provided with the installation CD-ROM disc to enable you to take full advantage of the display capabilities of the display monitor while using different application programs. Refer to the README file in the utility CD-ROM disc or ask your dealer for more information or documentation on these utilities and drivers.

Audio Drivers

For onboard CrystalClear™ CS4235 sound chip —

1. Sound Driver (Win 95)

2. Sound Driver Win NT 4.0 / Win NT 3.51

3. Sound Driver OS/2

CD-ROM Drive Software Drivers (optional)

1. Matsushita (Panasonic) UJDA110 20X CD-ROM drive device driver

2. Matsushita (Panasonic) UJDA150L 24X CD-ROM drive device driver

3. Mitsumi SR200S 20X CD-ROM drive device driver

4. Mitsumi SR240S 24X CD-ROM drive device driver

Note: *The Adobe Acrobat Reader software utility is also included in the utility CD-ROM disc.*

LAN Controller Driver

The LAN controller driver provide the necessary information and the utilities allowing you to connect with the network environment. These include all the driver installation programs supported by the onboard Intel 82558 Ethernet PCI bus (LAN) chip for Win 95, Win NT 4.0, Win 3.1, DOS, and OS/2.

The controller driver software utilities are located in the different sub-directories. It contains a driver program and the corresponding README.TXT file. Read them for the driver installation procedures.

Setup Procedures for Diskless LAN Station

Enter the BIOS Setup, under the BIOS Features Setup section make certain that the item Boot From LAN First is set at the default setting of *Enabled*.

The following suggestions provide a way of modification that allows the system to share the resources of the server.

Setup 1: Enter the commands below on the file server – (In this example, the server's LAN card is NE2000.)

1. SERVER (Enter)

2. LOAD NE2000 FRAME=ETHERNET 802.2 BOARD=1

3. BIND IPX TO NE2000

4. LOAD RPL

5. BIND RPL TO NE2000

Setup 2: Place the following commands into the AUTOEXEC.BAT file

set comspec=f:\login\command.com

lsl

pciodi

ipxodi

netx622

The bootable disk must contain the following files –

command.com   autoexec.bat

lsl.com   pciodi.com (provided by Intel)

ipxodi

netx622.exe   (based on MS DOS ver. 6.22 in this case)

Setup 3: Execute the following commands on the system –

1.   f: \SYSTEM\DOSGEN A: (Enter)
     (The fileserver creates NET$DOS.SYS)

2.   copy a:\NET$DOS.SYS   f: \PUBLIC (Enter)

3.   copy f:\PUBLIC\NET$DOS.SYS   f:\login (Enter)

4.   copy a:\command.com   f: \login (Enter)

5.   Reboot the system (not with drive C: or A:)

6.   f:\login\login (supervisor's ID)

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