Certificate HK07/01191.00

The management system of

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

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No.20 & No.26 (Except 1F, 2F&3F) Free Trade Zone, Shatoujiao, Shenzhen City, Guangdong Province, China

has been assessed and certified as meeting the requirements of

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For the following activities

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

Further clarifications regarding the scope of this certificate and the applicability of ISO 9001:2000 requirements may be obtained by consulting the organization

This certificate is valid from 16 March 2007 until 15 March 2010
Issue 1. Certified with SGS since March 2007

Multiple certificates have been issued for this scope
The main certificate is numbered HK07/01191.00

Authorised by

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# ISO14001 CERTIFICATE

Certificate No.: 061-04-E1-0065-R1-L

We hereby certify that

**ECS MANUFACTURING (SHANZHEN) CO., LTD.**

by reason of its

**Environmental Management System**

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**ISO14001:1996**

The Environmental Management System applies in the following area:

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Date of issue: **28th Sept. 2004**

Date of expiry: **27th Sept. 2007**

Signed by:

**SHENZHEN SOUTHERN CERTIFICATION CO., LTD.**

# Preface

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Version 1.0

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- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto 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

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## Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation

## Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

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

## About the Manual

The manual consists of the following:

**Chapter 1**

**Introducing the Motherboard**

Describes features of the motherboard.

Go to ⇨ page 1

**Chapter 2**

**Installing the Motherboard**

Describes installation of motherboard components.

Go to ⇨ page 7

**Chapter 3**

**Using BIOS**

Provides information on using the BIOS Setup Utility.

Go to ⇨ page 27

**Chapter 4**

**Using the Motherboard Software**

Describes the motherboard software

Go to ⇨ page 43

**Chapter 5**

**SIS968 SATA RAID Setup Guide**

Provides information about SATA RAID Setup

Go to ⇨ page 47

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# Chapter 1
# *Introducing the Motherboard*

## Introduction

Thank you for choosing the 671T-M motherboard. This motherboard is a high performance, enhanced function motherboard that supports the LGA775 socket Intel Core™ 2 Duo/Pentium D/Pentium 4/Celeron D processors for high-end business or personal desktop markets.

The motherboard incorporates the SiS671 Northbridge (NB) and SiS968 Southbridge (SB) chipsets. The SiS671 Northbridge chipset features the AGTL & AGTL+ compliant bus driver technology with integrated on-die termination to support Intel Pentium 4 series processors with FSB 1066/800/533 MHz. The memory controller supports DDR2 memory DIMM frequencies of 667/533/400. It supports two DDR2 Sockets with up to maximum memory of 4 GB. High resolution graphics via one PCI Express slot, intended for Graphics Interface, is fully compliant to the PCI Express Specification revision 1.1.

The SiS968 Southbridge supports Hi-Precision Event Timer (HPET) for Microsoft Windows with multiple DMA bus architecture that supports isochroous request and continuous packet transmission. It implements an EHCI compliant interface that provides 480Mb/s bandwidth for eight USB 2.0 ports. One onboard IDE connector supports two IDE devices in Ultra DMA 133/100/66/33. The Southbridge integrates a Serial ATA host controller, supporting two SATA ports with maximum transfer rate up to 3.0 Gb/s each.

This motherboard is equipped with advanced full set of I/O ports in the rear panel, including PS/2 mouse and keyboard connectors, COM1, LPT1 (optional), VGA, four USB ports, one optional 1394a port, one optional LAN port, and audio jacks for microphone, line-in and 6/8-channel (optional) line-out.

# Feature

## Processor

This motherboard uses an LGA775 type of Intel Core™ 2 Duo/Pentium D/Pentium 4/ Celeron D that carries the following features:

- Accommodates Intel Core™ 2 Duo/Pentium D/Pentium 4/Celeron D processors
- Supports a system bus (FSB) of 1066/800/533 MHz
- Supports “Hyper-Threading” technology CPU

“Hyper-Threading” technology enables the operating system into thinking it’s hooked up to two processors, allowing two threads to be run in parallel, both on separate “logical” processors within the same physical processor.

## Chipset

The SiS671 Northbridge (NB) and SiS968 Southbridge (SB) chipset is based on an innovative and scalable architecture with proven reliability and performance.

***SiS671 (NB)***

- Supports 12 outstanding transactions and out-of-order completion
- Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS968 MuTIOL 1G media I/O with bi-directional 16-bit data bus to perform 1GB/s bandwidth in 133 MHz x 4 mode
- Integrates Host-to-PCI Express Bridge fully compliant with PCI Express Specification 1.1
- Supports 256-Mb, 512-Mb and 1-Gb DDR2 technologies for x8 and x16 devices
- Supports High Performance & High Quality 3D/2D Graphics Accelerator

***SiS968 (SB)***

- Integrated Multi-threaded I/O link Ensures Concurrency of Upstream/down Stream Data Transfer with 1.2 GB/s Bandwidth
- Compliant with PCI 2.3 specificaiton supporting up to 6 PCI masters
- Compliant with PCI Express 1.1
- Integrated SATA 3.0 Gb/s Host Controller
- Integrated USB 2.0 Host Controller supporting up to eight USB 2.0 ports
- Supports single IDE Master/Slave Controller supports Ultra DMA 133/100/66/33

## Memory

- Supports DDR2 667/533/400 DDR SDRAM memory module
- Accommodates two unbuffered DIMMs
- Up to 2 GB per DIMM with maximum memory size up to 4 GB

## Onboard LAN (Optional)

The onboard LAN provides either of the following LAN with following features:

| |
|---|
| • Integrated Fast Ethernet Controller for PCI Express™ Applications<br>• Integrated 10/100 transceiver<br>• Wake-on-LAN and remote wake-up support |
| • 10BASE-T/100BASE-TX IEEE 802.3u fast Ethernet transceiver<br>• Low-power mode<br>• MII and 7-wire serial interface |
| • Integrated Gigabit Ethernet Controller for PCI Express™ Applications<br>• Integrated 10/100/1000 transceiver<br>• Wake-on-LAN and remote wake-up support |

## Audio

This motherboard may support either of the following Audio chipsets:

| |
|---|
| • 5.1 Channel High Definition Audio Codec<br>• ADCs support 44.1k/48k/96k sample rate<br>• Meets Microsoft WHQL/WLP 3.0x audio requirements<br>• Direct Sound 3D™ compatible |
| • 7.1+2 channel High Definition Audio Codec<br>• All DACs Support 192k/96k/48k/44.1kHz DAC sample rate<br>• Software selectable 2.5V/3.75V VREFOUT<br>• Meets Microsoft WHQL/WLP 2.x audio requirements<br>• Direct Sound 3D™ compatible |

## Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express slot for Graphic Interface
- One PCI Express x1 slot
- Two 32-bit PCI v2.3 compliant slots
- One 40-pin IDE connector that support two IDE devices
- One floppy disk drive interface
- Two 7-pin SATA connector

This motherboard supports UltraDMA bus mastering with transfer rates of 133/100/66 MB/s.

## Integrated I/O

The motherboard has a full set of I/O ports and connectors:

- Two PS/2 ports for mouse and keyboard
- One serial port
- One parallel port (optional)
- One VGA port
- Four USB ports
- One 1394a port (optional)
- One LAN port (optional)
- Audio jacks for microphone, line-in and 6/8-channel (optional) line-out

## BIOS Firmware

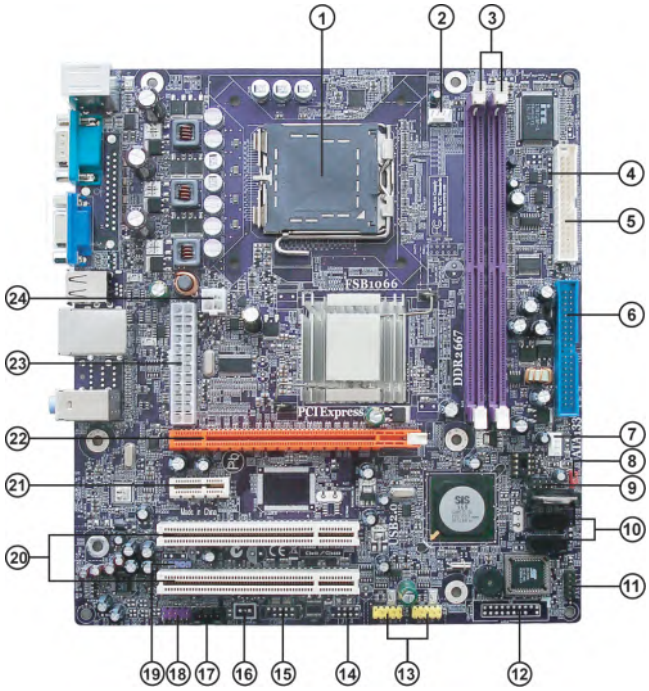
This motherboard uses AMI BIOS that enables users to configure many system features including the following:

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

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

*Some hardware specifications and software items are subject to change without prior notice.*

## Motherboard Components



### *Table of Motherboard Components*

| LABEL | COMPONENTS |
|---|---|
| 1. CPU Socket | LGA775 socket for Intel Core™2 Duo/Pentium D/Pentium 4/Celeron D CPUs |
| 2. CPU_FAN1 | CPU cooling fan connector |
| 3. DIMM1~2 | 240-pin DDR2 SDRAM slots |
| 4. IR2* | Infrared header |
| 5. FDD1 | Floppy disk drive connector |
| 6. IDE1 | Primary IDE connector |
| 7. SYS_FAN1 | System cooling fan connector |
| 8. CLR_CMOS1 | Clear CMOS jumper |
| 9. SPI_C | SPI_ROM header |
| 10. SATA1~2 | Serial ATA connectors |
| 11. PANEL1 | Front panel switch/LED header |
| 12. JLPC1* | Low pin count header |
| 13. USB3~4 | Front Panel USB headers |
| 14. 1394* | IEEE 1394a header |
| 15. COM2* | Onboard Serial port header |
| 16. WOL1* | Wake On LAN connector |
| 17. CD_IN1 | Analog audio input connector |
| 18. F_AUDIO | Front panel audio header |
| 19. SPDIFO1 | SPDIF out header |
| 20. PCI1~2 | 32-bit add-on card slots |
| 21. PCIE1 | PCI Express x1 slot |
| 22. PCIEX1 | PCI Express slot for graphics interface |
| 23. ATX_POWER1 | Standard 24-pin ATX power connector |
| 24. ATX12V1 | Auxiliary 4-pin power connector |

"*" stands for optional components.

This concludes Chapter 1. The next chapter explains how to install the motherboard.

# Chapter 2
# *Installing the Motherboard*

## Safety Precautions

- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in the static-proof bags they came in
- Hold all circuit boards by the edges. Do not bend circuit boards

## Choosing a Computer Case

There are many types of computer cases on the market. The motherboard complies with the specifications for the Micro ATX system case. First, some features on the motherboard are implemented by cabling connectors on the motherboard to indicators and switches on the system case. Make sure that your case supports all the features required. Secondly, this motherboard supports one or two floppy diskette drives and two enhanced IDE drives. Make sure that your case has sufficient power and space for all drives that you intend to install.

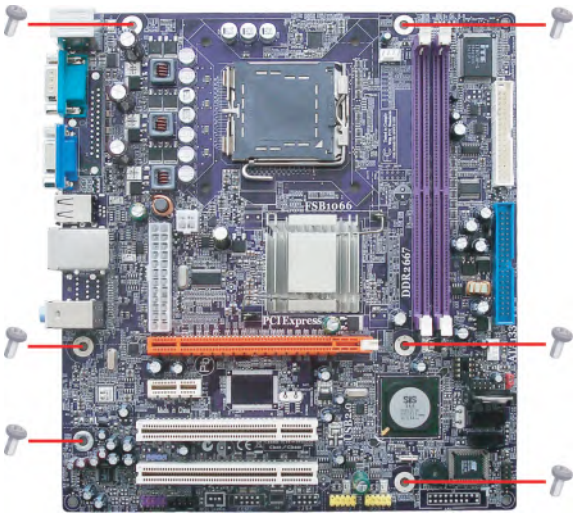
Most cases have a choice of I/O templates in the rear panel. Make sure that the I/O template in the case matches the I/O ports installed on the rear edge of the motherboard.

This motherboard carries a Micro ATX form factor of 244 x 220 mm. Choose a case that accommodates this form factor.

## Installing the Motherboard in a Case

Refer to the following illustration and instructions for installing the motherboard in a case. Most system cases have mounting brackets installed in the case, which correspond the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

Ensure that your case has an I/O template that supports the I/O ports and expansion slots on your motherboard.




*Do not over-tighten the screws as this can stress the motherboard.*

## Checking Jumper Settings

This section explains how to set jumpers for correct configuration of the motherboard.

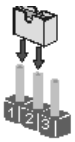
### *Setting Jumpers*

Use the motherboard jumpers to set system configuration options. Jumpers with more than one pin are numbered. When setting the jumpers, ensure that the jumper caps are placed on the correct pins.

The illustrations show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.

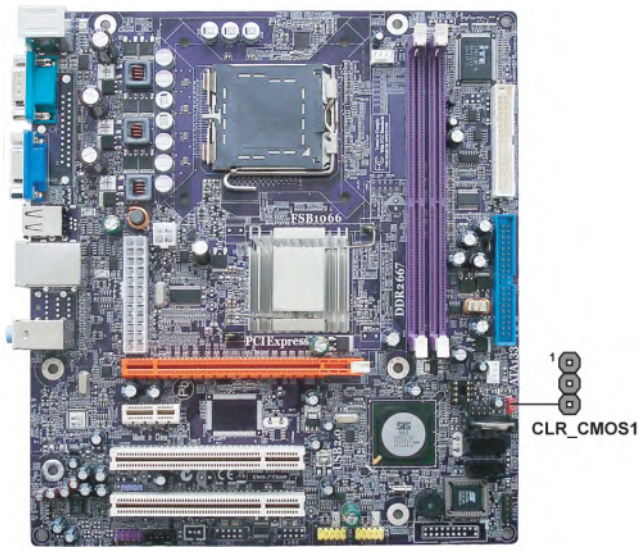
SHORT OPEN

This illustration shows a 3-pin jumper. Pins 1 and 2 are SHORT



### *Checking Jumper Settings*

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.



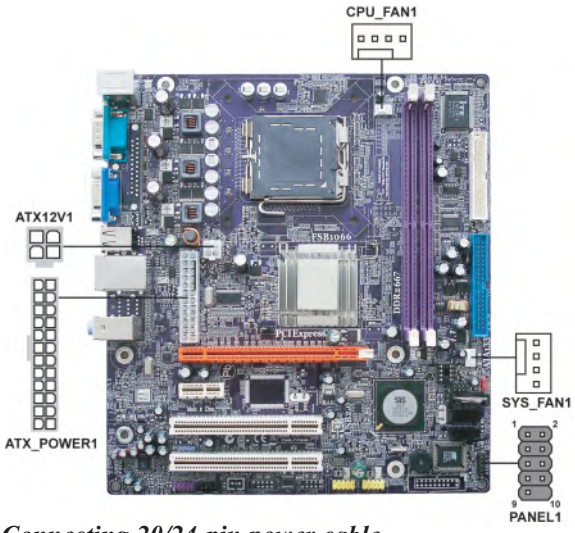

### *Jumper Settings*

| Jumper | Type | Description | Setting (default) | |
|---|---|---|---|---|
| **CLR_CMOS1** | 3-pin | CLEAR CMOS | 1-2: NORMAL<br>2-3: CLEAR<br>Before clearing the CMOS, make sure to turn off the system. | CLR_CMOS1  1 |

## Connecting Case Components

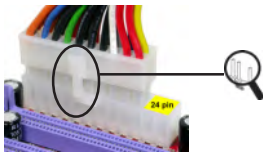
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

1 Connect the CPU cooling fan cable to **CPU_FAN1**.
2 Connect the system cooling fan connector to **SYS_FAN1**.
3 Connect the case switches and indicator LEDs to the **PANEL1**.
4 Connect the standard power supply connector to **ATX_POWER1**.
5 Connect the auxiliary case power supply connector to **ATX12V1**.



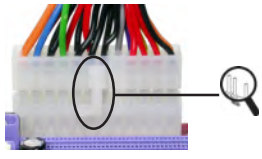

### *Connecting 20/24-pin power cable*

Users please note that the 20-pin and 24-pin power cables can both be connected to the ATX1 connector. With the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the ATX1 connector. However, using 20-pin power cable may cause the system to become unbootable or unstable because of insufficient electricity. A minimum power of 300W is recommended for a fully-



*20-pin power cable*

With ATX v1.x power supply, users please note that when installing 20-pin power cable, the latche of power cable falls on the left side of the ATX1 connector latch, just as the pic-



*24-pin power cable*

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX1

### CPU_FAN1/SYS_FAN1: FAN Power Connectors

| Pin | Signal Name | Function |
|---|---|---|
| 1 | GND | Ground |
| 2 | +12V | Power +12V |
| 3 | Sense | Sensor |
| 4 | Control | FAN Control Signal |

*Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.*

### ATX12V1: ATX 12V Power Connector

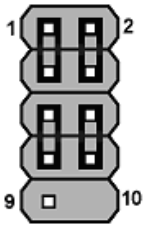
| Pin | Signal Name |
|---|---|
| 1 | Ground |
| 2 | Ground |
| 3 | +12V |
| 4 | +12V |

### ATX_POWER1: ATX 24-pin Power Connector

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | +3.3V | 13 | +3.3V |
| 2 | +3.3V | 14 | -12V |
| 3 | Ground | 15 | Ground |
| 4 | +5V | 16 | PS_ON |
| 5 | Ground | 17 | Ground |
| 6 | +5V | 18 | Ground |
| 7 | Ground | 19 | Ground |
| 8 | PWRGD | 20 | -5V |
| 9 | +5VSB | 21 | +5V |
| 10 | +12V | 22 | +5V |
| 11 | +12V | 23 | +5V |
| 12 | +3.3V | 24 | Ground |

### *Front Panel Connector*

The front panel connector (PANEL1) provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases. Refer to the table below for information:




PANEL1

| Pin | Signal | Function | Pin | Signal | Function |
|---|---|---|---|---|---|
| 1 | HD_LED_P | Hard disk LED+ | 2 | FP PWR/SLP | *MSG LED+ |
| 3 | HD_LED_N | Hard disk LED- | 4 | FP PWR/SLP | *MSG LED- |
| 5 | RST_SW_N | Reset Switch | 6 | PWR_SW_P | Power Switch |
| 7 | RST_SW_P | Reset Switch | 8 | PWR_SW_N | Power Switch |
| 9 | RSVD | Reserved | 10 | Key | No pin |

** MSG LED (dual color or single color)*

#### *Hard Drive Activity LED*

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

#### *Power/Sleep/Message waiting LED*

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

#### *Reset Switch*

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

#### *Power Switch*

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal debounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

# Installing Hardware

## *Installing the Processor*

*Caution: When installing a CPU heatsink and cooling fan make sure that you DO NOT scratch the motherboard or any of the surface-mount resistors with the clip of the cooling fan. If the clip of the cooling fan scrapes across the motherboard, you may cause serious damage to the motherboard or its components.*

*On most motherboards, there are small surface-mount resistors near the processor socket, which may be damaged if the cooling fan is carelessly installed.*

*Avoid using cooling fans with sharp edges on the fan casing and the clips. Also, install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.*

### Before installing the Processor

This motherboard automatically determines the CPU clock frequency and system bus frequency for the processor. You may be able to change these settings by making changes to jumpers on the motherboard, or changing the settings in the system Setup Utility. We strongly recommend that you do not over-clock processors or other components to run faster than their rated speed.

*Warning: Over-clocking components can adversely affect the reliability of the system and introduce errors into your system. Over-clocking can permanently damage the motherboard by generating excess heat in components that are run beyond the rated limits.*

This motherboard has a LGA775 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

The following illustration shows CPU installation components.

A. Read and follow the instructions shown on the sticker on the CPU cap.


B. Unload the cap
- Use thumb & forefinger to hold the lifting tab of the cap.
- Lift the cap up and remove the cap completely from the socket.

C. Open the load plate
- Use thumb & forefinger to hold the hook of the lever, pushing down and pulling aside unlock it.
- Lift up the lever.
- Use thumb to open the load plate. Be careful not to touch the contacts.

D. Install the CPU on the socket
- Orientate CPU package to the socket. Make sure you match triangle marker to pin 1 location.

E. Close the load plate
- Slightly push down the load plate onto the tongue side, and hook the lever.
- CPU is locked completely.

F. Apply thermal grease on top of the CPU.

G. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.

H. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detail installation procedure.

1. *To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heatsink installation procedures may vary with the type of CPU fan/heatsink sup plied. The form and size of fan/heatsink may also vary.*
2. *DO NOT remove the CPU cap from the socket before installing a CPU.*
3. *Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with thecap on the LGA775 socket.*

### *Installing Memory Modules*

This motherboard accomodates two memory modules. It can support two 240-pin unbuffered DIMMs, DDR2 667/533/400. The total memory capacity is 4 GB.

**DDR SDRAM memory module table**

| Memory module | Memory Bus |
|---|---|
| *DDR2 400* | *200 MHz* |
| *DDR2 533* | *266 MHz* |
| *DDR2 667* | *333 MHz* |

You must install at least one module in any of the two slots. Each module can be installed with 2 GB of memory; total memory capacity is 4 GB.


*Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts.*

*Always wear a grounding strap when you handle the modules.*

## Installation Procedure

Refer to the following to install the memory modules.

1. This motherboard supports unbuffered DDR2 SDRAM only.
2. Push the latches on each side of the DIMM slot down.
3. Align the memory module with the slot. The DIMM slots are keyed with notches and the DIMMs are keyed with cutouts so that they can only be installed correctly.
4. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
5. Install the DIMM module into the slot and press it firmly down until it seats correctly. The slot latches are levered upwards and latch on to the edges of the DIMM.
6. Install any remaining DIMM modules.

### Table A: DDR2 (memory module) QVL (Qualified Vendor List)

The following DDR2 667/533/400 memory modules have been tested and qualified for use with this motherboard.

| Type | Size | Vendor | Module Name |
|---|---|---|---|
| DDR2 400 | 256 MB | SAMSUNG | K4T5163QB-ZCCC |
| | 512 MB | TwinMos | K4T51083QB-GCCC |
| DDR2 533 | 512 MB | CORSAIR | VC256MB533D2 4PB11D9CHM |
| | | CORSAIR | AET94F-370 |
| | | ELPIDA | E2508AA-DF-E |
| | | ELPIDA | E2508AA-T7F-E |
| | | Hynix | HY5PS121621 |
| | | Kingston | HYB18T512260AF-3.7 |
| | | Kingston | E5116AF-5C-E |
| | | Kingmax | HY5PS121621 |
| | | Nanya | NT5TU32M16AG-37B |
| | | Ramaxel | E5116AF-5C-E |
| | | Ramaxel | 5PB42 D9DCD |
| | | TwinMOS | 8D22IB-ED |
| | 512 MB | AENEON | AET93F370A98Z |
| | | AENEON | AET94F370A98U |
| | | A-DATA | M2GXX2F3H4140A1B0E |
| | | Auspis | DR2504-206IK |
| | | CORSAIR | K4T510830B-GCD5 |
| | | G.SKILL | G76 GT |
| | | Infineon | HY818T512800AF373346778 |
| | | Kingston | HY5PS12821 |
| | | Kingston | HYB18T512800AF37 |
| | | Kingston | NT5TU64M8AE-37B |
| | | PQI | PQB2648D38R |
| | | Ramaxel | E5108AG-5C-E |
| | | Ramaxel | E5116AF-5C-E |
| | | Ramaxel | 5PB42 D9DCD |
| | | TwinMOS | E5108AB-5C-E |
| | 1 GB | APACER | E5108AB-5C-E |
| | | APACER | K4T51083QC |
| | | GEIL | A016E2864T2AG8AKT5H120001 |
| | | Hynix | HY5P512821 F-C4 |
| | | Infineon | HY818T512800AF3733344539 |
| | | Kingmax | KKEA88E4AAKKG-37 |
| | | PQI | PQB2648D38R |
| | | UMAX | U2S12D30TP-5C |

| Type | Size | Vendor | Module Name |
|---|---|---|---|
| DDR2 667 | 256 MB | Infineon | HYS64T325001HU-3-A |
| | | Ramaxel | 5NB31 D9DCG |
| | 512 MB | A-DATA | AD29608A88-3EG |
| | | A-DATA | Eipida E5108AE-6E-E |
| | | CORSAIR | VALUESELECT 32M8CEC |
| | | CORSAIR | 64M8CFEPS1000545 |
| | | CORSAIR | 64M8CFEPS1000547 |
| | | CORSAIR | K4T5108QC |
| | | ELIXIR | N2TU51280BE-3C |
| | | GEIL | GL2L64MO88BA18W |
| | | GEIL | GL2L64M088BA30AW |
| | | Infinity | 0547W64M8 |
| | | PQI | E5108AE-6E-E |
| | | Ramaxel | 6AD11 D9GCT |
| | | SAMSUNG | K4T56083QF-ZCE6 |
| | | SAMSUNG | K4T51083QC |
| | | SyncMAX | 04400WB01 R050008A |
| | | Transcend | J12Q3AB-6 |
| | | Transcend | K4T51083QC |
| | | Transcend | K4T5108AE-6E-E |
| | | TwinMOS | TMM6208G8M30B |
| | 1 GB | APACER | AM4B5708GQJS7E0631F |
| | | APACER | AM4B5708GEWS7E-0637F |
| | | Infineon | HYB18T512800AF3S |
| | | Kingston | D6408TE8EWL3 |
| | | PQI | PQC2648D3R |
| | | SAMSUNG | K4T51083QC |
| | | TwinMOS | TMM6208G8M30A |
| | | Transcend | D6408TE8EWL3 |
| | | UMAX | U2S12D30TP-6E |

## *Installing a Hard Dish Drive/CD-ROM/SATA Hard Drive*

This section describes how to install IDE devices such as a hard disk drive and a CD-ROM drive.

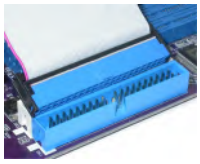
### About IDE Devices

Your motherboard has one IDE channel. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.

*You must orient the cable connector so that the pin1 (color) edge of the cable correspoinds to the pin 1 of the I/O port connector.*

#### IDE1: IDE Connector

This motherboard supports two high data transfer SATA ports with each runs up to 3.0 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard dives on the SATA ports.



IDE devices enclose jumpers or switches used to set the IDE device as MASTER or SLAVE. Refer to the IDE device user's manual. Installing two IDE devices on one cable, ensure that one device is set to MASTER and the other device is set to SLAVE. The documentation of your IDE device explains how to do this.

### About SATA Connectors

Your motherboard features two SATA connectors supporting a total of two drives. SATA, or Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

### Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with an SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

**SATA cable** (optional)

**SATA power cable** (optional)

Refer to the illustration below for proper installation:

1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.


*This motherboard does not support the "Hot-Plug" function.*

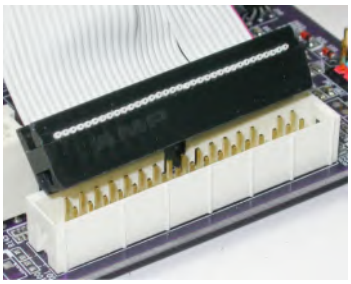
## *Installing a Floppy Diskette Drive*

The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch drive and another type of connector for a 3.5-inch drive.

*You must orient the cable connector so that the pin 1 (color) edge of the cable corresponds to the pin 1 of the I/O port connector.*

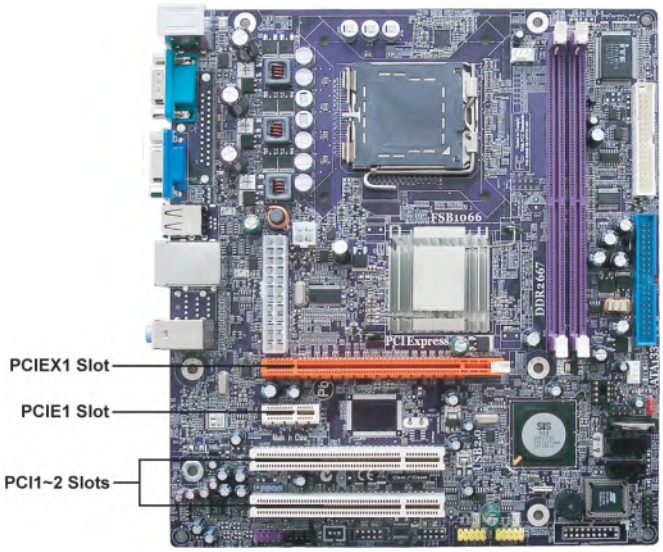
### FDD1: Floppy Disk Connector

This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



## *Installing Add-on Cards*

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.




**PCIEX1 Slot** The PCI Express slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 1.1.

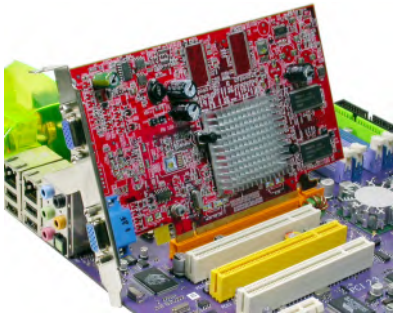
**PCIE1 Slot** The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.1 as well.

**PCI1~2 Slots** This motherboard is equipped with two standard PCI slots. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slots on this board are PCI v2.3 compliant.

*Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.*

Follow these instructions to install an add-on card:

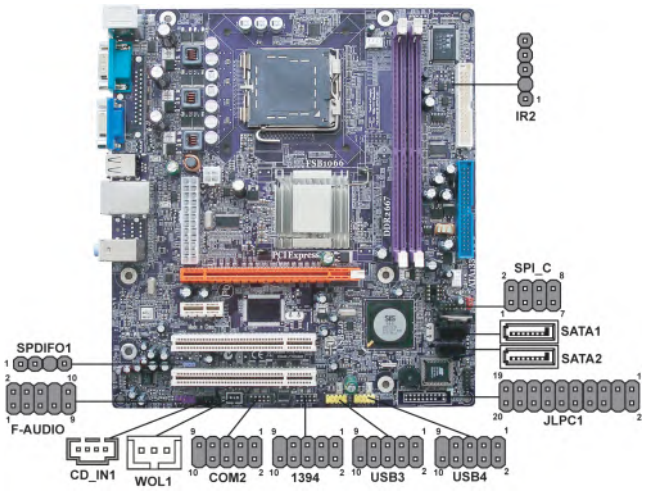
1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
3 Secure the metal bracket of the card to the system case with a screw.



*For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.*

### *Connecting Optional Devices*

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



### F-AUDIO: Front Panel Audio header (optional)

This header allows the user to install auxiliary front-oriented microphone and 6/8 (optional) line-out ports for easier access.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | AUD_MIC | Front Panel Microphone input signal |
| 2 | AUD_GND | Ground used by Analog Audio Circuits |
| 3 | AUD_MIC_BIAS | Microphone Power |
| 4 | AUD_VCC | Filtered +5V used by Analog Audio Circuits |
| 5 | AUD_F_R | Right Channel audio signal to Front Panel |
| 6 | AUD_RET_R | Right Channel Audio signal to Return from Front Panel |
| 7 | REVD | Reserved |
| 8 | Key | No Pin |
| 9 | AUD_F_L | Left Channel Audio signal to Front Panel |
| 10 | AUD_RET_L | Left Channel Audio signal to Return from Front Panel |

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | PORT 1L | 2 | AUD_GND |
| 3 | PORT 1R | 4 | PRESENCE# |
| 5 | PORT 2R | 6 | SENSE1_RETURN |
| 7 | SENSE_SEND | 8 | KEY |
| 9 | PORT 2L | 10 | SENSE2_RETURN |

### SATA1~2: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest date transfer rates (3.0 Gb/s), simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | Ground | 2 | TX (+) |
| 3 | TX (-) | 4 | Ground |
| 5 | RX (-) | 6 | RX (+) |
| 7 | Ground | - | - |

### CD_IN1: Analog audio input connector

| Pin | Signal Name | Function |
|---|---|---|
| 1 | CD in_L | CD In left channel |
| 2 | GND | Ground |
| 3 | GND | Ground |
| 4 | CD in_R | CD In right channel |

### USB3~4: Front Panel USB headers

The motherboard has four 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 connector to connect the front-mounted ports to the motherboard.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | USBPWR | Front Panel USB Power |
| 2 | USBPWR | Front Panel USB Power |
| 3 | USB_FP_P0- | USB Port 0 Negative Signal |
| 4 | USB_FP_P1- | USB Port 1 Negative Signal |
| 5 | USB_FP_P0+ | USB Port 0 Positive Signal |
| 6 | USB_FP_P1+ | USB Port 1 Positive Signal |
| 7 | GND | Ground |
| 8 | GND | Ground |
| 9 | Key | No pin |
| 10 | USB_FP_OC0 | Overcurrent signal |

*Please make sure that the USB cable has the same pin assignment as indicatged above. A different pin assignment may cause damage or system hang-up.*

### SPDIFO1: SPDIF out header

This is an optional header that provides an S/PDIF (Sony/Philips Digital Interface) output to digital multimedia device through optical fiber or coaxial connector.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | SPDIF | SPDIF digital output |
| 2 | +5VA | 5V analog Power |
| 3 | Key | No pin |
| 4 | GND | Ground |

### COM2: Onboard serial port header (optional)

Connect a serial port extension bracket to this header to add a second serial port to your system.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | NDCDB | Data carry detect |
| 2 | NSINB | Serial Data In |
| 3 | NSOUTB | Serail Data Out |
| 4 | NDTRB | Data terminal ready |
| 5 | GND | Ground |
| 6 | NDSRB | Date set ready |
| 7 | NRTSB | Request to send |
| 8 | NCTSB | Clear to send |
| 9 | NRIB | Ring Indicator |
| 10 | KEY | Key |

### SPI_C: SPI ROM Header

This 8 Mb ROM contains the programmable BIOS program.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | CHIP SELECT | Select chip |
| 2 | VCC | VCC |
| 3 | DATA OUTPUT | Data output |
| 4 | HOLD | Hold |
| 5 | WRITE PROTECT | BIOS write protect |
| 6 | CLOCK | Clock |
| 7 | CND | CND |
| 8 | DATA INPUT | Data input |

### WOL1: Wake On LAN connector (optional)

If you have installed a LAN card, use the cable provided with the card to plug into the WOL connector onboard. This enables the Wake On LAN (WOL) feature. When your system is in a power-saving mode, any LAN signal automatically resumes the system. You must enable this item using the Power Management page of the Setup Utility in the BIOS. See Chapter 3 for more information.

| Pin | Signal Name | Function |
|---|---|---|
| 1 | 5VSB | +5V stand by power |
| 2 | GND | Ground |
| 3 | Ring# | Wake up signal (low active) |

### JLPC1: TPM header (optional)

| Pin No. | Symbol | Pin No. | Symbol |
|---|---|---|---|
| 1 | CLK_33MHz | 2 | GND |
| 3 | L_FRAME# | 4 | KEY |
| 5 | PCIRST # | 6 | NC |
| 7 | L_AD3 | 8 | L_AD2 |
| 9 | VCC3 | 10 | L_AD1 |
| 11 | L_AD0 | 12 | GND |
| 13 | SM_CLK | 14 | SM_DAT |
| 15 | 3VSB | 16 | SERIRQ |
| 17 | GND | 18 | CLKRUN# |
| 19 | L_PCPD# | 20 | NC |

### IR2: Infrared header (optional)

The motherboard supports an Infrared (IRDA) data port. Infrared ports allow 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 Name |
|---|---|
| 1 | VCC |
| 2 | No Pin |
| 3 | IRRX |
| 4 | Ground |
| 5 | IRTX |

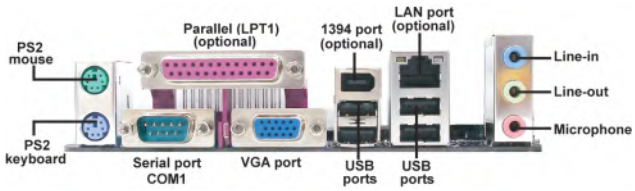
### 1394: Onboard IEEE 1394a header (optional)

Connect this header to any device with IEEE 1394a interface.

| Pin | Signal Name | Pin | Signal Name |
|---|---|---|---|
| 1 | TPA+ | 2 | TPA- |
| 3 | GND | 4 | GND |
| 5 | TPB+ | 6 | TPB- |
| 7 | Cable-Power | 8 | Cable-Power |
| 9 | Key Pin | 10 | GND |

## Connecting I/O Devices

The backplane of the motherboard has the following I/O ports:




**PS2 Mouse** — Use the upper PS/2 port to connect a PS/2 pointing device.

**PS2 Keyboard** — Use the lower PS/2 port to connect a PS/2 keyboard.

**Parallel Port (LPT1) (optional)** — Use LPT1 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 COM1/3.

**VGA Port** — Connect your monitor to the VGA port.

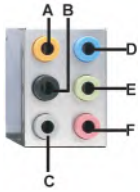
**LAN Port (optional)** — Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

**USB Ports** — Use the USB ports to connect USB devices.

**1394a Port (optional)** — Use the 1394a port to connect any 1394a device.

**Audio Ports (optional)** — Use the three audio ports to connect audio devices. The first jack is for stereo line-in signal. The second jack is for stereo line-out signal. The third jack is for microphone.

This motherboard may adopt 8-channel audio ports that correspond to the A,B, C, and E port respectively. In addition, all of the 3 ports, B, C, and E provide users with both right & left channels individually. Users please refer to the following note for specific port function definition.




| | |
|---|---|
| A: Center & Woofer | D: Line-in |
| B: Back Surround | E: Front Out |
| C: Side Surround | F: Mic_in Rear |

*The above port definition can be changed to audio input or audio output by changing the driver utility setting.*

This concludes Chapter 2. The next chapter covers the BIOS.

# Chapter 3
# *Using BIOS*

## About the Setup Utility

The computer uses the latest "American Megatrends Inc." BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

### *The Standard Configuration*

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

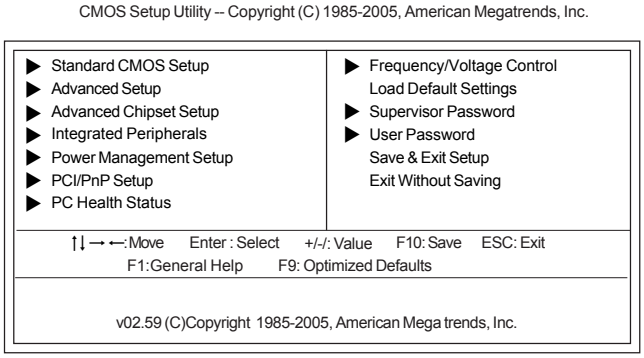
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

### *Entering the Setup Utility*

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

***Press DEL to enter SETUP***

Press the delete key to access the BIOS Setup Utility.




## *BIOS Navigation Keys*

The BIOS navigation keys are listed below:

| KEY | FUNCTION |
|---|---|
| **ESC** | Exits the current menu |
| ↑↓→← | Scrolls through the items on a menu |
| **+/-/PU/PD** | Modifies the selected field's values |
| **Enter** | Select |
| **F9** | Loads an optimized setting for better performance |
| **F10** | Saves the current configuration and exits setup |
| **F1** | Displays a screen that describes all key functions |

### *Updating the BIOS*

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
2. Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the system diskette you created in Step 1.
3. Turn off your computer and insert the system diskette in your computer's diskette drive. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the floppy diskette drive first.)
4. At the A:\ prompt, type the Flash Utility program name and the file name of the new bios and then press <Enter>. Example: AMINF340.EXE 040706.ROM
5. When the installation is complete, remove the floppy diskette from the diskette drive and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

## Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

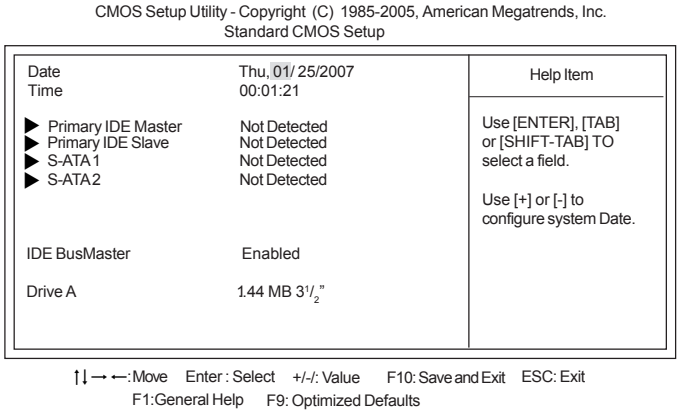
Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle ▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle ▶.

## *Standard CMOS Setup*

This option displays basic information about your system.

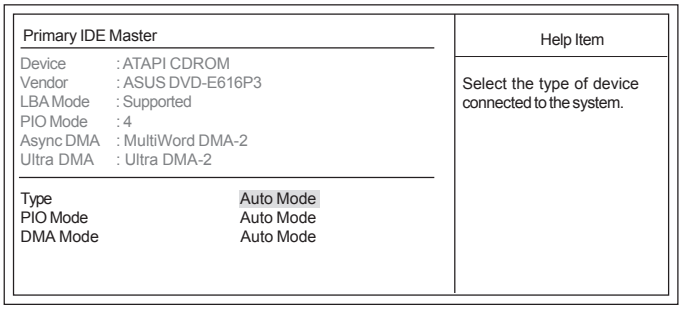



### Date and Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

### ►Primary IDE Master/Slave, S-ATA 1/2

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 two SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.



***Type (Auto Mode)***

Use this item to configure the type of the IDE device that you specify. If the feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer

***PIO Mode (Auto Mode)***

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

***DMA Mode (Auto Mode)***

DMA capability allows user to improve the transfer-speed and data-integrity for compatible IDE devices.

Press <Esc> to return to the Standard CMOS Setup page.

**IDE BusMaster (Enabled)**

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

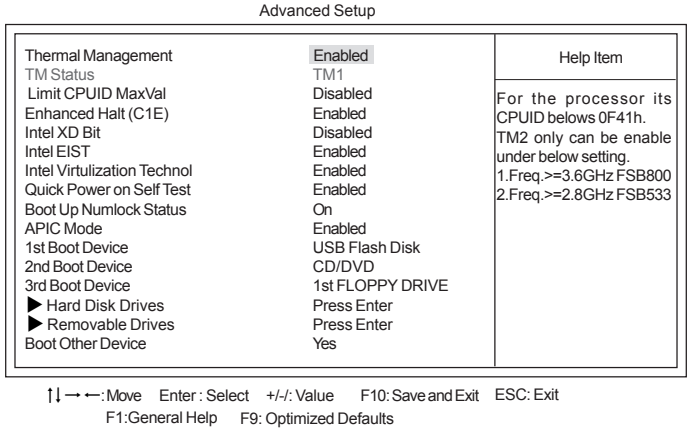
**Drive A (1.44 MB $3^1/_2$")**

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

Press <Esc> to return to the main menu setting page.

## *Advanced Setup*

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




**Thermal Management (Enabled)**

This item displays CPU's temperature and enables you to set a safe temperature to Prescott CPU.

**TM Status (TM1)**

This item displays CPU Monitor status.

**Limit CPUID MaxVal (Disabled)**

Use this item to enable or disable the Max CPU ID value limit. When suppports Prescott and LGA775 CPUs, enables this to prevent the system from "rebooting" when trying to install Windows NT 4.0.

**Enhanced Halt (C1E) (Enabled)**

This item enables or disables enhanced halt.

**Intel XD Bit (Disabled)**

This item enables or disables the Intel XD Bit technology.

**Intel EIST (Enabled)**

This item allows users to enable or disable the EIST (Enhanced Intel Speedstep Technology) function. This item shows only if the CPU supports EIST.

**Intel Virtulization Technol (Enabled)**

When enabled, a VMM can utilize the additional hardware capabilities provided by Vandor Pool Technology.

**Quick Power on Self Test (Enabled)**

Enable this item to shorten the power on testing (POST) and have your system start up faster. You might like to enable this item after you are confident that your system hardware is operating smoothly.

**Boot Up Numlock Status (On)**

This item defines if the keyboard Num Lock key is active when your system is started.

### APIC Mode (Enabled)

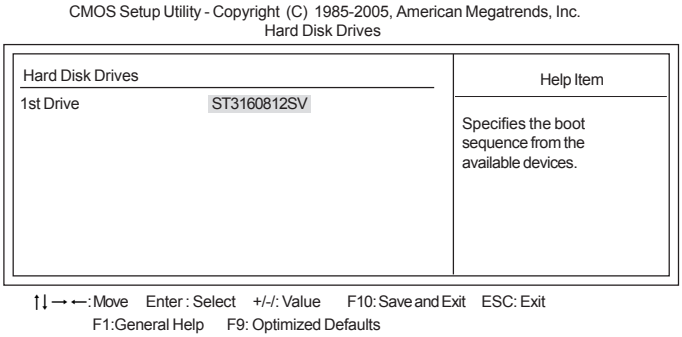
This item allows you to enable or disable the APCI (Advanced Programmable Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

### 1st/2nd/3rd Boot Device (USB Flash Disk/CD,DVD/1st FLOPPY DRIVE)

Use this item to determine the device order the computer used to look for an operating system to load at start-up time. The devices showed here will be different depending on the exact devices installed on your motherboard.

### ►Hard Disk Drives (Press Enter)

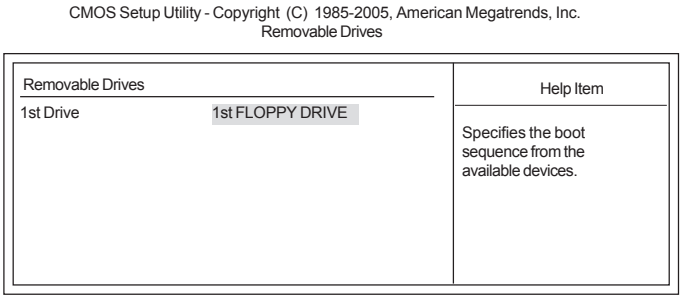
Scroll to this item and press <Enter> to view the following screen:




Press <Esc> to return to the Advanced Setup page.

### ►Removable Drives (Press Enter)

Scroll to this item and press <Enter> to view the following screen:




Press <Esc> to return to the Advanced Setup page.

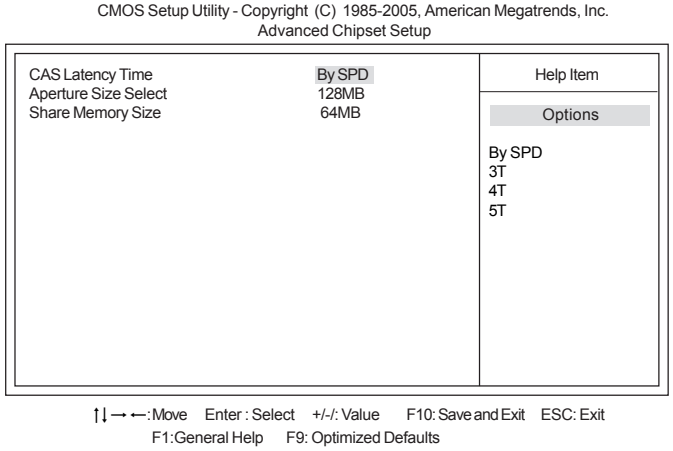
### Boot Other Device (Yes)

When enabled, the system searches all other possible locations for an operating system if it fails to find one in the devices specified under the First, Second and Third boot devices.

Press <Esc> to return to the main menu setting page.

## *Advanced Chipset Setup*

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




**CAS Latency Time (By SPD)**
When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.

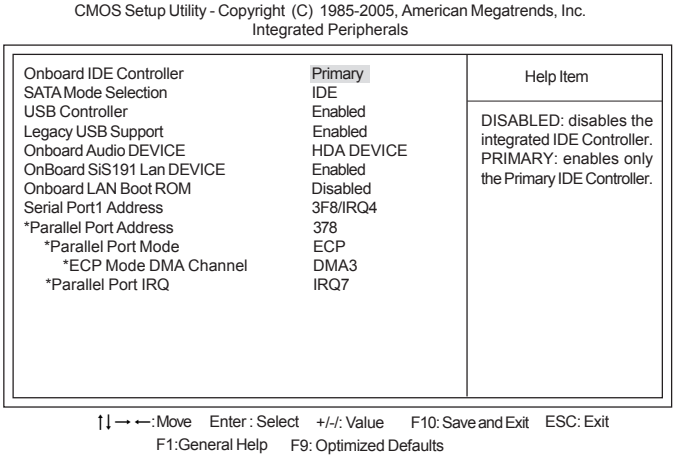
**Aperature Size Select (128MB)**
This item defines the size of the aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory that you leave this item at the default value.

**Share Memory Size (64MB)**
This item lets you allocate a portion of the main memory for the onboard VGA display application.

Press <Esc> to return to the main menu setting page.

## *Integrated Peripherals*

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




**Onboard IDE Controller (Primary)**

Use this item to enable or disable the onboard IDE interface.

**SATA Mode Selection (IDE)**

Use this item to select the mode of the Serial ATA.

**USB Controller (Enabled)**

This item enables the USB controller. Leave this at the default "Enabled" if you want to connect USB devices to your computer.

**Legacy USB Support (Enabled)**

Use this item to enable or disable support for legacy USB devices. Setting to Auto allows the system to detect the presence of USB device at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled.

**OnBoard Audio DEVICE (HDA DEVICE)**

Use this item to enable or disable the onboard audio device.

**OnBoard SiS191 Lan DEVICE (Enabled)**

This item allows you to control the onboard SiS191 Lan device.

**OnBoard LAN Boot ROM (Disabled)**

Use this item to enable or disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

**Serial Port1 Address (3F8/IRQ4)**

Use this item to enable or disable the onboard COM1/2 serial port, and to assign a port address.

**Parallel Port Address (378) (optional)**

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

**Parallel Port Mode (ECP) (optional)**

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

**ECP Mode DMA Channel (DMA3) (optional)**

Use this item to assign the DMA Channel under ECP Mode function.

**Parallel Port IRQ (IRQ7) (optional)**

Use this item to assign IRQ to the parallel port.

Press <Esc> to return to the main menu setting page.

## *Power Management Setup*

This page sets up some parameters for system power management operation.

CMOS Setup Utility - Copyright (C) 1985-2005, American Megatrends, Inc.
Power Management Setup

| | | Help Item |
|---|---|---|
| ACPI Suspend Type | S3 (STR) | |
| Soft-off by PWR-BTTN | Delay 4 Sec | Select the ACPI state used for System Suspend. |
| PWRON After PWR-Fail | Power Off | |
| Wake-Up by PME | Enabled | |
| Power On by Ring | Disabled | |
| USB KB Wake Up From S3 | Enabled | |
| PS2 Keyboard Wakeup | Disabled | |
| PS2 Mouse Wakeup | Disabled | |
| Onboard PCIE LAN Wake Up | Disabled | |
| Resume on RTC Alarm | Disabled | |

↑↓→←: Move Enter : Select +/-/: Value F10: Save and Exit ESC: Exit
F1:General Help F9: Optimized Defaults

**ACPI Suspend Type (S3(STR))**

Use this item to define how your system suspends. In the default, S3, 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.

**Soft-Off By PWR-BTTN (Delay 4 Sec)**

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec, then you have to hold the power button down for four seconds to cause a software power down.

**PWRON After PWR-Fail (Power Off)**

This item enables your computer to automatically restart or return to its operating status.

**Wake-Up by PME (Enabled)**

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 PCI Modem or PCI LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI card.

**Power On by Ring (Disabled)**

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. You must use an ATX power supply in order to use this feature.

**USB KB Wake Up from S3 (Enabled)**

This item allows you to enable/disable the USB device wakeup function from S3/S4 mode.

**PS2 Keyboard Wakeup (Disabled)**

This item enable or disable you to allow keyboard activity to awaken the system from power saving mode.

**PS2 Mouse Wakeup (Disabled)**

This item enable or disable you to allow mouse activity to awaken the system from power saving mode.

**OnBoard PCIE LAN Wake Up (Disabled)**

This item enable or disable you to allow PCIE LAN activity to awaken the system from power saving mode.

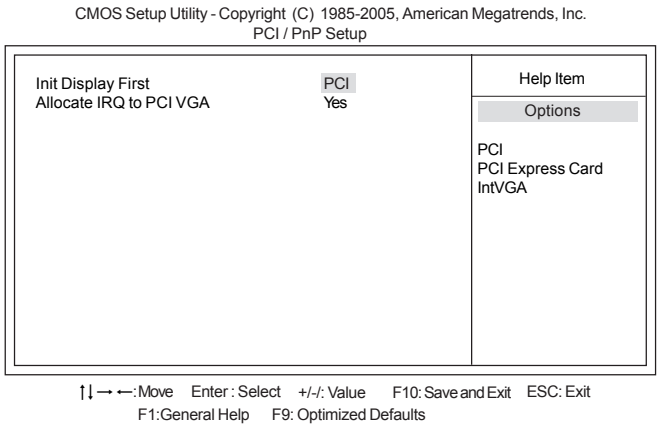
**Resume on RTC Alarm (Disabled)**

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.

Press <Esc> to return to the main menu setting page.

## *PCI / PnP Setup*

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




### Init Display First (PCI)

Use this item to select which graphics controller to use as the primary boot devices.

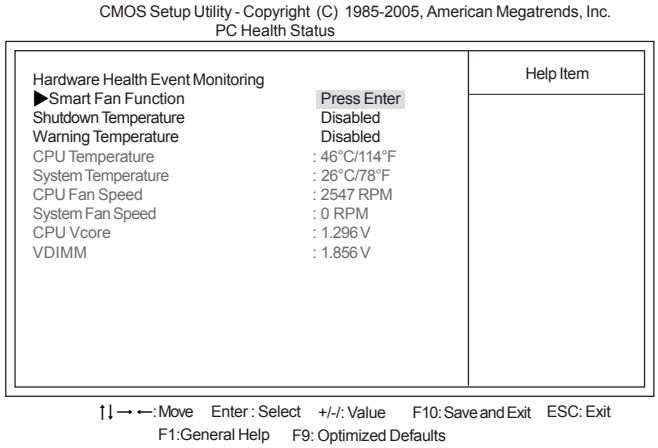
### Allocate IRQ to PCI VGA (Yes)

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.

Press <Esc> to return to the main menu setting page.

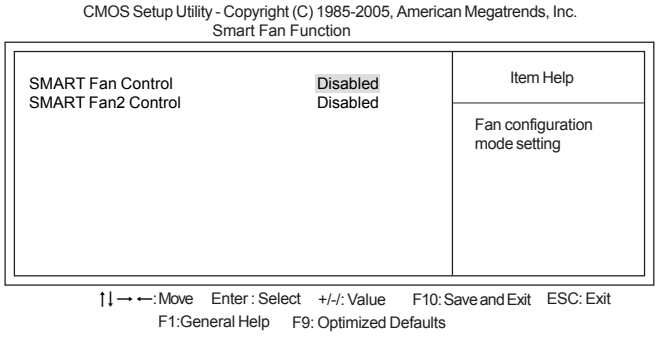
## *PC Health Status*

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.




### ► Smart Fan Function (Press Enter)

Scroll to this item and press <Enter> to view the following screen:




### ***SMART Fan/Fan2 Control (Disabled)***

This item allows you to enable/disable the control of the system/CPU fan speed by changing the fan voltage.

Press <Esc> to return to the PC Health Status page.

### Shutdown Temperature (Disabled)

Enable or disable you to set the maximum temperature the system can reach before powering down.

### Warning Temperature (Disabled)

This item lets you select the temperature at which you want the system to send out a warning message to the PC speakers of when the temperature goes beyond either limit. You can select the tmperature you want.

**System Component Characteristics**

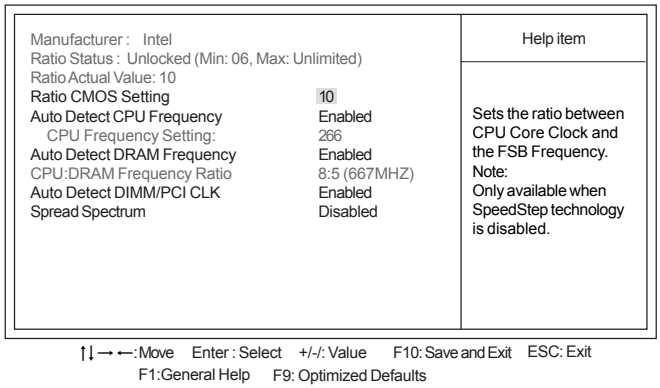
These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU & DIMM voltage, CPU & system fan speed,...etc.

- CPU Temperature
- System Temperature
- CPU/System Fan Speed
- CPU Vcore
- VDIMM

Press <Esc> to return to the main menu setting page.

## *Frequency/Voltage Control*

This page enables you to set the clock speed and system bus for your system. The clock speed and system bus are determined by the kind of processor you have installed in your system.




**Manufacturer**

This item displays the information of current manufacturer of the CPU installed in your computor.

**Raito Status/Ratio Actual Value**

These items show the locked ratio status and the actual ratio of the CPU installed in your system.

**Auto Detect CPU Frequency (Enabled)**

This item enables or disables the auto detect CPU frequency.

**CPU Frequency Setting (266)**

This item is used to set the CPU Frequency.

**Auto Detect DRAM Frequency (Enabled)**

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

**CPU:DRAM Frequency Ratio (8:5 (667MHZ))**

This item controls the ratio of the CPU FSB clock and DRAM Frequency; enables the CPU and DRAM to run at different frequency combination.

**Auto Detect DIMM/PCI CLK (Enabled)**

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

**Spread Spectrum (Disabled)**

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

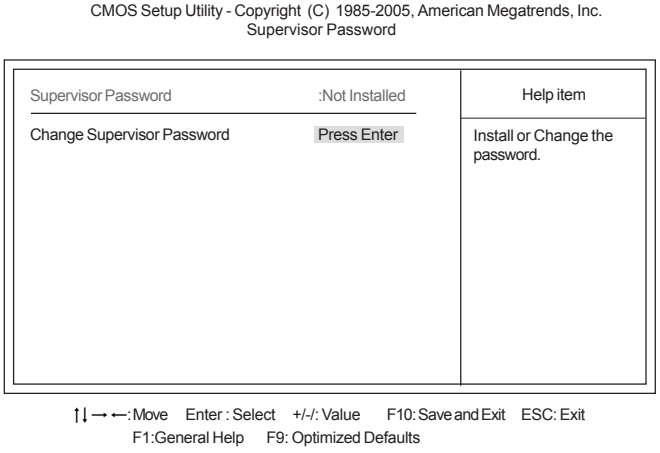
Press <Esc> to return to the main menu setting page.

## *Load Default Settings*

This option opens a dialog box tto 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.

## *Supervisor Password*

This page helps you install or change a password.




**Supervisor Password (Not Installed)**

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

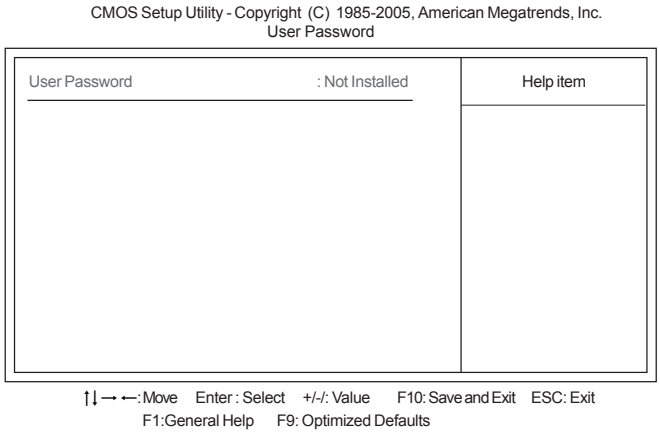
**Change Supervisor Password (Press Enter)**

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

Press <Esc> to return to the main menu setting page.

### *User Password*

This page helps you install or change a password.




**User Password (Not Installed)**

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

Press <Esc> to return to the main menu setting page.

### *Save & Exit Setup*

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

### *Exit Without Saving*

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 Exit Without Saving dialog box appears, select [OK] to discard changes and exit, or select [Cancel] to return to the main menu.

*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.*

This concludes Chapter 3. Refer to the next chapter for information on the software supplied with the motherboard.

# Chapter 4
# *Using the Motherboard Software*

## About the Software CD-ROM

The support software CD-ROM that is included in the motherboard package contains all the drivers and utility programs needed to properly run the bundled products. Below you can find a brief description of each software program, and the location for your motherboard version. More information on some programs is available in a README file, located in the same directory as the software. Before installing any software, always inspect the folder for files named README.TXT, INSTALL.TXT, or something similar. These files may contain important information that is not included in this manual.

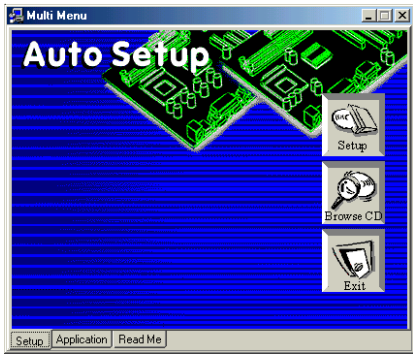
1. *Never try to install all software from folder that is not specified for use with your motherboard.*
2. *The notice of Intel HD audio installation (optional): The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center "before" installing HD audio driver bundled in the Driver CD. Please log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.*

## Auto-installing under Windows 2000/XP

The Auto-install CD-ROM makes it easy for you to install the drivers and software for your motherboard.

*If the Auto-install CD-ROM does not work on your system, you can still install drivers through the file manager for your OS (for example, Windows Explorer). Refer to the Utility Folder Installation Notes later in this chapter.*

The support software CD-ROM disc loads automatically under Windows 2000/XP. When you insert the CD-ROM disc in the CD-ROM drive, the autorun feature will automatically bring up the install screen. The screen has three buttons on it, Setup, Browse CD and Exit.




*If the opening screen does not appear; double-click the file "setup.exe" in the root directory.*

### Setup Tab

| | |
|---|---|
| **Setup** | Click the **Setup** button to run the software installation program. Select from the menu which software you want to install. |
| **Browse CD** | The **Browse CD** button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.<br><br>Before installing the software from Windows Explorer, look for a file named README.TXT, INSTALL.TXT or something similar. This file may contain important information to help you install the software correctly.<br><br>Some software is installed in separate folders for different operating systems, such as Windows 2000/XP. Always go to the correct folder for the kind of OS you are using.<br><br>In install the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen. |
| **Exit** | The **EXIT** button closes the Auto Setup window. |

### Application Tab

Lists the software utilities that are available on the CD.

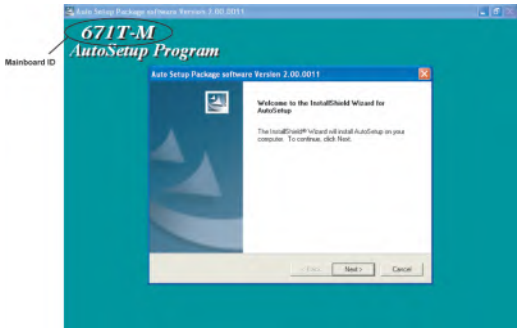
### Read Me Tab

Displays the path for all software and drivers available on the CD.

## *Running Setup*

*Follow these instructions to install device drivers and software for the motherboard:*

1. *Click* ***Setup.*** *The installation program begins:*

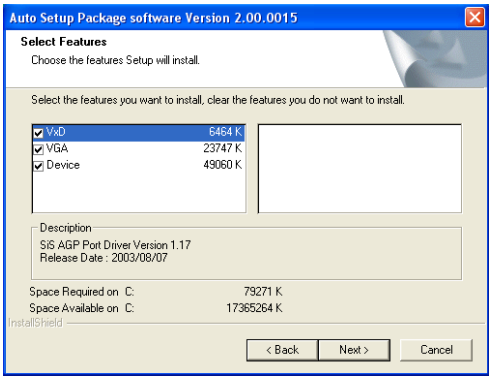



*The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.*

The motherboard identification is located in the upper left-hand corner.

2. *Click **Next.** The following screen appears:*


3. *Check the box next to the items you want to install. The default options are recommended.*
4. *Click **Next** run the Installation Wizard. An item installation screen appears:*




5. *Follow the instructions on the screen to install the items.*

Drivers and software are automatically installed in sequence. Follow the onscreen instructions, confirm commands and allow the computer to restart a few times to complete the installation.

## Manual Installation

Insert the CD in the CD-ROM drive and locate the PATH.DOC file in the root directory. This file contains the information needed to locate the drivers for your motherboard.

Look for the chipset and motherboard model; then browse to the directory and path to begin installing the drivers. Most drivers have a setup program (SETUP.EXE) that automatically detects your operating system before installation. Other drivers have the setup program located in the operating system subfolder.

If the driver you want to install does not have a setup program, browse to the operating system subfolder and locate the readme text file (README.TXT or README.DOC) for information on installing the driver or software for your operating system.

## Utility Software Reference

All the utility software available from this page is Windows compliant. They are provided only for the convenience of the customer. The following software is furnished under license and may only be used or copied in accordance with the terms of the license.

*These software(s) are subject to change at anytime without prior notice. Please refer to the support CD for available software.*

This concludes Chapter 4.

# Chapter 5
# SiS968 SATA RAID Setup Guide

## Introduction for SiS968 SATA RAID Function

The 968 S-ATA controller only supports two serial ATA on two independent ports. The Serial ATA RAID is designed to provide a cost-effective, high performance RAID solution that adds performance and/or reliability to PC desktops and/or servers using Serial ATA/300 hard disks.

Serial ATA RAID function supports striping (RAID 0), mirroring (RAID 1), and span (JBOD). Please note that the function supports hard disk drives only and the 968 S-ATA controller don't support Striping + mirroring (Raid 0+1).

With striping, identical drives can read and write data in parallel to increase performance. Mirroring increases read performance through load balancing and elevator sorting while creating a complete backup of your files. Span would increase the logic hard disk space.

Serial ATA RAID striped arrays can double the sustained data transfer rate of Serial ATA/ 300. Serial ATA RAID fully supports Serial ATA/300 specification of up to 300 MB/sec per drive, depending on individual drive specifications.

## Features

- The SiS968 controller only support two Serial ATA (Serial ATA RAID) drivers;
- Support RAID function: RAID 0, RAID 1, JBOD.
- Support bootable disk.
- Windows-based RAID Utility software tool (only support Windows XP and 2000).
- BIOS Utility.

## Support Operating Systems

Support Microsoft Windows 2000/XP Professional and Server/XP.

## What is RAID?

This section will give you an overview about the RAID system and introduce the basic background and glossary which you need to know before using "SiS RAID Controller Application".

1 **RAID:** (Redundant Array of Independent Disk Drives) use jointly several hard drives to increase data transfer rates and data security. It depends on the number of drives present and RAID function you select to fulfill the security or performance purposes or both.

2 **RAID 0:** Also known as "Stripping". All of the data are distributed evenly to all of the existing drives. You gain benefits on performance because the data transfer rate is multiplied by the number of drives. However, RAID 0 has high risks of data security. All of the stored data will be lost if even any one drive in the RAID set crashes.

3 **RAID 1:** Also known as "Mirroring". Two hard drives are required. The goal of RAID 0 is to ensure data security. Data is written to two or more drives synchronously. That is, 100% duplication of data from one drive to another.

4 **JBOD:** (Just a Bunch of Drives). Also known as “Spanning”. Two or more hard drives are required. Several hard disk types configured as a single hard disk. The hard drives are simply hooked up in series. This expands the capacity of your drive and results in a useable total capacity. However, JBOD will not increase any performance or data security.

## Installing Software Drivers

SiS provides RAID driver for SiS968 SATA with RAID function.

1 For RAID function, SiS968 support RAID 0, RAID 1, and JBOD by software RAID driver only.
2 Support the function of installing windows to RAID array.

### *New Windows 2000/XP Installation*

1 Start the installation:
Boot from the CD-ROM. Press F6 when the message “Press **F6** key if you need to install third party SCSI or RAID driver” appears.
2 When the Windows 2000/XP Setup window is generated, press **S** key to specify an Additional Device(s).
3 Insert the driver diskette into drive A: and press Enter.
4 Choose one of the following items:
***“WinXP SiS Raid/IDE Controller”***,
***“Win2000 SiS Raid/IDE Controller”***,
that appears on screen, and then press the Enter key.
5 Press Enter to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, Press Enter to continue with installation.
6 From the Windows 2000/XP Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000/XP installation.
7 Please install the driver package again (ex. SiS RAID driver v1.00) while the operation system has been setup.

*If you would like to install windows to any RAID set, you should create RAID from BIOS utility or SiS 968 RAID Utility first and then follow the steps above.*

### *Existing Windows 2000/XP Installation*

1 Install the driver by executing SiS driver setup utility.
2 The drivers will be automatically installed.

### *Confirming Windows 2000/XP Driver Installation*

1 From Windows 2000/XP, open the Control Panel from “My Computer” followed by the System icon.
2 Choose the “Hardware” tab, then click the “Device Manager” tab.
3 Click the “+” in front of “SCSI and RAID Controllers” hardware type. The driver *“WinXP SiS180 Raid Controller*” (for RAID) or “*Win2000/XP SiS180 IDE Controller*” (for SATA) should appear.

# BIOS Utility Operation

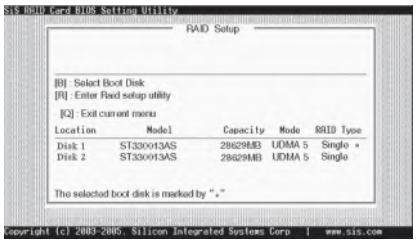
BIOS Utility supports windows 2000/XP.

## *Starting BIOS Utility*

1 Boot your system. If this is the first time you have booted with the SiS968 and the drives installed, the BIOS will display the following:

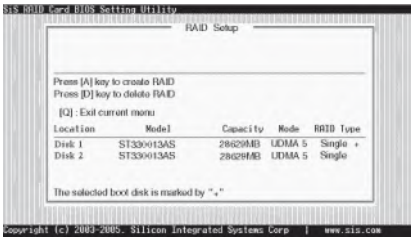
```
Silicon Integrated Systems Corp. RAID BIOS Setting Utility 1.00.0.XX
(c) 2006-2008 Silicon Integrated Systems Corp. All Rights Reserved.

Press <Ctrl.<S> to run BIOS Setting Utility
```

2 Press <Ctrl-S> keys to display the SiS968 Utility Main Menu.




3 You can press <B> key to select the boot disk on the 968 controller. The yellow highlight will show on the disk and you can switch it to select the disk you wanted. Press “Enter” key to select it and the selected boot device will be marked by “*****”. The default boot device will be set as **Disk 1**.

4 Press <R> to display the RAID setup menu below. This is the fastest and easiest method to creating your first array.



### *Create RAID*

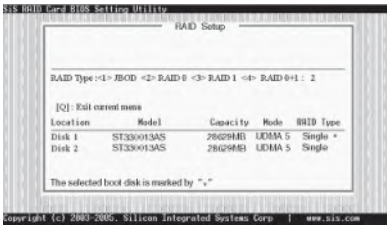
- SIS968 controller support RAID 0, RAID 1 and JBOD.

### *Creating a RAID 0 (Stripe) Array for Performance*

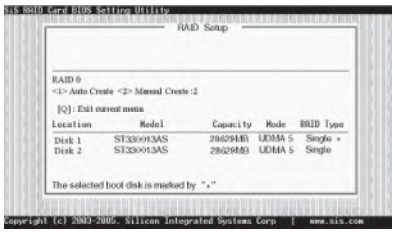
- SiS 180 enables users to create striped arrays with 1, 2, 3, or 4 drives.
- SiS968 only supports 2 SATA drivers to create a stripe array.

To create an array for best performance, follow these steps:

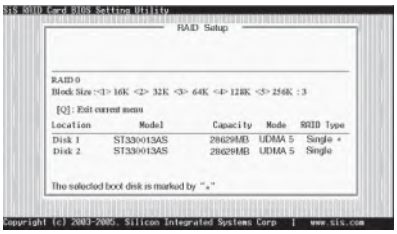
1 Press <A> to start creating a RAID array.
2 Press <2> and <Enter> to select RAID 0.



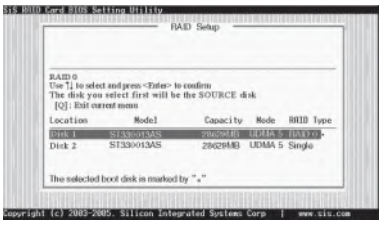

3 You will have two selections to create a RAID 0 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 0 array faster and easier. The Blocksize will be selected by its default value “64K”. The result after creating will be show on **step 8**. Besides, you also can select **<2>Manual Create**, see following steps.



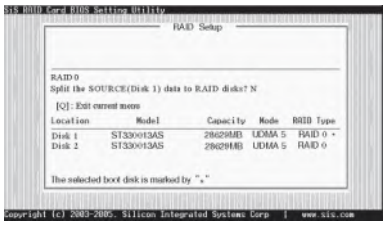

4 Press <1>-<5> keys and <Enter> to select Block Size. (Default:64K)



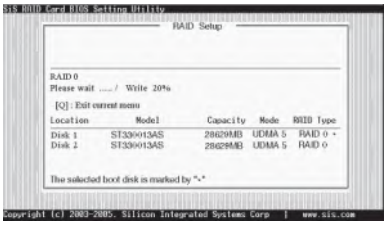
5 Use <↑ > < ↓ > to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 0. And the disk you select first will be the SOURCE disk.



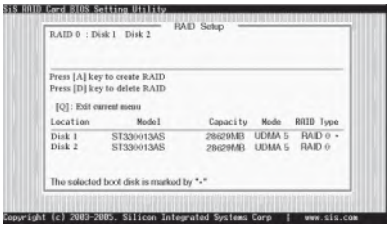

6 Next, you will see a message “Split the SOURCE(DISK x) data to RAID disks?”. Press <N> and <Enter> to create RAID 0 array only or press <Y> and <Enter> to split the data from source disk to other disks.




7 Starting splitting action, the following frame will be shown.

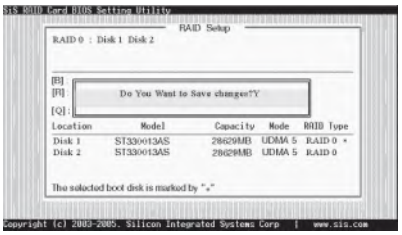



8 After all steps finished, press ,<Q> until escape the setup menu and RAID 0 array will be show on the top of the main frame.



9 Press <Q> again to exit this BIOS utility and the red message frame will show. Press <Y> and <Enter> to save changes.

10 Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

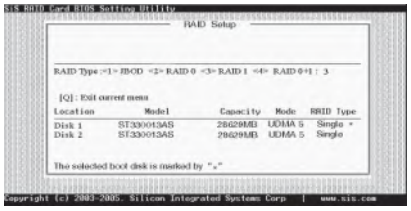



## *Creating a RAID 1 (Mirror) Array*

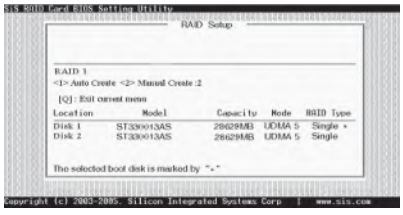
To create a Mirror array, follow these steps:

1 Press <A> to start creating a RAID array.

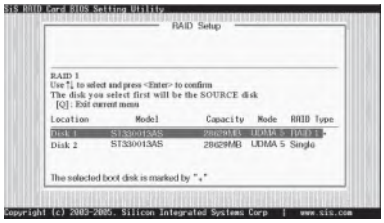
2 Press <3> and <Enter> to select Mirror.



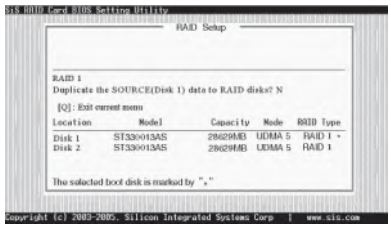

3 You will have two selections to create a RAID 1 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 1 array faster and easier. The result after creating will be show on **step 7**. Besides, you also can select **<2>Manual Create**, see following steps.



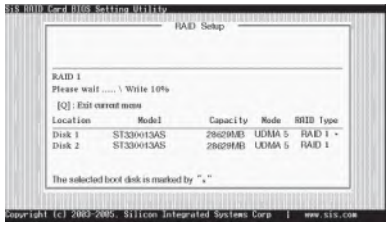
4 Use <↑ > < ↓ > to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from **Single** to **RAID 1**. The same as RAID 0, the disk you select first will be the SOURCE disk.



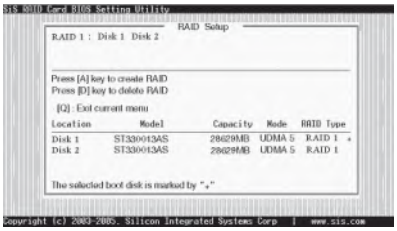

5 Next, you will see a message “Duplicate the SOURCE (DISK x) data to RAID disks?”. Press <N> and <Enter> to create RAID 1 array only or press <Y> and <Enter> to duplicate the data from source disk to mirror disk.




6 Starting duplicating action, the following frame will be showing.




7 After all steps finished, press <Q> until escape the setup menu and RAID 1 array will be show on the top of the main frame.



8 Press <Q> again to exit this BIOS utility and the red message frame will show as the same as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.

9 Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

## *Creating a JBOD Array*

*1 SIS 180 enables users to create JBOD arrays with 2,3, or 4 drives.*

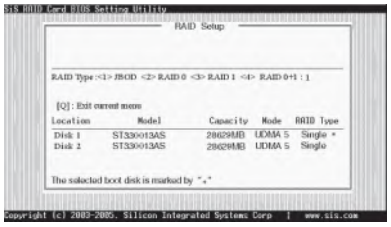
*2 SIS968 only supports 2 SATA drivers to create a JBOD arrays.*

To create an JBOD array, follow these steps:

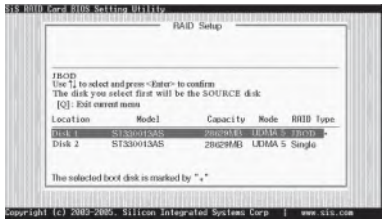
1 Press <A> to start creating a RAID array.

2 Press <1> and <Enter> to select JBOD.

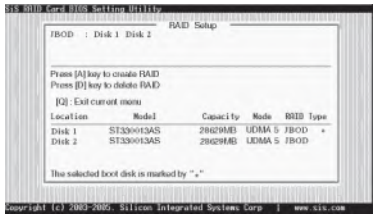
3 You will have two selections to create a JBOD array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a JBOD array faster and easier. The result after creating will be show on **step 5**. Besides, you also can select **<2>Manual Create**, see following steps.




4 Use <↑> < ↓ > to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from **Single** to **JBOD**.




5 After all steps finished, press <Q> until escape the setup menu and JBOD array will be show on the top of the main frame.



6 Press <Q> again to exit this BIOS utility and the red message frame will show as the same age as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.

7 Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

This concludes Chapter 5.

## Memo