



CERTIFICATE

The TÜV CERT Certification Body
for QM Systems of RWTÜV Systems GmbH

hereby certifies in accordance with TÜV CERT
procedure that

ELITEGROUP COMPUTER SYSTEMS CO., LTD.
ECS MANUFACTURING (SHENZHEN) CO., LTD.
ELITE TECHNOLOGY (SHENZHEN) CO., LTD.

2F, No. 240, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 22, Alley 38, Lane 91, Sec. 1, Nei Hu Road, Taipei, Taiwan 114
No. 20 & No. 26, Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, China

has established and applies a quality system for

**Design, Manufacturing and Sales of Mainboards,
Personal Computers, Notebooks and Peripheral Cards**

An audit was performed, Report No. 2.5-1585/2000

Proof has been furnished that the requirements according to
ISO 9001 : 2000 / EN ISO 9001 : 2000 / JIS Q 9001 : 2000 / ANSI/ASQC Q9001 : 2000

are fulfilled. The certificate is valid until 27 January 2007

Certificate Registration No. 04100 2000 1325

The company has been certified since 2000



Essen, 04.03.2004




The TÜV CERT Certification Body for QM Systems
of RWTÜV Systems GmbH



ISO14001 CERTIFICATE

Certificate No.: 061-04-EI-0065-R1-L

We hereby certify that

ECS MANUFACTURING (SHANZHEN) CO., LTD.

by reason of its

Environmental Management System

has been awarded this certificate for
compliance with the standard

ISO14001:1996

The Environmental Management System
applies in the following area:

ECS MANUFACTURING (SHANZHEN) CO., LTD.
located at No. 20 & 26 (except 1F, 2F), Free Trade Zone,
Shatuoqiao, Shenzhen City, Guangdong Province, P. R. China,
is engaged in manufacturing of Mother Board and Peripheral Card,
and interrelated managerial activities.

Date of issue: 28th Sept. 2004

Date of expiry: 27th Sept. 2007

Signed by:



SHENZHEN SOUTHERN CERTIFICATION CO., LTD.

This publication, including photographs, illustrations and software, is under the protection of international copyright laws, with all rights reserved. Neither this user's guide, nor any of the material contained herein, may be reproduced without the express written consent of the manufacturer.

The information in this document is subject to change without notice. The manufacturer makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Further, the manufacturer reserves the right to revise this publication and to make changes from time to time in the content hereof without obligation of the manufacturer to notify any person of such revision or changes.

Trademarks

IBM, VGA, and PS/2 are registered trademarks of International Business Machines.

Intel, Pentium/II/III, Pentium 4, Celeron and MMX are registered trademarks of Intel Corporation.

Microsoft, MS-DOS and Windows 98/ME/NT/2000/XP are registered trademarks of Microsoft Corporation.

AMI is a trademark of American Megatrends Inc.

It has been acknowledged that other brands or product names in this manual are trademarks or the properties of their respective owners.

Static Electricity Precautions

1. Don't take this motherboard and components out of their original static-proof package until you are ready to install them.
2. While installing, please wear a grounded wrist strap if possible. If you don't have a wrist strap, discharge static electricity by touching the bare metal of the system chassis.
3. Carefully hold this motherboard by its edges. Do not touch those components unless it is absolutely necessary. Put this motherboard on the top of static-protection package with component side facing up while installing.

Pre-Installation Inspection

1. Inspect this motherboard whether there are any damages to components and connectors on the board.
2. If you suspect this motherboard has been damaged, do not connect power to the system. Contact your motherboard vendor about those damages.

**Copyright © 2005
All Rights Reserved
M960GV Series, V3.0B
March 2005**

Table of Contents

Trademark i
Static Electricity Precautions i
Pre-Installation Inspection i

Chapter 1: Introduction 1
Key Features 1
Package Contents 3

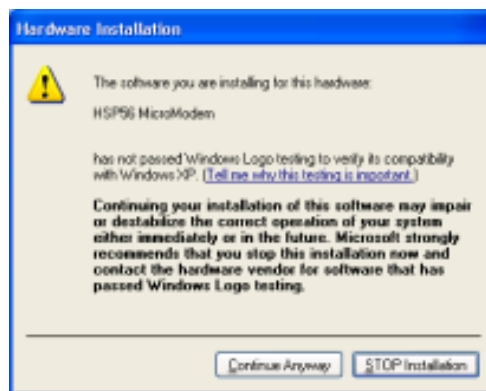
Chapter 2: Motherboard Installation 5
Motherboard Components 6
I/O Ports 8
Installing the Processor 9
Installing Memory Modules 10
Jumper Settings 11
Install the Motherboard 13
Connecting Optional Devices 14
Install Other Devices 17
Expansion Slots 19

Chapter 3: BIOS Setup Utility 21
Introduction 21
Running the Setup Utility 21
Standard CMOS Setup Page 22
Advanced Setup Page 23
Features Setup Page 25
Power Management Setup Page 26
PCI/Plug and Play Setup Page 27
BIOS Security Features Setup Page 28
CPU PnP Setup Page 28
Hardware Monitor Page 29
Load Optimal Defaults 29
Save Changes and Exit 30
Discard Changes and Exit 30

Chapter 4: Software & Applications 31
Introduction 31
Installing Support Software 31
Bundled Software Installation 33

Notice:

- 1 Owing to Microsoft's certifying schedule is various to every supplier, we might have some drivers not certified yet by Microsoft. Therefore, it might happen under Windows XP that a dialogue box (shown as below) pop out warning you this software has not passed Windows Logo testing to verify its compatibility with Windows XP. Please rest assured that our RD department has already tested and verified these drivers. Just click the "Continue Anyway" button and go ahead the installation.



- 2 USB 2.0 Driver Limitations:
 - 2-1 The USB 2.0 driver only supports Windows XP and Windows 2000.
 - 2-2 If you connect a USB 2.0 hub to the root hub, plugging USB devices into this hub, the system might not successfully execute certain USB devices' connection because it could not recognize these devices.

Currently, we are working on such limitations' solution. As soon as the solution is done, the updated USB drive will be released to our website: www.pcchips.com for your downloading.

Chapter 1 Introduction

This motherboard has a **Socket-478** to support **Intel Pentium 4** processors with Front-Side Bus (FSB) speeds up to **800 MHz(only by overclocking)** / 533 MHz.

It integrates the **SiS661GX** Northbridge and **SiS964L** Southbridge that supports the built-in **USB 2.0** providing higher bandwidth, implementing **Universal Serial Bus Specification Revision 2.0** and is compliant with **UHCI 1.1** and **EHCI 0.95**. It supports **AC' 97 Audio Codec** and provides **Ultra DMA 133/100/66** function. It has one **8x AGP**, one **CNR** and five 32-bit **PCI** slots. There is a full set of I/O ports including two PS/2 ports for mouse and keyboard, one serial port, one parallel port, one LAN port(optional), one **VGA** port, three audio jacks for Line-in, Line-out and Microphone, four back-panel USB2.0 ports and onboard USB headers USB2/USB3 providing extra ports by connecting the Extended USB Module to the motherboard.

It is an **ATX** motherboard and has power connectors for an ATX power supply.

Key Features

The key features of this motherboard include:

Socket-478 Processor

- Supports the latest **Intel Pentium 4 Series** processors
- Supports up to **800 MHz(only by overclocking)** / 533 MHz Front-Side Bus

Note: Users please note that this motherboard supports FSB 533 MHz only; FSB 800 MHz can be achieved by overclocking but it may be unstable!

Chipset

There are **SiS661GX Northbridge** and **SiS964L** in the chipsets in accordance with an innovative and scalable architecture with proven reliability and performance.

- High Performance Host Interface: Supports Intel Pentium 4 processor family with FSB 533MHz
- Integrated A.G.P. Compliant Target/66Mhz Host-to-PCI Bridge: Universal AGP v3.5 Compliant and Support 1.5V AGP Interface Only
- High Performance & High Quality 3D Graphics Accelerator: Built-in a high performance 256-bit 3D engine
- Complete TV-OUT/Digital Flat Panel Solution: Built-in secondary CRT controller to support independent display of secondary CRT, LCD and TV-out
- PCI 2.3 Specification Compliance

Motherboard User's Guide

- Integrated Multithreaded I/O Link Mastering
- Multithreaded I/O Link Mastering with Read/Write Concurrent transaction

Memory Support

- Two 184-pin 2.5V DIMM sockets for DDR SDRAM memory modules
- Supports **DDR400** memory bus
- Maximum installed memory is 2GB

Expansion Slots

- Five 32-bit PCI slots
- One 8X AGP slot
- One CNR slot

Onboard IDE channels

- Supports PIO (Programmable Input/Output) and DMA (Direct Memory Access) modes
- Supports IDE Ultra DMA bus mastering with transfer rates of **133/100/66 MB/sec**

Onboard VGA

- Built-in a high performance **256-bit 3D** engine

AC'97 Audio Codec

- 6-CH hardware architecture allows multi-channel south bridge to playback 6CH audio
- Intel AC'97 (REV. 2.3) compatible, meeting Microsoft PC2001 requirements
- Built-in earphone buffer and internal PLL, the latter saving additional crystal
- Line-in/rear out share the same jack; Center/bass share the MIC jack
- Digital S/PDIF OUT Support
- CRL 3D: HRTF based BS3D compatible audio engine

Onboard I/O Ports

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port
- One VGA port
- One LAN port (optional)
- Four back-panel USB2.0 ports
- Audio jacks for microphone, line-in and line-out

Fast Ethernet LAN (optional)

- Built-in **100Base-TX/10Base-T Physical Layer solution**
- Dual Speed - 100/10 Mbps

- MII Interface to Ethernet Controller and Configuration & Status
- Auto Negotiation: 10/100, Full/Half Duplex
- Meet All applicable IEEE 802.3, 10Base-T and 100Base-TX Standards

USB 2.0

- Compliant with Universal Serial Bus Specification Revision 2.0
- Compliant with Intel's Enhanced Host Controller Interface Specification Revision 1.0
- Compliant with Universal Host Controller Interface Specification Revision 1.1
- PCI multi-function device consists of two **UHCI Host Controller** cores for full-/low-speed signaling and one **EHCI Host Controller** core for high-speed signaling
- Root hub consists 4 downstream facing ports with integrated physical layer transceivers shared by **UHCI** and **EHCI** Host Controller, up to eight functional ports
- Support PCI-Bus Power Management Interface Specification release 1.1
- Legacy support for all downstream facing ports

BIOS Firmware

This motherboard uses AMI BIOS that enables users to configure many system features including the following:

- Power management
- Wake-up alarms
- CPU parameters and memory timing
- CPU and memory timing

The firmware can also be used to set parameters for different processor clock speeds.

Dimensions

- ATX form factor of 305 x 220 mm

Note: Hardware specifications and software items are subject to change without notification.

Package Contents

Your motherboard package ships with the following items:

- The motherboard
- The User's Guide
- One diskette drive ribbon cable (optional)
- One IDE drive ribbon cable
- The Software support CD

Motherboard User's Guide

Optional Accessories

You can purchase the following optional accessories for this motherboard.

- The Extended USB module
- The CNR v.90 56K Fax/Modem card
- The Card Reader

Note: You can purchase your own optional accessories from the third party, but please contact your local vendor on any issues of the specification and compatibility.

Chapter 2 Motherboard Installation

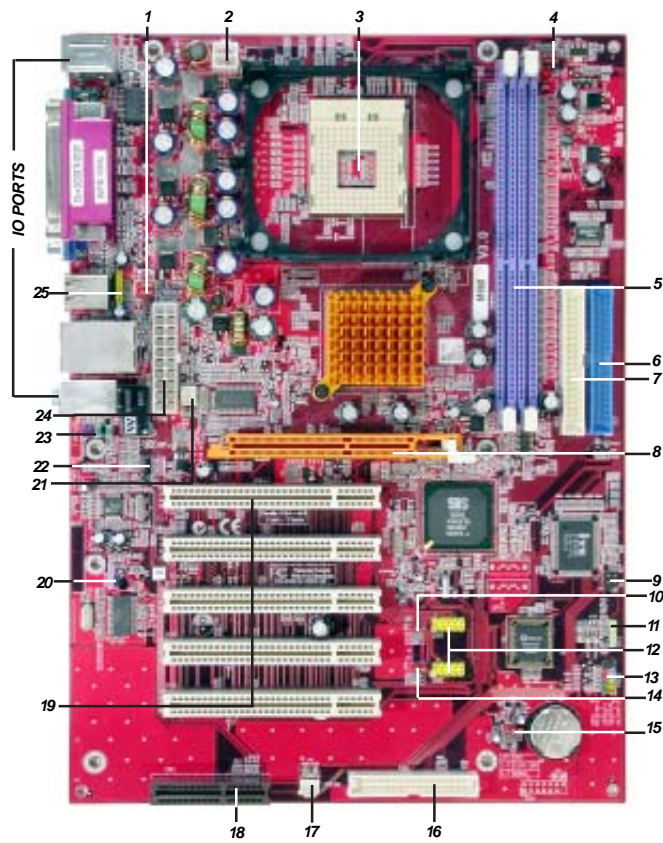
To install this motherboard in a system, please follow these instructions in this chapter:

- Identify the motherboard components
- Install a CPU
- Install one or more system memory modules
- Make sure all jumpers and switches are set correctly
- Install this motherboard in a system chassis (case)
- Connect any extension brackets or cables to headers/connectors on the motherboard
- Install peripheral devices and make the appropriate connections to headers/connectors on the motherboard

Note:

- 1 Before installing this motherboard, make sure jumper JP2 is under Normal setting. See this chapter for information about locating JP2 and the setting options.
- 2 Never connect power to the system during installation; otherwise, it may damage the motherboard.

Motherboard Components



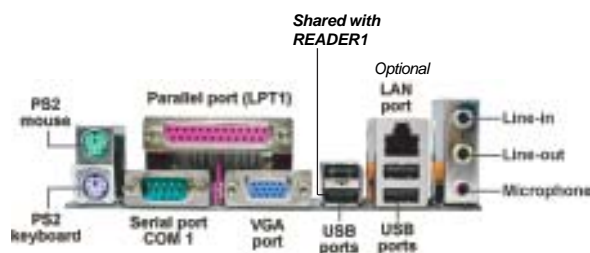
Chapter 2: Motherboard Installation

| ITEM | LABEL | COMPONENTS | COLOR |
|------|------------|---|--------------|
| 1 | JP3 JP4 | USBLAN1 Pow er Select jumper USB1 Pow er Select jumper | RED |
| 2 | CPUPW1 | Standard 4-Pin ATX Pow er connector | WHITE |
| 3 | CPU Socket | Socket-478 for Pentium 4 CPUs | WHITE |
| 4 | CPUFAN1 | CPU Fan connector(3PIN) | DARK RED |
| 5 | DDR1/2 | 184-pin DDR SDRAM sockets | PURPLE |
| 6 | IDE1 | Primary IDE connector | BLUE |
| 7 | IDE2 | Sceondary IDE connector | WHITE |
| 8 | AGP1 | AGP slot | ORANGE |
| 9 | IR1 | Infrared header | BLACK |
| 10 | JP6 | USB3 Pow er Select jumper | RED |
| 11 | SPK1 | Speaker header | LIME |
| 12 | USB2/USB3 | Front Panel USB headers | YELLOW |
| 13 | PANEL1 | Front Panel Sw itch/LED header | COLOR |
| 14 | JP5 | USB2 Pow er Select jumper | RED |
| 15 | JP2 | Clear CMOS jumper | RED |
| 16 | FDD1 | Floppy Disk Drive connector | WHITE |
| 17 | SYSFAN1 | System Fan connector | WHITE |
| 18 | CNR1 | CNR slot | BROWN |
| 19 | PCI 1-5 | 32-bit PCI slots | WHITE |
| 20 | SPDIFO1 | SPDIF Out header | LIGHT PURPLE |
| 21 | SYSFAN2 | System Fan connector (optional) | WHITE |
| 22 | CD1 | Analog Audio Input header | BLACK |
| 23 | AUDIO2 | Front Panel Audio header | PURPLE |
| 24 | ATXPW1 | Standard 20-Pin ATX Pow er connector | WHITE |
| 25 | READER1 | USB Card Reader header | YELLOW |

Motherboard User's Guide

I/O Ports

The illustration below shows a side view of the built-in I/O ports on the motherboard.



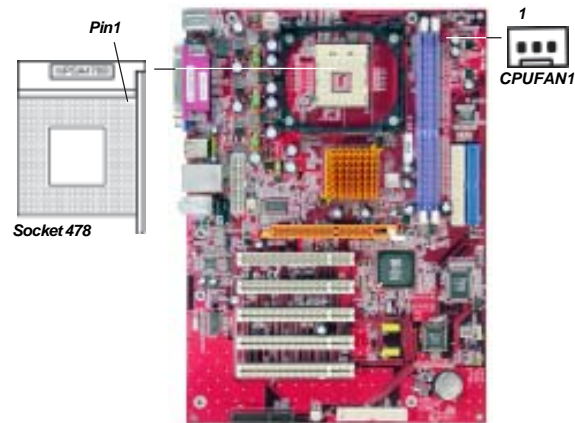
| | |
|-----------------------------|---|
| PS/2 Mouse | Use the upper PS/2 port to connect a PS/2 pointing device. |
| PS/2 Keyboard | Use the lower PS/2 port to connect a PS/2 keyboard. |
| Parallel Port (LPT1) | Use the Parallel port to connect printers or other parallel communications devices. |
| Serial Port (COM1) | Use the COM port to connect serial devices such as mice or fax/modems. COM1 is identified by the system as COM1. |
| VGA Port | Use the VGA port to connect VGA devices. Note: The lower USB port located beside the VGA port is shared with the READER1 header. |
| LAN Port (optional) | Connect an RJ-45 jack to the LAN port to connect your computer to the Network. |
| USB Ports | Use the USB ports to connect USB devices. |
| Audio Ports | Use these three audio jacks to connect audio devices. The first jack is for stereo Line-In signal, the second jack for stereo Line-Out signal, and the third jack for Microphone. |

Installing the Processor

This motherboard has a Socket 478 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

CPU Installation Procedure

Follow these instructions to install the CPU:



- 1 Install your CPU. Pull up the lever away from the socket and lift up to 90-degree angle.
- 2 Locate the CPU cut edge (the corner with the pin hold noticeably missing). Align and insert the CPU correctly.
- 3 Press the lever down and apply thermal grease on top of the CPU.
- 4 Put the CPU Fan down on the retention module and snap the four retention legs of the cooling fan into place.
- 5 Flip the levers over to lock the heat sink in place and connect the CPU cooling Fan power cable to the CPUFAN1 connector. This completes the installation.



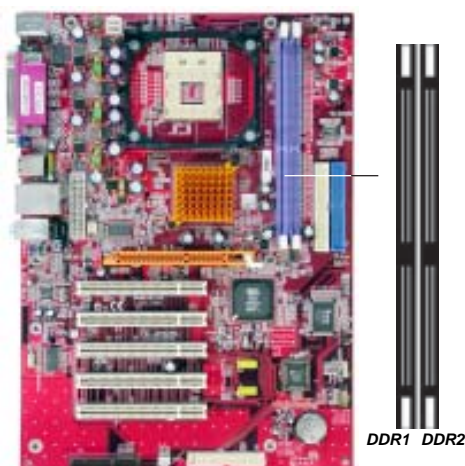
Motherboard User's Guide

Note: The fan power requirement for proper operation is a maximum current of 740mA at +12V.

Installing Memory Modules

This motherboard accommodates two 184-pin 2.5V DIMM sockets (Dual Inline Memory Module) for unbuffered **DDR400/333/266/200** (Double Data Rate SDRAM), and maximum 2.0 GB installed memory.

DDR SDRAM is a type of SDRAM that supports data transfers on both edges of each clock cycle (the rising and falling edges), effectively doubling the memory chip's data throughput. DDR DIMMs can synchronously work with 400/333/266/200 MHz memory and provide 3.2 GB/s, 2.7 GB/s, 2.1 GB/s and 1.6 GB/s data transfer rate.



Memory Module Installation Procedure

These modules can be installed with up to 2 GB system memory. Refer to the following to install the memory module.

1. Push down the latches on both sides of the DIMM socket.
2. Align the memory module with the socket. There is a notch on the DIMM socket that you can install the DIMM module in the correct direction. Match the cutout on the DIMM module with the notch on the DIMM socket.
3. Install the DIMM module into the socket and press it firmly down until it is seated correctly. The socket latches are levered upwards and latch on to the edges of the DIMM.

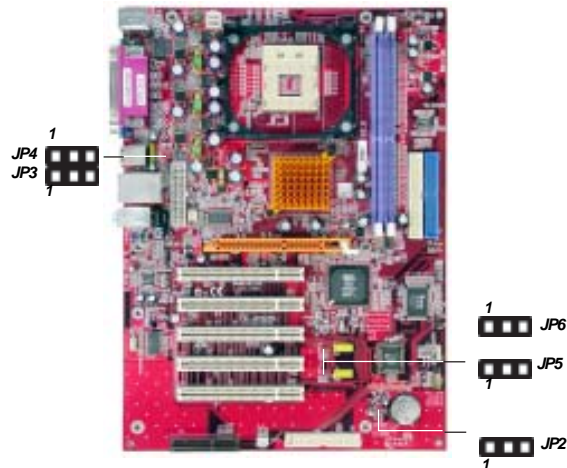
Chapter 2: Motherboard Installation

4. Install any remaining DIMM modules.



Jumper Settings

Connecting two pins with a jumper cap is SHORT; removing a jumper cap from these pins, OPEN.



JP2: Clear CMOS Jumper

Use this jumper to clear the contents of the CMOS memory. You may need to clear the CMOS memory if the settings in the Setup Utility are incorrect and prevent your mainboard from operating. To clear the CMOS memory, disconnect all the power cables from the motherboard and then move the jumper cap into the CLEAR setting for a few seconds.

| Function | Jumper |
|------------|----------------|
| Clear CMOS | Short Pins 1-2 |
| Normal | Short Pins 2-3 |

Motherboard User's Guide

Note: To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Optimal De-faults" and then "Save Changes and Exit".

JP3/JP4/JP5/JP6: USB Power Select Jumper

Use these jumpers to select the voltage for USB ports:

- **USBLAN1 Power Selector: JP3**

| Function | Jumper Setting |
|----------|----------------|
| VCC5V | Short pins 1-2 |
| SB5V | Short pins 2-3 |

- **USB1 Power Selector: JP4**

| Function | Jumper Setting |
|----------|----------------|
| VCC5V | Short pins 1-2 |
| SB5V | Short pins 2-3 |

- **USB2 Power Selector: JP5**

| Function | Jumper Setting |
|----------|----------------|
| VCC5V | Short pins 1-2 |
| SB5V | Short pins 2-3 |

- **USB3 Power Selector: JP6**

| Function | Jumper Setting |
|----------|----------------|
| VCC5V | Short pins 1-2 |
| SB5V | Short pins 2-3 |

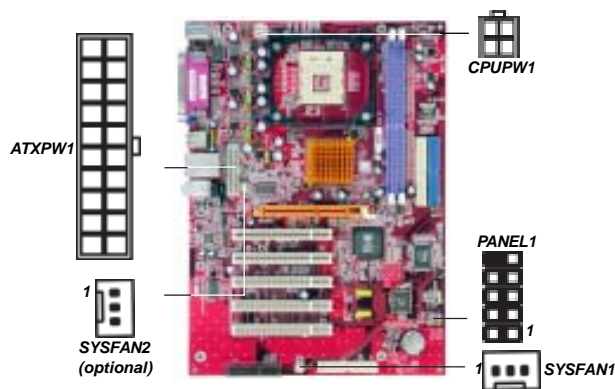
Note: Make sure the power supply provides enough SB5V voltage before selecting the SB5V function.

Chapter 2: Motherboard Installation

Install the Motherboard

Install the motherboard in a system chassis (case). The board is an ATX size motherboard. You can install this motherboard in an ATX case. Make sure your case has an I/O cover plate matching the ports on this motherboard.

Install the motherboard in a case. Follow the case manufacturer's instructions to use the hardware and internal mounting points on the chassis.



Connect the power connector from the power supply to the **ATXPW1** connector on the motherboard. The **CPUPW** is a +12V connector for CPU Vcore power.

If there is a cooling fan installed in the system chassis, connect the cable from the cooling fan to the **SYSFAN1/2** fan power connector on the motherboard (*SYSFAN2 is an optional connector*).

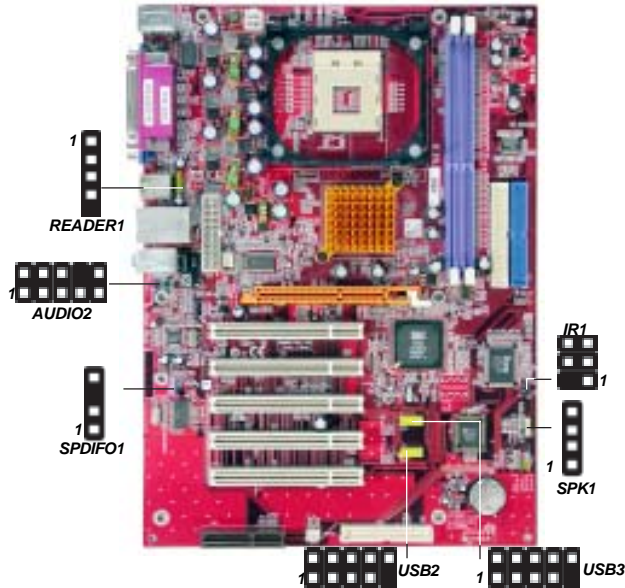
Connect the case switches and indicator LEDs to the **PANEL1** connector. Here is a list of the **PANEL1** pin assignments.

| Pin | Signal | Pin | Signal |
|-----|---------------|-----|---------------|
| 1 | HD_LED_P(+) | 2 | FP PWR/SLP(+) |
| 3 | HD_LED_N(-) | 4 | FP PWR/SLP(-) |
| 5 | RESET_SW_N(-) | 6 | POWER_SW_P(+) |
| 7 | RESET_SW_P(+) | 8 | POWER_SW_N(-) |
| 9 | RSVD_DNU | 10 | KEY |

Motherboard User's Guide

Connecting Optional Devices

Refer to the following for information on connecting the motherboard's optional devices:



SPK1: Speaker Header

Connect the cable from the PC speaker to the SPK1 header on the motherboard.

| Pin | Signal |
|-----|--------|
| 1 | SPKR |
| 2 | NC |
| 3 | GND |
| 4 | +5V |

AUDIO2: Front Panel Audio Header

This header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access.

| Pin | Signal | Pin | Signal |
|-----|--------------|-----|-----------|
| 1 | AUD_MIC | 2 | AUD_GND |
| 3 | AUD_MIC_BIAS | 4 | AUD_VCC |
| 5 | AUD_FPOUT_R | 6 | AUD_RET_R |
| 7 | HP_ON | 8 | KEY |
| 9 | AUD_FPOUT_L | 10 | AUD_RET_L |

USB2/USB3: Front panel USB Headers

The motherboard has USB ports installed on the rear edge I/O port array. Additionally, some computer cases have USB ports at the front of the case.

If you have this kind of case, use auxiliary USB headers USB2/USB3 to connect the front-mounted ports to the motherboard.

| Pin | Signal | Pin | Signal |
|-----|-----------------|-----|-----------------|
| 1 | VERG_FP_USBPWR0 | 2 | VERG_FP_USBPWR0 |
| 3 | USB_FP_P0(-) | 4 | USB_FP_P1(-) |
| 5 | USB_FP_P0(+) | 6 | USB_FP_P1(+) |
| 7 | GROUND | 8 | GROUND |
| 9 | KEY | 10 | USB_FP_OC0 |

1. Locate the USB2/USB3 header on the motherboard.
2. Plug the bracket cable onto the USB2/USB3 header.
3. Remove a slot cover from one of the expansion slots on the system chassis. Install an extension bracket in the opening. Secure the extension bracket to the chassis with a screw.

READER1: USB Card Reader Header (optional)

This header is for connecting internal USB card reader. You can use a card reader to read or transfer files and digital images to your computer.

| Pin | Signal |
|-----|--------|
| 1 | VCC |
| 2 | USB- |
| 3 | USB+ |
| 4 | GND |
| 5 | KEY |

Note1: The READER1 is shared with the lower USB port located beside the VGA port of the I/O back panel. Please see "I/O Ports" for more information.

Note2: Please check the pin assignment of the cable and the USB header on the motherboard. Make sure the pin assignment will match before plugging in. Any incorrect usage may cause unexpected damage to the system. The vendor won't be responsible for any incidental or consequential damage arising from the usage or misuse of the purchased product.

IR1: Infrared Header

The infrared port allows the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | NC | 2 | KEY |
| 3 | +5V | 4 | GND |
| 5 | IRTX | 6 | IRRX |

1. Locate the infrared port-**IR1** header on the motherboard.
2. If you are adding an infrared port, connect the ribbon cable from the port to the IR1 header and then secure the port to an appropriate place in your system chassis.

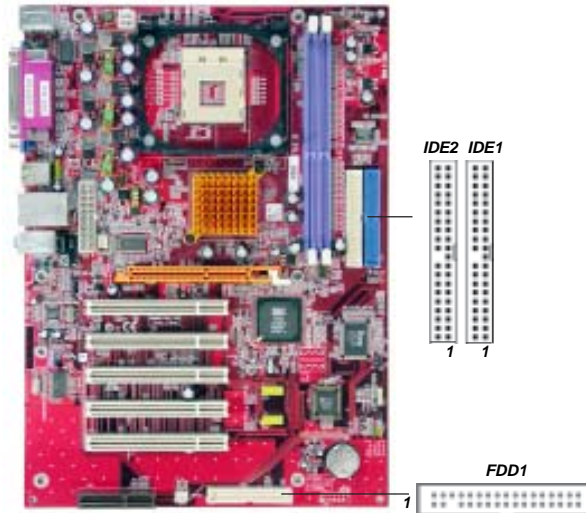
SPDIFO1: SPDIF Out Header

S/PDIF (Sony/Philips Digital Interface) is a standard audio transfer file format and allows the transfer of digital audio signals from one device to another without having to be converted first to an analog format. Via a specific audio cable, you can connect the SPDIFO1 header (S/PDIF output) on the motherboard to the S/PDIF digital input on the external speakers or AC Decode devices.

| Pin | Signal | Pin | Signal |
|-----|--------|-----|--------|
| 1 | SPDIF | 2 | +5VA |
| 3 | KEY | 4 | GND |

Install Other Devices

Install and connect any other devices in the system following the steps below.



Floppy Disk Drive

The motherboard ships with a floppy disk drive cable that can support one or two drives. Drives can be 3.5" or 5.25" wide, with capacities of 360K, 720K, 1.2MB, 1.44MB, or 2.88MB.

Install your drives and connect power from the system power supply. Use the cable provided to connect the drives to the floppy disk drive connector **FDD1**.

IDE Devices

IDE devices include hard disk drives, high-density diskette drives, and CD-ROM or DVD-ROM drives, among others.

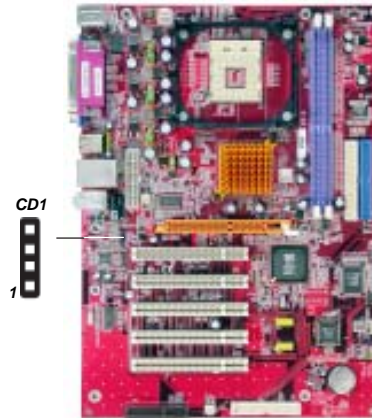
The motherboard ships with an IDE cable that can support one or two IDE devices. If you connect two devices to a single cable, you must configure one of the drives as Master and one of the drives as Slave. The documentation of the IDE device will tell you how to configure the device as a Master or Slave device. The Master device connects to the end of the cable.

Install the device(s) and connect power from the system power supply. Use the cable provided to connect the device(s) to the Primary IDE channel connector **IDE1** on the motherboard.

If you want to install more IDE devices, you can purchase a second IDE cable and connect one or two devices to the Secondary IDE channel connector **IDE2** on the motherboard. If you have two devices on the cable, one must be Master and one must be Slave.

Analog Audio Input Header

If you have installed a CD-ROM drive or DVD-ROM drive, you can connect the drive audio cable to the onboard sound system.

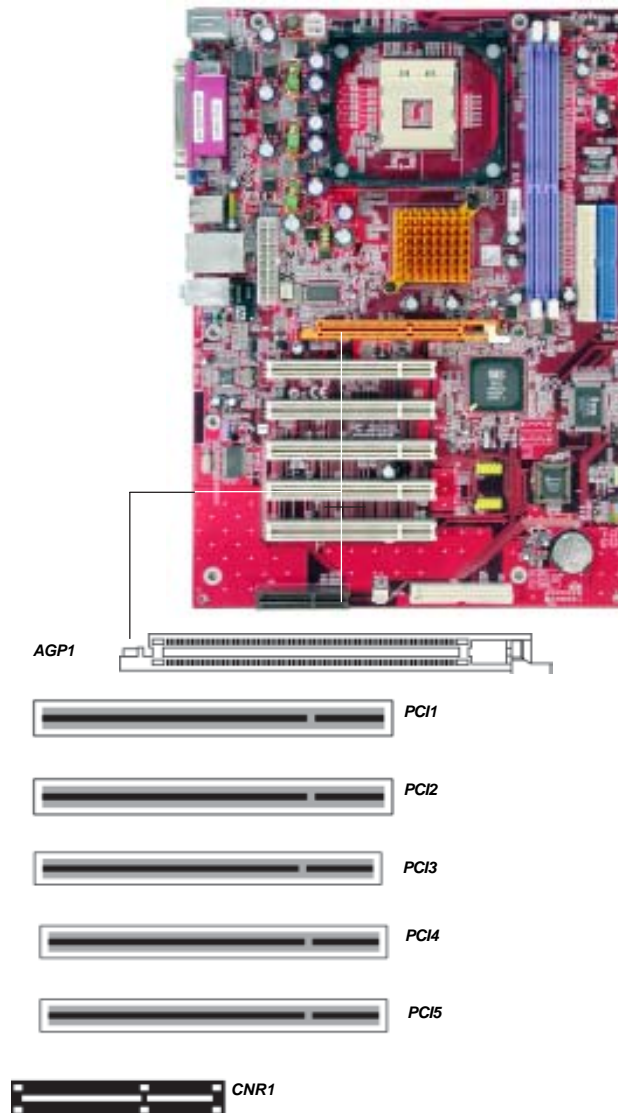


When you first start up your system, the BIOS should automatically detect your CD-ROM/DVD drive. If it doesn't, enter the Setup Utility and configure the CD-ROM/DVD drive that you have installed. On the motherboard, locate the 4-pin header **CD1**.

| Pin | Signal |
|-----|---------|
| 1 | CD IN L |
| 2 | GND |
| 3 | GND |
| 4 | CD IN R |

Expansion Slots

This motherboard has one AGP, CNR and five 32-bit PCI slots.



Motherboard User's Guide

Follow the steps below to install an AGP/CNR/PCI expansion card.

- 1 Locate the AGP, CNR or PCI slots on the motherboard.
- 2 Remove the blanking plate of the slot from the system chassis.
- 3 Install the edge connector of the expansion card into the slot. Ensure the edge connector is correctly seated in the slot.
- 4 Secure the metal bracket of the card to the system chassis with a screw.



8x AGP Slot

You can install a graphics adapter that supports the 8x AGP specification and has a 8x AGP edge connector in the AGP slot.

CNR Slot

You can install the CNR (Communications and Networking Riser) cards in this slot, including LAN, Modem, and Audio functions.

PCI Slots

You can install the 32-bit PCI interface expansion cards in the slots.

Chapter 3 BIOS Setup Utility

Introduction

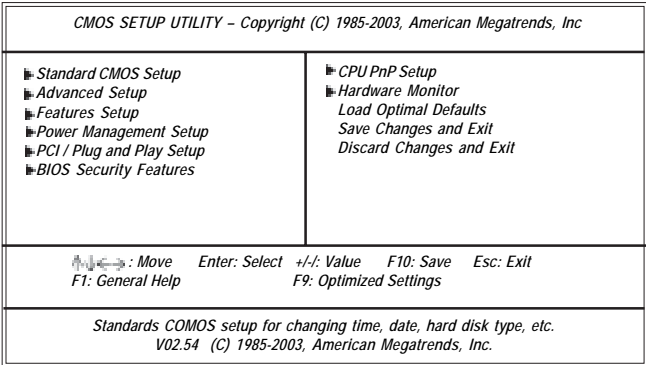
The BIOS Setup Utility records settings and information of your computer, such as date and time, the type of hardware installed, and various configuration settings. Your computer applies the information to initialize all the components when booting up and basic functions of coordination between system components.

If the Setup Utility configuration is incorrect, it may cause the system to malfunction. It can even stop your computer booting properly. If it happens, you can use the clear CMOS jumper to clear the CMOS memory which has stored the configuration information; or you can hold down the **Page Up** key while rebooting your computer. Holding down the **Page Up** key also clears the setup information.

You can run the setup utility and manually change the configuration. You might need to do this to configure some hardware installed in or connected to the motherboard, such as the CPU, system memory, disk drives, etc.

Running the Setup Utility

Every time you start your computer, a message appears on the screen before the operating system loading that prompts you to “Hit if you want to run SETUP”. Whenever you see this message, press the **Delete** key, and the Main menu page of the Setup Utility appears on your monitor.



Motherboard User's Guide

You can use cursor arrow keys to highlight anyone of options on the main menu page. Press **Enter** to select the highlighted option. Press the **Escape** key to leave the setup utility. Press +/- to modify the selected field's values.

Some options on the main menu page lead to tables of items with installed values that you can use cursor arrow keys to highlight one item, and press + and - keys to cycle through alternative values of that item. The other options on the main menu page lead to dialog boxes requiring your answer OK or Cancel by selecting **[OK]** or **[Cancel]**.

If you have already changed the setup utility, press **F10** to save those changes and exit the utility. Press **F1** to display a screen describing all key functions. Press **F9** to install the setup utility with a set of default values.

Standard CMOS Setup Page

This page displays a table of items defining basic information about your system.

| <i>CMOS SETUP UTILITY – Copyright (C) 1985-2003, American Megatrends, Inc. Standard CMOS Setup</i> | | |
|--|-----------------------|---|
| | | <i>Help Item</i> |
| <i>System Time</i> | <i>00:01:25</i> | |
| <i>System Date</i> | <i>Fri 10/24/2003</i> | |
| <input checked="" type="checkbox"/> <i>Primary IDE Master</i> | <i>Auto</i> | <i>User [Enter], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system time.</i> |
| <input checked="" type="checkbox"/> <i>Primary IDE Slave</i> | <i>Auto</i> | |
| <input checked="" type="checkbox"/> <i>Secondary IDE Master</i> | <i>Auto</i> | |
| <input checked="" type="checkbox"/> <i>Secondary IDE Slave</i> | <i>Auto</i> | |
| <i>Floppy A</i> | <i>1.44 MB 3 1/2"</i> | |
| <i>Floppy B</i> | <i>Disabled</i> | |

System Time & System Date

These items set up system date and time.

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

Your computer has one IDE channel and each channel can be installed with one or two devices (Master and Slave). In addition, this motherboard supports four SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.

Floppy A/B

These items set up size and capacity of the floppy diskette drive(s) installed in the system.

Advanced Setup Page

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.

| CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc. Advanced Setup | | |
|---|-------------------|---|
| Share Memory Size | 32MB | Help Item |
| Quick Boot | Enabled | |
| 1st Boot Device | PM-IC35L040AVV07 | Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system. |
| 2nd Boot Device | SS-Pioneer DVD-R0 | |
| 3rd Boot Device | 1st Floppy Drive | |
| Try Other Boot Device | Yes | |
| Bootup Num-Lock | On | |
| Boot To OS/2 > 64 MB | No | |
| Graphic Win Size | 64 MB | |
| DRAM CAS# Latency | By SPD | |
| Performance Mode Select | Enabled | |
| MA 1T/2T Select | Auto | |
| Hyper Threading Function | Disabled | |
| Auto Detect DIMM/PCI Clk | Enabled | |
| Spread Spectrum | Disabled | |
| DRAM Voltage Control | Auto | |
| CPU Vcore Voltage Adjustment | Auto | |
| Max CPUID Value Limit | Disabled | |

Share Memory Size

This item lets you allocate a portion of the main memory for the onboard VGA display application with three options of 16/32/64MB.

Quick Boot

If you enable this item, the system starts up more quickly by elimination of some of the power on test routines.

1st Boot Device/2nd Boot Device/3rd Boot Device

Use these items to determine the device order the computer uses to look for an operating system to load at start-up time.

Try Other Boot Device

If you enable this item, the system will also search for other boot devices if it fails to find an operating system from the first two locations.

BootUp Num-Lock

This item determines if the Num Lock key is active or inactive at system start-up time.

Boot To OS/2 > 64MB

Enable this item if you are booting the OS/2 operating system and you have more than 64MB of system memory installed.

Graphic Win Size

This item defines the size of aperture if you use a graphic adapter.

DRAM CAS# Latency

This item determines the operation of SDRAM memory CAS (column address strobe). It is recommended that you leave this item at the default value. The 2T setting requires faster memory that specifically supports this mode.

Performance Mode Select

You can enable this item to achieve a better performance; however, it is necessary to use a better DDR SDRAM going with this function.

MA 1T/2T Select

This item adjusts timing 1T/2T latency. We recommend you to leave this item at the default value.

Hyper Threading Function

You can set "Disabled" or "Enabled" to control HT CPU support in O.S. Set "Enabled" to test HT CPU function.

Auto detect DIMM/PCI Clock

When this item is enabled, BIOS will disable the clock signal of free DIMM/PCI slots.

Spread Spectrum

If you enable spread spectrum, it can significantly reduce the EMI (Electro-Magnetic Interference) generated by the system.

DRAM Voltage Control

Use this item to adjust the voltage of the DRAM memory.

CPU Vcore Voltage Adjustment

Use this item to adjust the Vcore voltage of the CPU.

Max CUID Value Limit

When this item is enabled, you can use Prescott CPU and LGA-775 CPU and there will be a normal NT4.0 installation; otherwise, the automatically restarting will occur while installing.

Features Setup Page

This page sets up some parameters for peripheral devices connected to the system.

| <i>CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc. Features Setup</i> | | |
|---|-----------------|--|
| <i>OnBoard Floppy Controller</i> | <i>Enabled</i> | <i>Help Item</i> |
| <i>Serial Port1 Address</i> | <i>3F8/IRQ4</i> | |
| <i>OnBoard IR Port</i> | <i>Disabled</i> | |
| <i>Parallel Port Address</i> | <i>378</i> | <i>Allows BIOS to Enable or Disable Floppy Controller.</i> |
| <i>Parallel Port Mode</i> | <i>ECP</i> | |
| <i>ECP Mode DMA Channel</i> | <i>DMA3</i> | |
| <i>Parallel Port IRQ</i> | <i>IRQ7</i> | |
| <i>OnBoard PCI IDE Controller</i> | <i>Both</i> | |
| <i>Audio Device</i> | <i>Enabled</i> | |
| <i>MODEM Device</i> | <i>Auto</i> | |
| <i>Ethernet Device</i> | <i>Enabled</i> | |
| <i>OnBoard USB Function</i> | <i>Enabled</i> | |
| <i>USB Function For DOS</i> | <i>Disabled</i> | |

OnBoard Floppy Controller

Use this item to enable or disable the onboard floppy disk drive interface.

OnBoard Serial Port

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

OnBoard IR Port

Use this item to enable or disable the onboard infrared port, and to assign a port address.

Onboard Parallel Port

This item enables or disables the onboard LPT1 parallel port, and assigns a port address. The Auto setting will detect and available address.

Parallel Port Mode

Use this item to set the parallel port mode. You can select Normal (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or EPP & ECP.

Parallel Port IRQ

Use this item to assign IRQ to the parallel port.

Parallel Port DMA

Use this item to assign a DMA channel to the parallel port.

OnBoard PCI IDE

Use this item to enable or disable the onboard PCI IDE channel.

Audio Device

This item enables or disables the AC'97 audio chip.

Motherboard User's Guide

MODEM Device

This item enables or disables the MC'97 modem chip.

Ethernet Device

This item enables or disables the onboard Ethernet LAN.

OnBoard USB Function

Enable this item if you plan to use the USB ports on this motherboard.

Power Management Setup Page

This page sets some parameters for system power management operation.

| <i>CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc.</i> | | |
|--|-----------------|---|
| <i>Power Management Setup</i> | | |
| <i>ACPI Aware O/S</i> | <i>Yes</i> | <i>Help Item</i> |
| <i>Power Management</i> | <i>Enabled</i> | |
| <i>Suspend Mode</i> | <i>S1</i> | <i>Yes / No</i> <i>ACPI support for</i> <i>Operating System.</i> <i>Yes: If OS supports ACPI.</i> <i>No: If OS does not support</i> <i>ACPI.</i> |
| <i>Suspend Time Out</i> | <i>Disabled</i> | |
| <i>Resume on RTC Alarm</i> | <i>Disabled</i> | |
| <i>Keyboard Power On</i> | <i>Disabled</i> | |
| <i>LAN/Ring Power On</i> | <i>Disabled</i> | |
| <i>S3/S4 USB Device Power On</i> | <i>Disabled</i> | |

ACPI Aware O/S

This item supports ACPI (Advanced Configuration and Power Management Interface). Use this item to enable or disable the ACPI feature.

Power Management

Use this item to enable or disable a power management scheme. If you enable power management, you can use this item below to set the power management operation. Both APM and ACPI are supported.

Suspend Mode

Use this item to define how your system suspends. In the default, S1(POS), the suspend mode is equivalent to a software power down. If you select S3 (STR), the suspend mode is a suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Suspend Time Out

This item sets up the timeout for Suspend mode in minutes. If the time selected passes without any system activity, the computer will enter power-saving Suspend mode.

Resume on RTC Alarm

The system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system's RTC (realtime clock). Use the items below this one to set the date and time of the

wake-up alarm. You must use an ATX power supply in order to use this feature.

Keyboard Power On

If you enable this item, the system can automatically resume by pressing any keys, hot key, power key on the keyboard, or typing in the password. You must use an ATX power supply in order to use this feature.

LAN/Ring Power On

The system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem/Ring, or traffic on the network adapter. You must use an ATX power supply in order to use this feature.

S3/S4 USB Device Power On

If you enable this item, only in S3/S4 mode, the system can automatically resume by using the USB device.

PCI / Plug and Play Setup Page

This page sets up some parameters for devices installed on the PCI bus and those utilizing the system plug and play capability.

| <i>CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc. PCI / Plug and Play Setup</i> | | |
|--|-----------------|--|
| <i>Primary Graphics Adapter</i> | <i>PCI</i> | <i>Help Item</i> |
| <i>Allocate IRQ to PCI VGA</i> | <i>Yes</i> | <i>Select which graphics controller to use as the primary boot device.</i> |
| <i>PCI IDE BusMaster</i> | <i>Disabled</i> | |

Primary Graphics Adapter

This item indicates if the primary graphics adapter uses the PCI or the AGP bus. The default PCI setting still lets the onboard display work and allows the use of a second display card installed in an AGP slot.

Allocate IRQ to PCI VGA

If this item is enabled, an IRQ will be assigned to the PCI VGA graphics system. You set this value to No to free up an IRQ.

PCI IDE BusMaster

This item enables or disables the DMA under DOS mode. We recommend you to leave this item at the default value.

Motherboard User's Guide

BIOS Security Features Setup Page

This page helps you install or change a password.

| CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc. BIOS Security Features Setup | |
|---|---------------------------------|
| Security Settings | Help Item |
| Supervisor Password : <i>Not Installed</i> Change Supervisor Password Press Enter | Install or Change the password. |

Supervisor Password

This item indicates whether a supervisor password has been set. If the password has been installed, *Installed* displays. If not, *Not Installed* displays.

Change Supervisor Password

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

CPU PnP Setup Page

This page helps you manually configure the mainboard for the CPU. The system will automatically detect the type of installed CPU and make the appropriate adjustments to the items on this page.

| CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc. CPU PnP Setup | |
|--|------------------|
| Manufacturer: Intel | Help Item |
| Auto Detect CPU and DRAM FREQU Enabled | |
| CPU Frequency Setting 133 | |
| DRAM Frequency 200MHz | |

Manufacturer

These items show the brand of the CPU installed in your system.

Auto Detect CPU and DRAM FREQU

When this item is enabled, it automatically detects and shows the frequency of the CPU and DRAM memory installed in your system; when disabled, it can adjust the frequency of the CPU and DRAM memory.

CPU Frequency

This item shows the frequency of the CPU installed in your system.

DRAM Frequency

This item shows the frequency of the DRAM in your system.

Hardware Monitor Page

This page sets up some parameters for the hardware monitoring function of this motherboard.

| <i>CMOS SETUP UTILITY - Copyright (C) 1985-2003, American Megatrends, Inc.</i> | |
|--|---------------------|
| <i>Hardware Monitor Setup</i> | |
| <i>***System Hardware Monitor***</i> | <i>Help Item</i> |
| <i>Vcore</i> | <i>1.504 V</i> |
| <i>Vdimm</i> | <i>2.496 V</i> |
| <i>Vvdd</i> | <i>1.792 V</i> |
| <i>Vcc5V</i> | <i>5.107 V</i> |
| <i>SB3V</i> | <i>3.296 V</i> |
| <i>SYSTEM FAN1 Speed</i> | <i>0 RPM</i> |
| <i>SYSTEM FAN2 Speed</i> | <i>0 RPM</i> |
| <i>CPU FAN Speed</i> | <i>4560 RPM</i> |
| <i>SYSTEM Temperature</i> | <i>32° C/89° F</i> |
| <i>CPU Temperature</i> | <i>41° C/105° F</i> |

CPU/System Temperature

These items display CPU and system temperature measurement.

FANS & Voltage Measurements

These items indicate cooling fan speeds in RPM and the various system voltage measurements.

Load Optimal Defaults

This option opens a dialog box to ask if you are sure to install optimized defaults or not. You select [OK], and then press <Enter>, the Setup Utility loads all default values; or select [Cancel], and then press <Enter>, the Setup Utility does not load default values.

Save Changes and Exit

Highlight this item and press <Enter> to save the changes that you have made in the Setup Utility configuration. When the Save Changes and Exit dialog box appears, select [OK] to save and exit, or select [Cancel] to return to the main menu.

Discard Changes and Exit

Highlight this item and press <Enter> to discard any changes that you have made in the Setup Utility and exit the Setup Utility. When the Discard Changes and Exit dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

Note: If you have made settings that you do not want to save, use the "Discard Changes and Exit" item and select [OK] to discard any changes you have made.

Chapter 4 Software & Applications

Introduction

This chapter describes the contents of the support CD-ROM that comes with the motherboard package.

The support CD-ROM contains all useful software, necessary drivers and utility programs to properly run our products. More program information is available in a README file, located in the same directory as the software.

To run the support CD, simply insert the CD into your CD-ROM drive. An Auto Setup screen automatically pops out, and then you can go on the auto-installing or manual installation depending on your operating system.

If your operating system is Windows 2000/XP, it will automatically install all the drivers and utilities for your motherboard; if Windows NT or manual installation, please follow the instructions described as the Installing under Windows NT or Manual Installation section.

Installing Support Software

- 1 Insert the support CD-ROM disc in the CD-ROM drive.
- 2 When you insert the CD-ROM disc in the system CD-ROM drive, the CD automatically displays an Auto Setup screen.
- 3 The screen displays three buttons of **Setup**, **Browse CD** and **Exit** on the right side, and three others **Setup**, **Application** and **ReadMe** at the bottom. Please see the following illustration.



The **Setup** button runs the software auto-installing program as explained in next section.

Motherboard User's Guide

The **Browse CD** button is a standard Windows command that you can check the contents of the disc with the Windows 98 file browsing interface.

The **Exit** button closes the Auto Setup window. To run the program again, reinsert the CD-ROM disc in the drive; or click the CD-ROM driver from the Windows Explorer, and click the Setup icon.

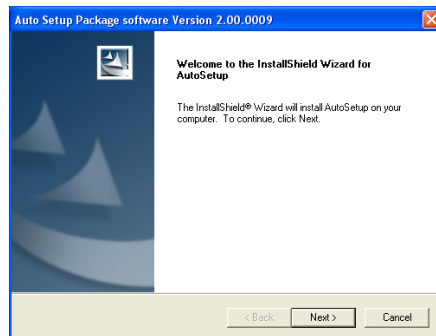
The **Application** button brings up a software menu. It shows the bundled software that this mainboard supports.

The **ReadMe** brings you to the Install Path where you can find out path names of software driver.

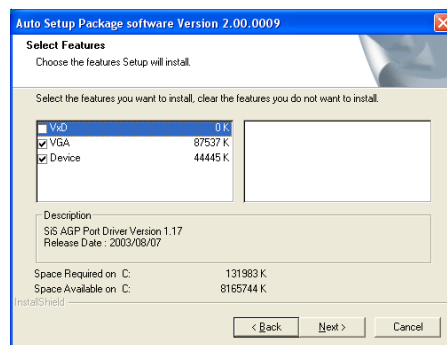
Auto-Installing under Windows 2000/XP

If you are under Windows 2000/XP, please click the **Setup** button to run the software auto-installing program while the Auto Setup screen pops out after inserting the support CD-ROM:

- 1 The installation program loads and displays the following screen. Click the **Next** button.



- 2 Select the items that you want to setup by clicking on it (the default options are recommended). Click the **Next** button to proceed.



- 3 The support software will automatically install.

Once any of the installation procedures start, software is automatically installed in sequence. You need to follow the onscreen instructions, confirm commands and allow the computer to restart as few times as needed to complete installing whatever software you selected. When the process is finished, all the support software will be installed and start working.

Installing under Windows NT or Manual Installation

If you are under Windows NT, the auto-installing program doesn't work out; or you have to do the manual installation, please follow this procedure while the Auto Setup screen pops out after inserting the support CD-ROM:

- 1 Click the **ReadMe** to bring up a screen, and then click the Install Path at the bottom of the screen.
- 2 Find out your mainboard model name and click on it to obtain its correct driver directory.
- 3 Install each software in accordance with the corresponding driver path.

Bundled Software Installation

All bundled software available on the CD-ROM is for users' convenience. You can install bundled software as follows:

- 1 Click the **Application** button while the Auto Setup screen pops out after inserting the support CD-ROM.
- 2 A software menu appears. Click the software you want to install.
- 3 Follow onscreen instructions to install the software program step by step until finished.