

## 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.



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.



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.



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.



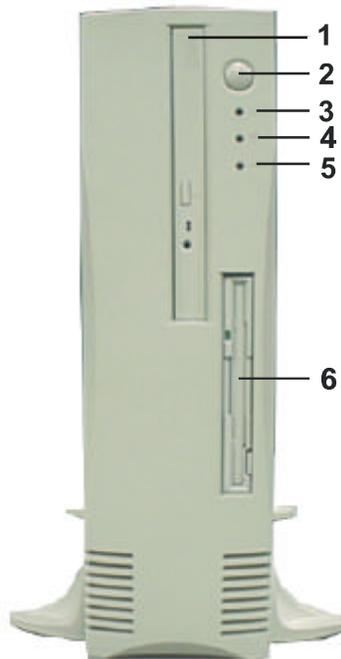


In order to save valuable working space on your desktop, it is advised that the system be placed in a vertical position as opposed to the horizontal position.

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

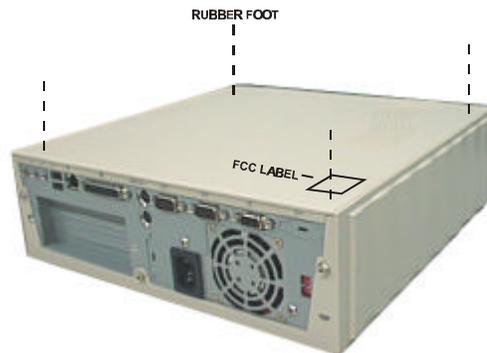
Refer to the following illustration to identify components located at the front of the SAHARA System.



- 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.

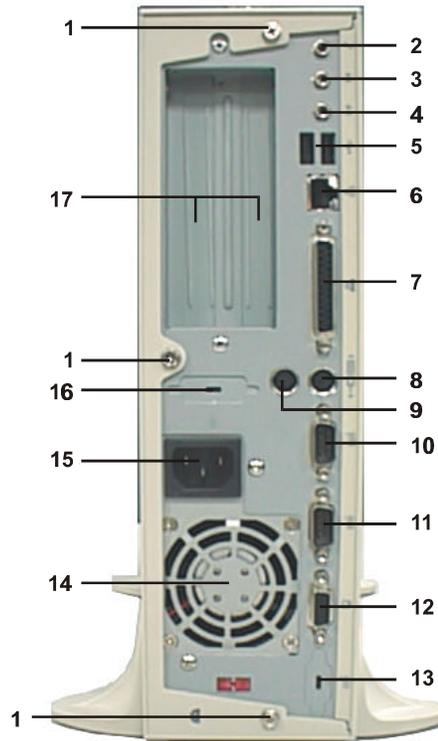
### Attaching the Rubber Foot Set

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 inputting 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
<b>2D Software Support <sup>1</sup></b>						
Accelerated driver	VESA <sup>2</sup>	✓	✓	✓	✓	✓
<b>Video Software Support</b>						
Microsoft DirectDraw			✓			
Microsoft ActiveMovie			✓			
MPEG-1 software playback	✓	✓	✓			
MPEG-2 software playback			✓			
<b>3D Software Support</b>						
Microsoft Direct3D			✓			
QuickDraw 3D RAVE			✓	✓	✓	
OpenGL <sup>3</sup>			✓	✓		
Heidi				✓		
ATI 3D CIF <sup>4</sup>			✓			
NOTES: 1 - Additional 3 <sup>rd</sup> 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