

Preface

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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Preface

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 Règlement sur le matériel brouilleur 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 23

Chapter 4

Using the Motherboard Software

Describes the motherboard software

Go to ➞ page 45

Chapter 5

SiS966/966L SATA RAID Setup Guide

Provide information about SATA RAID Setup

Go to ➞ page 49

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Chapter 1

Introducing the Motherboard

Introduction

Thank you for choosing the FS31 (S5086) motherboard. This motherboard is a high performance, enhanced function motherboard that supports LGA775 socket for latest Intel Pentium D/Pentium 4/Celeron D Processors.

The motherboard incorporates the SiS662 Northbridge (NB) and SiS966L Southbridge (SB) chipsets. The SiS662 Northbridge chipset features the AGTL & AGTL+ compliant bus driver technology with integrated on-die termination to support Intel Pentium 4 series processors with FSB 800 MHz. The memory controller supports DDR2 memory DIMM frequencies of 667/533/400 and supports two DDR2 Sockets with up to maximum memory of 2 GB. It can offer bandwidth up to 5.3 GB/s under DDR2 667 to sustain the bandwidth demand from host processors. High resolution graphics via one PCI Express slot, intended for Graphics Interface, is fully compliant to the PCI Express Specification revision 1.1.

The SiS966L 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 480 Mb/s bandwidth for eight USB 2.0 ports, integrates AC'97 v2.3 compliant audio controller that features 6-channel audio speaker out and HSP v.90 modem support. SiS966L also provides dual independent IDE channels and each of them supports UltraDMA 133/100/66.

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, four USB ports, one optional LAN port, one optional 1394a port and audio jacks for microphone, line-in and line-out.

Feature Processor

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

- Accommodates Intel Pentium D/Pentium 4/Celeron D processors
- Supports a system bus (FSB) of 800 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 SiS662 Northbridge (NB) and SiS966L Southbridge (SB) chipsets are based on an innovative and scalable architecture with proven reliability and performance.

- | | |
|---------------------|---|
| SiS662 (NB) | <ul style="list-style-type: none"> • Supports 12 outstanding transactions and out-of-order completion • Accommodates high throughput SiS MuTIOL 1G interconnecting to SiS966L MuTIOL media I/O with bi-directional 16 bit data bus • Integrates Host-to-PCI Express Bridge fully compliant with PCI Express Specification 1.1 • Supports DDR2 667/533/400 SDRAM • Supports High Performance & High Quality 3D/2D Graphics Accelerator |
| SiS966L (SB) | <ul style="list-style-type: none"> • 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 specification supporting up to 6 PCI masters • Compliant with PCI Express 1.0a • Compliant with Serial ATA 1.0a specification • Supports Dual IDE Master/Slave Controller supports Ultra DMA 133/100/66/33 • Compliant with AC'97 Codec supporting 6-Channel audio outputs • Integrated USB 2.0 Controller supporting up to eight ports |

Memory

- Supports DDR2 667/533/400 DDR2 SDRAM memory module
- Accommodates two unbuffered DIMMs
- Up to 1 GB per DIMM with maximum memory size up to 2 GB

Audio

- Compliant with AC'97 v2.3 CODEC
- Supports 6-channel audio CODEC designed for PC multimedia systems
- Provides three analog line-level stereo inputs with 5-bit volume control: Line-in, CD in, AUX-in
- Meets Microsoft WHQL/WLP 2.0 audio requirements

Introducing the Motherboard

Onboard LAN (Optional)

The onboard LAN controller provides any of the following features:

- 10BASE-T/100BASE-TX IEEE802.3u fast Ethernet transceiver
- Integrated voltage regulator to allow operation from a single 3.3V/2.5V supply source
- 32-pin MLP package

1394a (Optional)

- Compliant with single chip host controller for IEEE Std 1394-1995 and IEEE1394a-2000
- Integrated 400 Mb/s 2-Port PHY for the PCI BUS
- 3.3V Power Supply with 5V Tolerant Inputs

Expansion Options

The motherboard comes with the following expansion options:

- One PCI Express x16 slot for Graphics Interface
- One 32-bit PCI v2.3 compliant slot
- One 40-pin IDE low profile header that support two IDE devices
- One floppy disk drive interface
- Two 7-pin SATA connectors

The 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
- Four USB ports
- One 1394a port (optional)
- One LAN port (optional)
- Audio jacks for microphone, line-in and 6-Ch line-out

BIOS Firmware

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

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

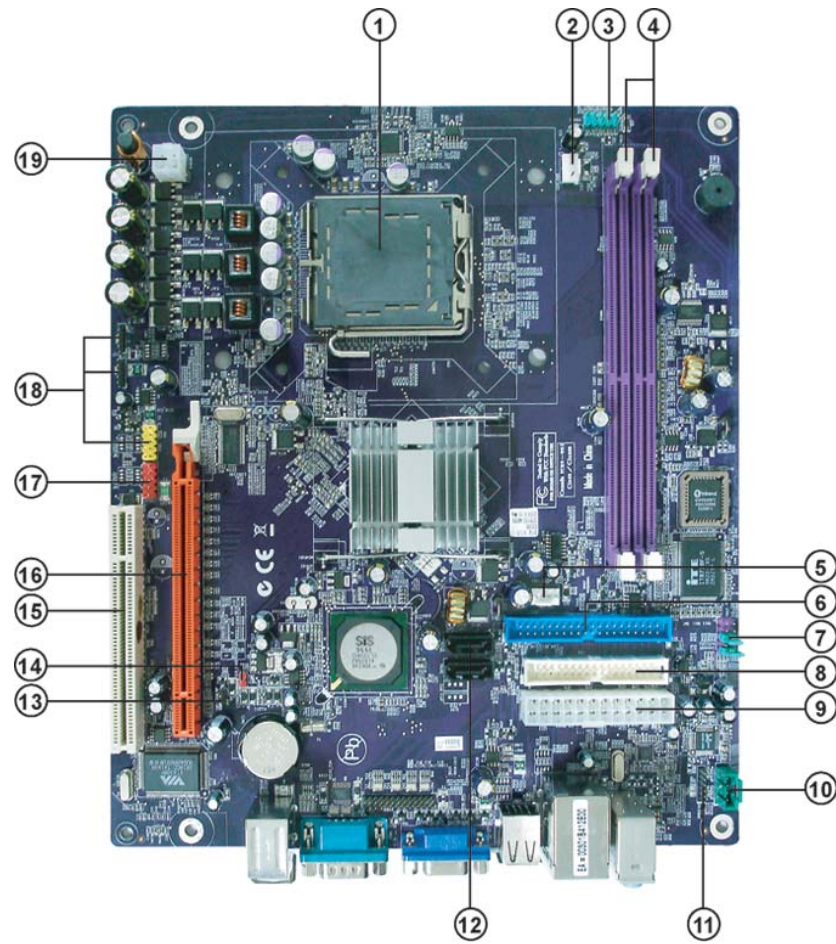
The firmware can also be used to set parameters for different processor clock speeds.



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

Introducing the Motherboard

Motherboard Components



Introducing the Motherboard

Table of Motherboard Components

LABEL	COMPONENT
1 CPU Socket	LGA775 socket for Intel Pentium D/Pentium 4/Celeron D CPUs
2 CPU_FAN	CPU cooling fan connector
3 PANEL1	Front panel switch/LED header
4 DIMM1~2	240-pin DDR2 SDRAM slots
5 SYS_FAN	System cooling fan connector
6 IDE1	Primary IDE connector
7 AUDIO1	Front panel audio header
8 FDD	Floppy diskette drive connector
9 ATX_POWER	Standard 24-pin ATX power connector
10 AUX_IN	Auxiliary In connector
11 SPDIFIO	SPDIF out header
12 SATA1~2	Serial ATA connectors
13 BIOS_WP	BIOS flash protect jumper
14 CLR_CMOS	Clear CMOS jumper
15 PCI1	32-bit add-on card slot
16 PCIEX16	PCI Express x16 Slot
17 1394A2	Onboard 1394a header
18 USB3~5	Front Panel USB headers
19 ATX12V	4-pin +12V power connector

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

Introducing the Motherboard

Memo

Introducing the Motherboard

Chapter 2

Installing the Motherboard

Safety Precautions

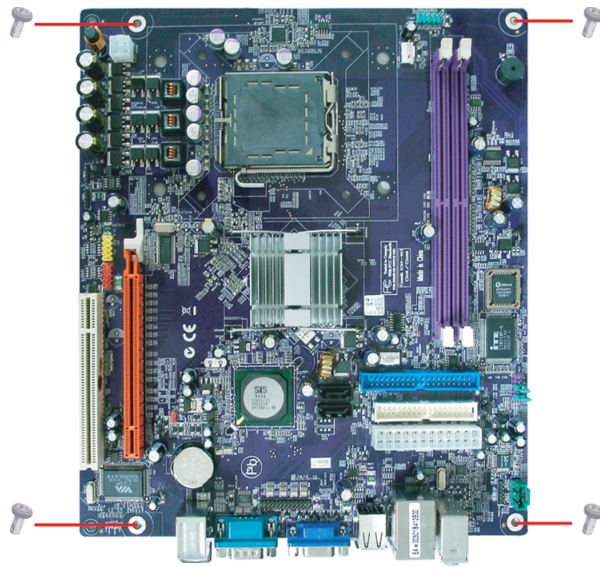
- Follow these safety precautions when installing the motherboard
- Wear a grounding strap attached to a grounded device to avoid damage from static electricity
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard
- Leave components in 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 Nano-BTX 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 Nano-BTX form factor of 266 x 224 mm. Choose a case that accommodates this form factor.



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**.

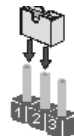


SHORT



OPEN

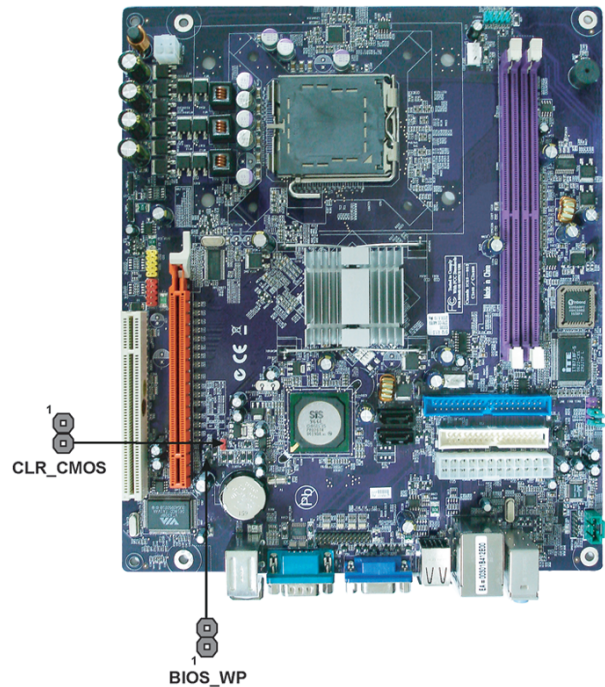
This illustration shows a 3-pin jumper. Pins 1 and 2 are **SHORT**.





Installing the Motherboard

Checking Jumper Settings

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



Jumper Settings

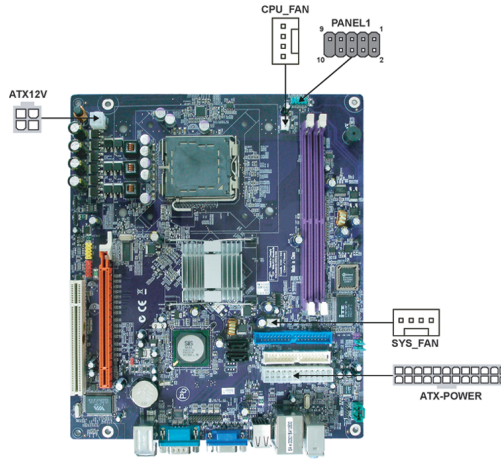
Jumper	Type	Description	Setting (default)	
CLR_CMOS	2-pin	CLEAR CMOS	Open: NORMAL Short: CLEAR CMOS Before clearing the CMOS, make sure to turn off the system.	1  CLR_CMOS
BIOS_WP	2-pin	BIOS PROTECT	OPEN: Enable Write SHORT: Disable Write	1  BIOS_WP

Installing the Motherboard

Connecting Case Components

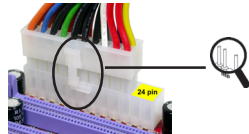
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:

- 1 Connect the CPU cooling fan cable to **CPU_FAN**.
- 2 Connect the system cooling fan connector to **SYS_FAN**.
- 3 Connect the case switches and indicator LEDs to the **PANEL1**.
- 4 Connect the standard power supply connector to **ATX_POWER**.
- 5 Connect the auxiliary case power supply connector to **ATX12V**.



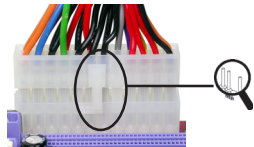
Connecting 20/24-pin power cable

Users please note that the 20-pin and 24-pin power cables can both be connected to the ATX_POWER connector. With the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the ATX_POWER 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-configured system.



20-pin power cable

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



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 ATX_POWER match perfectly.

Installing the Motherboard

CPU_FAN/SYS_FAN: Cooling Fan Connectors

Pin	Signal Name	Function
1	GND	System 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.

ATX_POWER: 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	COM
4	+5V	16	PS_ON
5	Ground	17	COM
6	+5V	18	COM
7	Ground	19	COM
8	PWRGD	20	-5V
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	COM

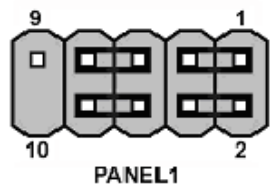
ATX12V: ATX 12V Power Connector

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

Installing the Motherboard

Front Panel Header

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



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 the Motherboard

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.

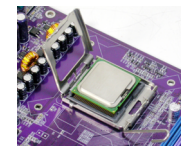
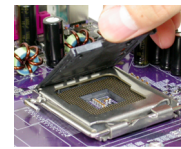
This motherboard has an LGA775 processor socket. When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.

Installing the Motherboard

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 supplied. 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 the cap on the LGA775 socket.

Installing the Motherboard

Installing Memory Modules

This motherboard accommodates two memory modules. It can support two 240-pin unbuffered DIMM, DDR2 667/533/400. The total memory capacity is 2 GB.

DDR2 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 1 GB of memory; total memory capacity is 2 GB.

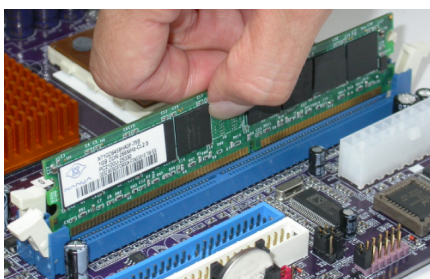


Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.

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.



Installing the Motherboard

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

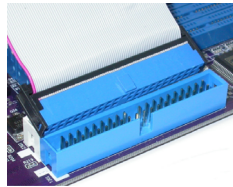
Your motherboard has one IDE channel interface. An IDE ribbon cable supporting two IDE devices is bundled with the motherboard.



You must orient the cable connector so that the pin1 (color) edge of the cable corresponds 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 1.5 Gb/s. To get better system performance, we recommend users connect the CD-ROM to the IDE channel, and set up the hard drives 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 refers to 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)

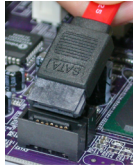


SATA power cable (optional)

Installing the Motherboard

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

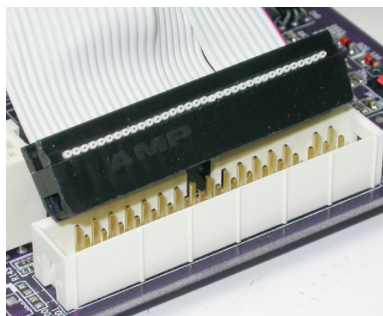
The motherboard has a floppy diskette drive (FDD) interface and ships with a diskette drive ribbon cable that supports one or two floppy diskette drives. You can install a 5.25-inch drive and a 3.5-inch drive with various capacities. The floppy diskette drive cable has one type of connector for a 5.25-inch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

FDD: Floppy Disk Connector

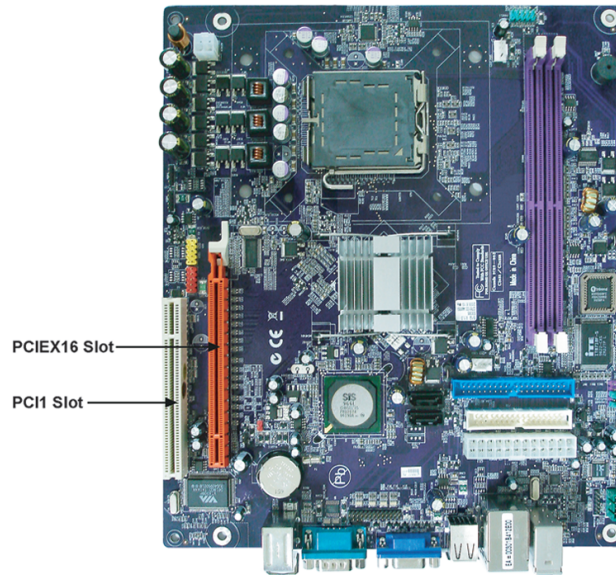
This connector supports the provided floppy drive ribbon cable. After connecting the single end to the onboard floppy connector, connect the remaining plugs on the other end to the floppy drives correspondingly.



Installing the Motherboard

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.



PCIEX16 Slot The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 1.1.

PCI1 Slot This motherboard is equipped with one standard PCI slot. 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 slot on this board is PCI v2.3 compliant.

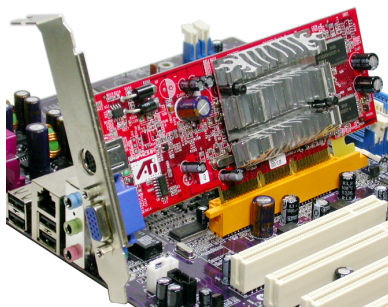


Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Installing the Motherboard

Follow these instructions to install an add-on card:

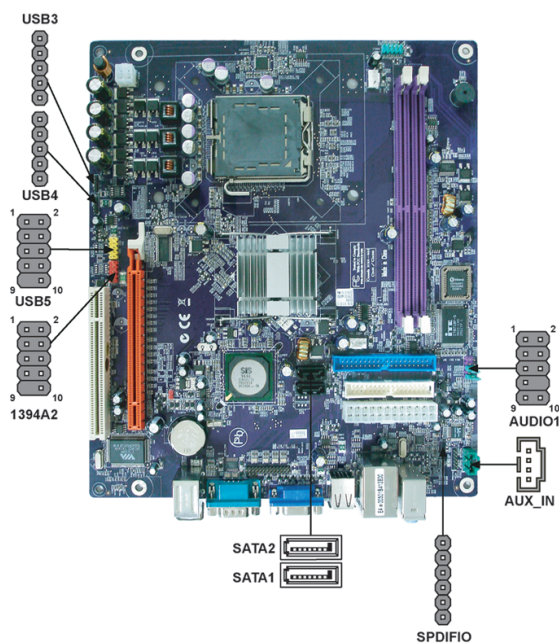
- 1 Remove a blanking plate from the system case corresponding to the slot you are going to use.
- 2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.
- 3 Secure the metal bracket of the card to the system case with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



Installing the Motherboard

AUDIO1: Front Panel Audio header

This header allows the user to install auxiliary front-oriented microphone and 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

AUX_IN: Auxiliary In connector

This connector is an additional line-in audio connector. It allows you to attach a line-in cable when your rear line-in jack is set as line out port for 4-channel function.

Pin	Signal Name	Function
1	AUX_L	AXU In left channel
2	GND	Ground
3	GND	Ground
4	AUX_R	AXU In right channel

SATA1~2: Serial ATA connectors

These connectors are used to support the new Serial ATA devices for the highest data transfer rates (1.5 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	-	-

SPDIF0: 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 IN	SPDIF digital input
2	GND	Ground
3	VCC	5V analog Power
4	GND	Ground
5	VCC	5V analog Power
6	SPDIF OUT	SPDIF digital output

Installing the Motherboard

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	GND	Ground
2	GND	Ground
3	USB(+)	USB Positive Signal
4	USB(-)	USB Negative Signal
5	5VSB	+5V stand by power

USB5: Front Panel USB header

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 indicated above. A different pin assignment may cause damage or system hang-up.

1394A2: Onboard IEEE 1394a headers (Optional)

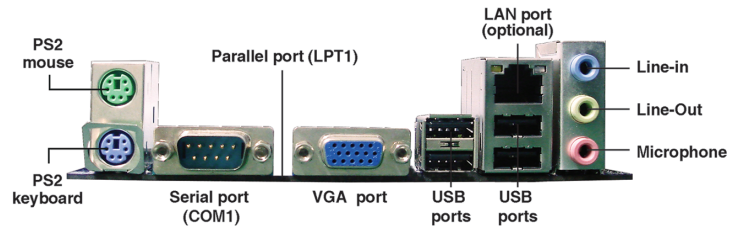
Connect this header to any device with IEEE 1394a interface.

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

Installing the Motherboard

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)** 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.
- Audio Ports** 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 concludes Chapter 2. The next chapter covers the BIOS.

Installing the Motherboard

Chapter 3

Using BIOS

About the Setup Utility

The computer uses the latest Award 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:

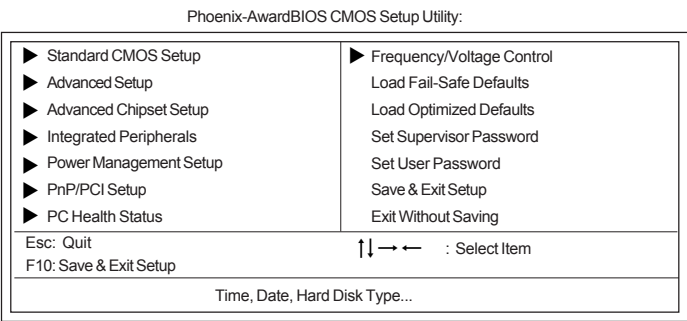
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security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

Pressing the delete key accesses 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
F10	Saves the current configuration and exits setup
F1	Displays a screen that describes all key functions
F5	Loads previously saved values to CMOS
F6	Loads a minimum configuration for troubleshooting
F7	Loads an optimum set of values for peak performance

Using BIOS

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 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.
- 2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)
- 3 Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
- 4 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 3.
- 5 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.)
- 6 At the A:\ prompt, type the Flash Utility program name and press <Enter>.
- 7 Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.
- 8 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.

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 ►.

Using BIOS

Standard CMOS Setup

This option displays basic information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Standard CMOS Setup

Date (mm:dd:yy)	Sun, Jan 1 2006	Item Help
Time (hh:mm:ss)	20 : 23 : 48	
► IDE Primary Master	[None]	Menu Level ► Change the day, month, year and century
► IDE Primary Slave	[None]	
SATA Channel 1 Master	[None]	
SATA Channel 2 Master	[None]	
Drive A	[None]	
Video	[EGA/VGA]	
Halt On	[All Errors]	
Base Memory	640K	
Extended Memory	65535K	
Total Memory	66175K	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

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.

► IDE Devices

Your computer has two IDE channels (Primary and Secondary) and each channel can be installed with one or two devices (Master and Slave). Use these items to configure each device on the IDE channel.

Phoenix-AwardBIOS CMOS Setup Utility
IDE Primary Maser

IDE HDD Auto-Detection	[Press Enter]	Item Help
IDE Primary Master	[Auto]	
Access Mode	[Auto]	Menu Level ►► To auto-detect the HDD's size, head... on this channel
Capacity	0MB	
Cylinder	0	
Head	0	
Precomp	0	
Landing Zone	0	
Sector	0	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

IDE HDD Auto-Detection

Press <Enter> while this item is highlighted to prompt the Setup Utility to automatically detect and configure an IDE device on the IDE channel.



If you are setting up a new hard disk drive that supports LBA mode, more than one line will appear in the parameter box. Choose the line that lists LBA for an LBA drive.

IDE Primary Master/Slave (Auto)

Leave these items at Auto to enable the system to automatically detect and configure IDE devices on the channel. If it fails to find a device, change the value to Manual and then manually configure the drive by entering the characteristics of the drive in the items described below.

Refer to your drive's documentation or look on the drive casing if you need to obtain this information. If no device is installed, change the value to None.



Before attempting to configure a hard disk drive, ensure that you have the configuration information supplied by the manufacturer of your hard drive. Incorrect settings can result in your system not recognizing the installed hard disk.

Access Mode (Auto)

This item defines ways that can be used to access IDE hard disks such as LBA (Large Block Addressing). Leave this value at Auto and the system will automatically decide the fastest way to access the hard disk drive.

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

SATA Channel 1/2 Master (None)

These items will be shown if they are set at the default values. They won't be seen if you set them under the dynamic SATA RAID mode.

Video (EGA/VGA)

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

Drive A (1.44M, 3.5 in.)

These items define the characteristics of any diskette drive attached to the system. You can connect one or two diskette drives.

Video (EGA/VGA)

This item defines the video mode of the system. This motherboard has a built-in VGA graphics system; you must leave this item at the default value.

Halt On (All Errors)

This item defines the operation of the system POST (Power On Self Test) routine. You can use this item to select which types of errors in the POST are sufficient to halt the system.

Base Memory, Extended Memory, and Total Memory

These items are automatically detected by the system at start up time. These are display-only fields. You cannot make changes to these fields.

Using BIOS

Advanced Setup

This option defines advanced information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Advanced Setup

▶ CPU Feature	[Press Enter]	Item Help Menu Level ▶
▶ Removable Device Priority	[Press Enter]	
▶ Hard Disk Boot Priority	[Press Enter]	
▶ CD-ROM Boot Priority	[Press Enter]	
▶ Network Boot Priority	[Press Enter]	
Virus warning	[Disabled]	
CPU L1 & L2 Cache	[Enabled]	
Hyper-Threading Technology	[Enabled]	
CPU L2 Cache ECC Checking	[Enabled]	
Quick P.O.S.T.	[Enabled]	
First Boot Device	[CDROM]	
Second Boot Device	[Hard Disk]	
Third Boot Device	[Removable]	
Boot Other Device	[Enabled]	
Boot Up Floppy Seek	[Disabled]	
Auto Detect Boot Device	[Disabled]	
Boot Up NumLock Status	[On]	
Security Option	[Setup]	
Gate A20 Option	[Fast]	
APIC Mode	[Enabled]	
MPS Version	[1.4]	
Shadow option	[Disabled]	
HDD Security Freeze Lock	[Disabled]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

▶ CPU Feature (Press Enter)

Users please note that this function is only available for Prescott CPUs. Scroll to this item and press <Enter> to view the following screen:

Phoenix-AwardBIOS CMOS Setup Utility
CPU Feature

Thermal Management	[Thermal Monitor 1]	Item Help Menu Level ▶▶ Thermal Monitor 1 (On die throttling) Thermal Monitor 2 (Ratio & VID transition)
TM2 Bus Ratio	[0 X]	
TM2 Bus VID	[0.8375V]	
Limit CPUID MaxVal	[Disabled]	
C1E Support	[Auto]	
Execute Disable Bit	[Disabled]	
Venderpool Technology	[Enabled]	

↑↓ → ← : Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6: Fail-Safe Defaults F7:Optimized

Thermal Management (Thermal Monitor 1)

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

TM2 Bus Ratio (0 X)

This item represents the frequency (bus ratio) of the throttled performance state that will be initiated when the on-die sensor goes from not hot to hot. Please note this item will be hidden except CPU support.

TM2 Bus VID (0.8375)

This item represents the voltage of the throttled performance state that will be initiated when the on-die sensor goes from not hot to hot. Please note this item will be hidden except CPU support.

Limit CPUID MaxVal (Disabled)

This item can support Prescott CPUs for old OS. Users please note that under NT 4.0, it must be set "Enabled", while under WinXP, it must be set "Disabled".

C1E Support (Auto)

Use this item to decrease the bus ratio that reduces the consumption of CPU electricity and power, which is only for the CPU supporting the C1E function. Please note this item will be hidden except CPU support.

Execute Disable Bit (Disabled)

This item is a security feature that helps you protect your CPU and operating system against malicious software executing code. This item is available when CPU supports the feature.

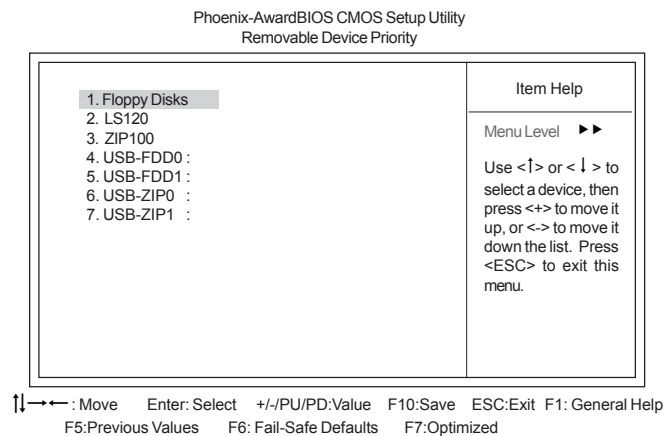
Venderpool Technology (Enabled)

This item enables or disables the Vanderpool Technology. When disabled, the VT function will close. Please note this item will be hidden except CPU support.

Press <Esc> to return to Advanced Setup screen.

► Removable Device Priority (Press Enter)

Please note this item will be hidden except you connect the Floppy device or USB ZIP device. Scroll to this item and press <Enter> to view the following screen:



Press <Esc> to return to Advanced Setup screen.

Using BIOS

► **Hard Disk Boot Priority (Press Enter)**

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

Phoenix-AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

<div>1. Pri. Master : 2. Pri. Slave : 3. Sec. Master: 4. Sec. Slave : 5. USBHDD0 : 6. USBHDD1 : 7. USBHDD2 : 8. Bootable Add-in Cards</div>	<div>Item Help</div> <div>Menu Level ▶▶</div> <div>Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.</div>
---	---

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized

Press <Esc> to return to Advanced Setup screen.

► **CD-ROM Boot Priority (Press Enter)**

Please note this item will be hidden except you connect the CD/DVD driver.

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

Phoenix-AwardBIOS CMOS Setup Utility
CD-ROM Boot Priority

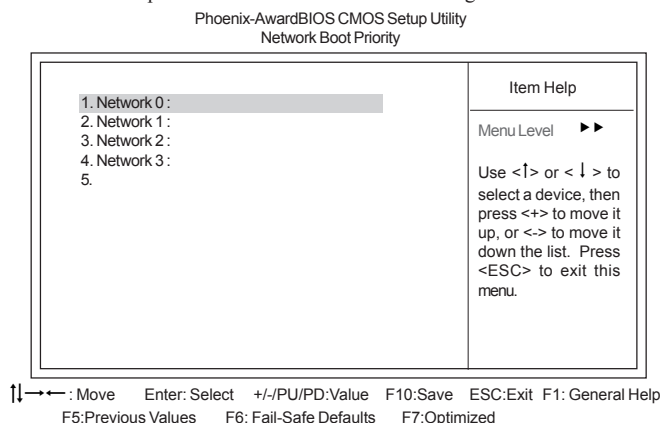
<div>1. Pri. Master : 2. Pri. Slave : 3. Sec. Master : 4. Sec. Slave : 5. USB-CDROM0 : 6. USB-CDROM1 :</div>	<div>Item Help</div> <div>Menu Level ▶▶</div> <div>Use <↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.</div>
--	---

↑↓←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized

Press <Esc> to return to Advanced Setup screen.

► Network Boot Priority (Press Enter)

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



Press <Esc> to return to Advanced Setup screen.

Virus warning (Disabled)

This item allows you to choose the VIRUS warning feature for IDE Hard Disk boot sector protection. If this function is enabled and someone attempts to write data into this area, BIOS will show a warning message on screen and alarm beep.

CPU L1&L2 Cache (Enabled)

All processors that can be installed in this mainboard use internal level 1 (L1) and external level 2 (L2) cache memory to improve performance. Leave this item at the default value for better performance.

Hyper-Threading Technology (Enabled)

This item is only available when the chipset supports Hyper-Threading and you are using a Hyper-Threading CPU.

CPU L2 Cache ECC Checking (Enabled)

This item allows you to choose the CPU L2 Cache ECC Checking function.

Quick P. O. S. T. (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.

First/Second/Third Boot Device (CDROM/Hard Disk/Removable)

Use these three items to select the priority and order of the devices that your system searches for an operating system at start-up time.

Boot Other Device (Enabled)

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.

Using BIOS

Boot Up Floppy Seek (Disabled)

If this item is enabled, it checks the size of the floppy disk drives at start-up time. You don't need to enable this item unless you have a legacy diskette drive with 360K capacity.

Auto Detect Boot Device (Disabled)

This item enables or disables the auto detect boot device function.

Boot Up NumLock Status (On)

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

Security Option (Setup)

If you have installed password protection, this item defines if the password is required at system start up, or if it is only required when a user tries to enter the Setup Utility.

Gate A20 Option (Fast)

This item defines how the system handles legacy software that was written for an earlier generation of processors. Leave this item at the default value.

APIC Mode (Enabled)

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

MPS Version (1.4)

This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.

Shadow option (Disabled)

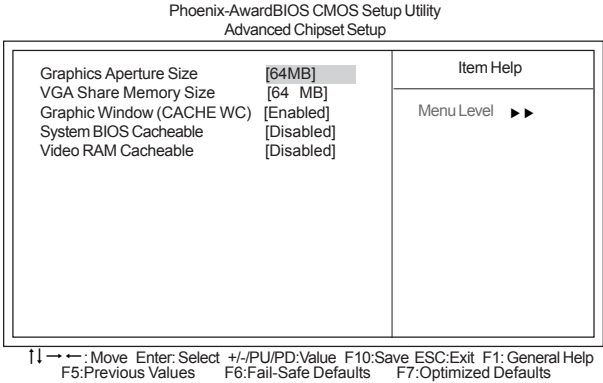
This item allows you to enable or disable shadow option.

HDD Security Freeze Lock (Disabled)

This item enable or disable the HDD security freeze lock function.

Advanced Chipset Setup

These items define critical timing parameters of the motherboard. You should leave the items on this page at their default values unless you are very familiar with the technical specifications of your system hardware. If you change the values incorrectly, you may introduce fatal errors or recurring instability into your system.



Graphics Aperture Size (64MB)

This setting controls just how much system RAM can be allocated to Graphics for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the Graphics without any translation.

VGA Share Memory Size (64 MB)

This item allows you to select the shared memory size for VGA usage.

Graphic Window (CACHE WC) (Enabled)

This item defines the Graphic Window value.

System BIOS Cacheable (Disabled)

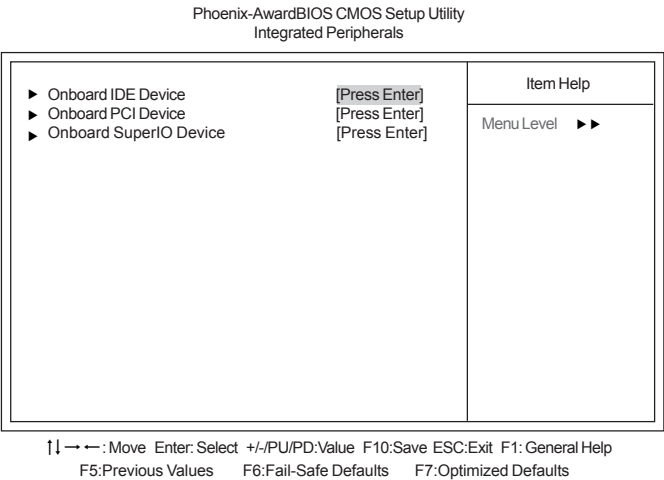
This feature is only valid when the system BIOS is shadowed. It enables or disables the caching of the system BIOS ROM at **F0000h-FFFFFh** via the L2 cache. This greatly speeds up accesses to the system BIOS.

Video RAM Cacheable (Disabled)

This feature enables or disables the caching of the video RAM at **A0000h-AFFFFh** via the L2 cache.

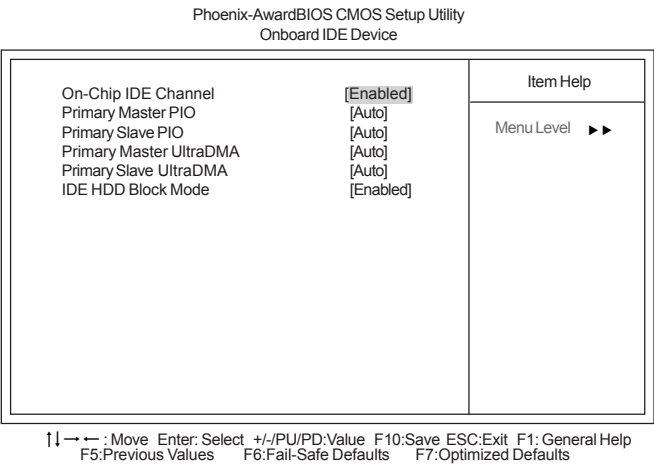
Integrated Peripherals

These options display items that define the operation of peripheral components on the system’s input/output ports.



▶ **Onboard IDE Device (Press Enter)**

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



On-Chip IDE Channel (Enabled)

Use these items to enable or disable the PCI IDE channels that are integrated on the mainboard.

Primary Master/Slave PIO (Auto)

Each IDE channel supports a master device and a slave device. These four items let you assign which kind of PIO (Programmed Input/Output) is used by IDE devices. Choose Auto to let the system auto detect which PIO mode is best, or select a PIO mode from 0-4.

Using BIOS

Primary Master/Slave UltraDMA (Auto)

This mainboard supports UltraDMA technology, which provides faster access to IDE devices. If you install a device that supports UltraDMA, change the item on this list to Auto. You may have to install the UltraDMA driver supplied with this mainboard in order to use an UltraDMA device.

IDE HDD Block Mode (Enabled)

Enable this field if your IDE and hard drive supports block mode. Block mode enables BIOS to automatically detect the optimal number of block read and write per sector that the drive can support and improve the speed of access to IDE devices.

Press <Esc> to return to the Integrated Peripherals page.

► Onboard PCI Device (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
Onboard PCI Device

On-Chip USB	[Enabled]	Item Help Menu Level ►►
Init Display First	[PCI Slot]	
Onboard Audio	[Enabled]	
SiS Serial ATA Controller	[Enabled]	
SiS Serial ATA Mode	[2P(IDE)+2S(IDE)]	
Onboard LAN	[Enabled]	
Onboard LAN ROM	[Disabled]	
Onboard 1394 Device	[Enabled]	

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

On-Chip USB (Enabled)

This item enables users to enable or disable the onchip USB function.

Init Display First (PCI Slot)

Use this item to specify whether your graphics adapter is installed in one of the PCI slots or is integrated on the mainboard.

Onboard Audio (Enabled)

This item allows users to enable or disable the onboard audio chip.

SiS Serial ATA Controller (Enabled)

This item allows you to enable or disable the onboard Serial-ATA device.

SiS Serial ATA Mode [2P(IDE)+2S(IDE)]

Enables or disables the SATA mode.

Onboard LAN (Enabled)

This option allows you to enable or disable the onboard LAN function.

Onboard LAN ROM (Disabled)

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

Using BIOS

Onboard 1394 Device (Enabled)

This item allows users to enable or disable the onboard 1394 device.

Press <Esc> to return to the Integrated Peripherals page.

► Onboard SuperIO Device (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
Onboard SuperIO Device

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[SPP]	
ECP Mode Use DMA	[3]	

Menu Level ►►

↑↓←→: Move Enter: Select +/-PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Onboard FDC Controller (Enabled)

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install an add-in FDC or the system has no floppy drive, select Disabled in this field.

Onboard Serial Port 1 (3F8/IRQ4)

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port1 (COM1).

Onboard Parallel Port (378/IRQ7)

This option is used to assign the I/O address and interrupt request (IRQ) for the onboard parallel port.

Parallel Port Mode (SPP)

Enables you to set the data transfer protocol for your parallel port. There are four options: SPP (Standard Parallel Port), EPP (Enhanced Parallel Port), ECP (Extended Capabilities Port), and ECP+EPP.

ECP Mode Use DMA (3)

When the onboard parallel port is set tp ECP mode, the parallel port can use DMA3 or DMA1.

Press <Esc> to return to the Integrated Peripherals page.

Power Management Setup

This option lets you control system power management. The system has various power-saving modes including powering down the hard disk, turning off the video, suspending to RAM, and software power down that allows the system to be automatically resumed by certain events.

Phoenix-AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI function	Enabled	Item Help
ACPI Suspend Type	[S1 (POS)]	
All wakeup features	[Disabled]	Menu Level ▶
Power Button Override	[Instant Off]	
Video Off Option	[Suspend-->Off]	
Video Off Method	[DPMS Supported]	
PWRON after Power Fail	[Off]	
Power-On by Alarm	[Disabled]	
X Month Alarm	NA	
X Date (of Month) Alarm	0	
X Time (hh: mm: ss) Alarm	0: 0: 0	
PS2 Keyboard Power ON	[Disabled]	
PS2 Mouse Power ON	[Disabled]	

↑ ↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

ACPI Function (Enabled)

This item enables or disables the ACPI function.

ACPI Suspend Type [S1(POS)]

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

All wakeup features (Disabled)

This item enables or disables the all wakeup features of the mouse or keyboard.

Power Button Override (Instant Off)

Under ACPI (Advanced Configuration and Power management Interface) you can create a software power down. In a software power down, the system can be resume 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.

Video Off Option (Suspend —> Off)

This option defines if the video is powered down when the system is put into suspend mode.

Video Off Method (DPMS Supported)

This item defines how the video is powered down to save power. This item is set to DPMS (Display Power Management Software) by default.

PWRON after Power Fail (Off)

This item enables your computer to automatically restart or return to its last operation status after power returns from a power failure.

Using BIOS

PS2 Keyboard Power ON (Disabled)

Enable or disable the function of waking up the system by the keyboard activity.

PS2 Mouse Power ON (Disabled)

Enable or disable the function of waking up the system by the mouse activity.

PCI/PnP Setup

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the the ISA and PCI buses on the motherboard use system IRQs (Interrupt ReQuests) and DMAs (Direct Memory Access). You must set up the IRQ and DMA assignments correctly through the PnP/PCI Configurations Setup utility for the motherboard to work properly. Selecting PnP/PCI Configurations on the main program screen displays this menu:

Phoenix-AwardBIOS CMOS Setup Utility
PCI/PnP Setup

PCI Exp Multi Adapter	[Disabled]	Item Help
Reset Configuration Data	[Disabled]	Menu Level ▶
Resources Controlled By	[Auto(ESCD)]	
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	
** PCI Express relative items **		
Maximum ASPM supported	[L0s&L1]	
Maximum Payload Size	[4096]	

↑↓: Move ←→: Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

PCI Exp Multi Adapter (Disabled)

This item enables or disables the PCI Express Multi Adapter function.

Reset Configuration Data (Disabled)

If you enable this item and restart the system, any Plug and Play configuration data stored in the BIOS Setup is cleared from memory.

Resources Controlled By Auto [Auto(ESCD)]

You should leave this item at the default Auto (ESCD). Under this setting, the system dynamically allocates resources to Plug and Play devices as they are required.

If you cannot get a legacy ISA (Industry Standard Architecture) expansion card to work properly, you might be able to solve the problem by changing this item to Manual, and then opening up the IRQ Resources submenu.

- **IRQ Resources (Press Enter):** In the IRQ Resources submenu, if you assign an IRQ to Legacy ISA, then that Interrupt Request Line is reserved for a legacy ISA expansion card. Press <Esc> to close the IRQ Resources submenu.

PCI/VGA Palette Snoop (Disabled)

This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

Maximum ASPM supported (L0s&L1)

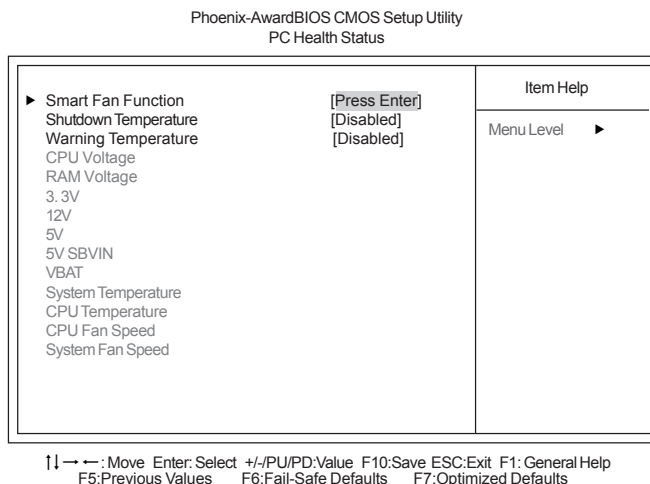
This item specifies the maximum ASPM supported function.

Maximum Payload Size (4096)

This item specifies the maximum payload size for the PCI Express function.

PC Health Status

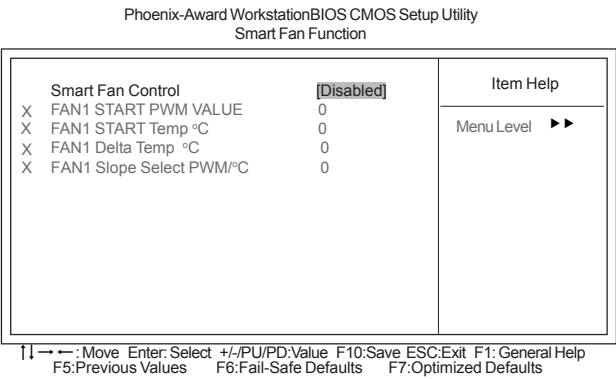
On motherboards that support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.



Using BIOS

► **Smart Fan Function (Press Enter)**

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



Smart Fan Control (Disabled)

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

- **FAN1 START PWM VALUE**: This item is used to set the start PWM value of the smart fan.
- **FAN1 START Temp °C**: This item is used to set the start temperature of the smart fan.
- **FAN1 Delta Temp °C**: This item is used to set the delta temperature of the smart fan.
- **FAN1 Slope Select PWM/°C**: This item is used to set the Slope Select PWM of the smart fan.

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

Shutdown Temperature (Disabled)

Enables you to set the maximum temperature the system can reach before powering down.

Warning Temperature (Disabled)

This item enables or disables the warning temperature function.

System Component Characteristics

These fields provide you with information about the systems current operating status. You cannot make changes to these fields.

- CPU Voltage
- RAM Voltage
- 3.3 V
- 12V
- 5V
- 5V SBVIN
- VBAT
- System Temperature
- CPU Temperature
- CPU Fan Speed
- System Fan Speed

Frequency/Voltage Control

This item 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.

Phoenix-AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

▶ Internal Graphic Control	[Press Enter]	Item Help
▶ DRAM Clock/Timing Control	[Press Enter]	Menu Level ▶
CPU Clock Ratio	[0 X]	
Auto Detect PCI Clk	[Enabled]	
Spread Spectrum	[+/-0.3%]	
CPU Clock	[100]	
CPU: DRAM Frequency Ratio	[SPD]	
DRAM Frequency		

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

▶ Internal Graphic Control (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
Internal Graphic Control

Graphic Engine Clock	[166 MHz]	Item Help
Graphic Memory Clock	[200 MHz]	Menu Level ▶▶

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

Graphic Engine Clock (200 MHz)

This setting controls the Graphic Engine Clock.

Graphic Memory Clock (200 MHz)

This setting controls the Graphic Memory Clock.

Press <Esc> to return to the Frequency/Voltage Control page.

Using BIOS

► **DRAM Clock/Timing Control (Press Enter)**

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

Phoenix-AwardBIOS CMOS Setup Utility
DRAM Clock/Timing Control

DDR2 CAS Latency	[SPD]	Item Help
DRAM Timing Control	[Auto]	Menu Level ►►
X RAS to CAS Delay (tRCD)	2T	
X Precharge Time (tRP)	2T	
X RAS Active Time(tRAS)	15T	
X Write Recovery Time (tWR)	1T	
X DDR2 Additive Latency (tAL)	0T	
Performance Mode	[Disabled]	
UMCO Read Data Ready	[Auto]	

↑↓ → ← : Move Enter: Select +/-/PU/PD: Value F10: Save ESC: Exit F1: General Help
F5: Previous Values F6: Fail-Safe Defaults F7: Optimized Defaults

DDR2 CAS Latency (SPD)

This item enables users to adjust the DDR2 CAS Latency.

DRAM Timing Control (Auto)

Enables you to select the CAS latency time in HCLKs of 2, 2.5, or 3. The value is set at the factory depending on the DRAM installed. Do not change the values in this field unless you change specifications of the installed DRAM or the installed CPU.

- **RAS to CAS Delay (tRCD) (2T):** This is the amount of time a CAS is performed after a RAS. This lower the better, but some DRAM does not support low figures.
- **Precharge Time (TRP) (2T):** This item defines the precharge time.
- **RAS Active Time (tRAS) (15T):** This item allows you to set the amount of time a RAS can be kept open for multiple accesses. High figures will improve performance.
- **Write Recovery Time (tWR) (1T):** This item specifies the write recovery time.
- **DDR2 Additive Latency (tAL) (0T):** This item specifies the write recovery time.

Performance Mode (Disabled)

This item allows the user to enable or disable the performance mode.

UMCO Read Data Ready (Auto)

This item allows the user to specify the UMCO read data ready value.

Press <Esc> to return to the Frequency/Voltage Control page.

CPU Clock Ratio (0 X)

Use the CPU Host/SDRAM/PCI Clock to set the frontside bus frequency for the installed processor (usually 133 MHz, 100 MHz or 66 MHz). Then use *CPU Clock Ratio Jumpless* to set a multiple. The multiple times the frontside bus must equal the core speed of the installed processor e.g., **3.5 (multiple) x 100 MHz (frontside bus) = 350 MHz (installed processor clock speed)**.

Auto Detect PCI Clk (Enabled)

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

Spread Spectrum (+/-0.3%)

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

CPU Clock (100)

This item displays the CPU frequency. This is a display-only item.

CPU: DRAM Frequency Ratio (SPD)

This item allows users to adjust the memory (DRAM) frequency ratio.

DRAM Frequency

This item displays the memory (DRAM) frequency. This is a display-only item.

Load Fail-Safe Defaults

This option opens a dialog box that lets you install fail-safe defaults for all appropriate items in the Setup Utility. Press <Y> and the <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The fail-safe defaults place no great demands on the system and are generally stable. If your system is not functioning correctly, try installing the fail-safe defaults as a first step in getting your system working properly again. If you only want to install fail-safe defaults for a specific option, select and display that option, and then press <F6>.

Load Optimized Defaults

This option opens a dialog box that lets you install optimized defaults for all appropriate items in the Setup Utility. Press <Y> and then <Enter> to install the defaults. Press <N> and then <Enter> to not install the defaults. The optimized defaults place demands on the system that may be greater than the performance level of the components, such as the CPU and the memory. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Set Supervisor/User Password

When this function is selected, the following message appears at the center of the screen to assist you in creating a password.

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection. To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

If you have selected “**System**” in “Security Option” of “BIOS Features Setup” menu, you will be prompted for the password every time the system reboots or any time you try to enter BIOS Setup. If you have selected “**Setup**” at “Security Option” from “BIOS Features Setup” menu, you will be prompted for the password only when you enter BIOS Setup.

Supervisor Password has higher priority than User Password. You can use Supervisor Password when booting the system or entering BIOS Setup to modify all settings. Also you can use User Password when booting the system or entering BIOS Setup but can not modify any setting if Supervisor Password is enabled.

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, press <Y> to save and exit, or press <N> 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, press <Y> to discard changes and exit, or press <N> to return to the main menu.



If you have made settings that you do not want to save, use the “Exit Without Saving” item and press <Y> 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.

Using BIOS

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.



Never try to install all software from folder that is not specified for use with your motherboard.

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.

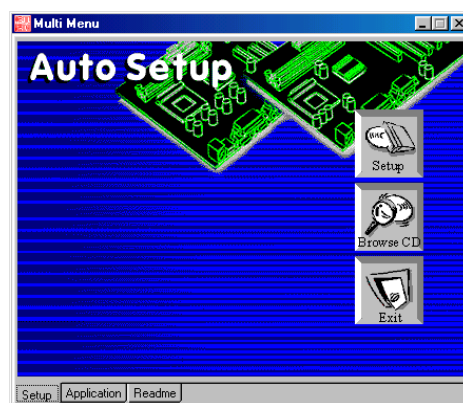
Auto-installing under Windows 2000/XP

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.

Using the Motherboard Software

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	<p>The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.</p> <p>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.</p> <p>Some software is installed in separate folders for different operating systems.</p> <p>In installing the software, execute a file named SETUP.EXE or INSTALL.EXE by double-clicking the file and then following the instructions on the screen.</p>
Exit	The EXIT button closes the Auto Setup window.

Application Tab

Lists the software utilities that are available on the CD.

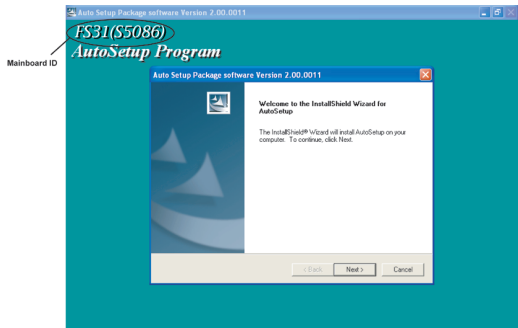
Read Me Tab

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:

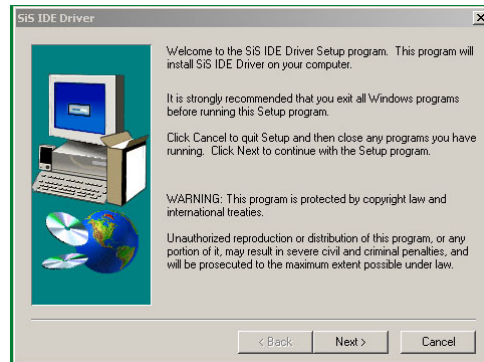


The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

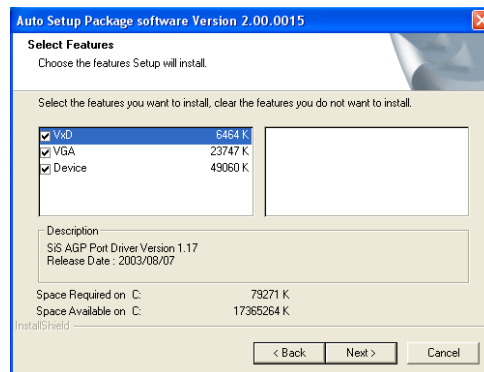
The motherboard identification is located in the upper left-hand corner.

Using the Motherboard Software

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.

Using the Motherboard Software

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.

AMI/AWARD Flash Utility

This utility lets you erase the system BIOS stored on a Flash Memory chip on the motherboard, and lets you copy an updated version of the BIOS to the chip. Proceed with caution when using this program. If you erase the current BIOS and fail to write a new BIOS, or write a new BIOS that is incorrect, your system will malfunction. Refer to Chapter 3, Using BIOS for more information.

WinFlash Utility

The WinFlash utility is a Windows version of the DOS BIOS flash writer utility. The utility enables you to flash the system BIOS stored on a Flash Memory chip on the motherboard while in a Windows environment. This utility is currently available for Win2000/XP. To install the WinFlash utility, run AFUWIN.EXE (AMI) or WINFLASH.EXE (Award) from the following directory: \UTILITY\WINFLASH AMI or Award.

This concludes Chapter 4.

Using the Motherboard Software

Chapter 5

SiS966/966L SATA RAID Setup Guide

Introduction for SiS966/966L SATA RAID Function

The 966 S-ATA controller supports four serial ATA on two independent ports, and The 966/966L S-ATA controller supports two serial ATA. 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/150 hard disks.

Serial ATA RAID function supports striping (RAID 0), mirroring (RAID 1), striping + mirroring (RAID 0+1) and span (JBOD). Please note that the function supports hard disk drives only and the 966L 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/150. Serial ATA RAID fully supports Serial ATA/150 specification of up to 150 MB/sec per drive, depending on individual drive specifications.

Features

- The SiS966 controller support four Serial ATA (Serial ATA RAID) drivers; while the SiS966/966L controller support two Serial ATA drivers.
- Support RAID function: RAID 0, RAID 1, RAID 0+1(SiS966 only), 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 "Striping". 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.

SiS966/966L SATA RAID Setup Guide

- 3 **RAID 0+1:** Also known as "StripeMirror". At least four hard drivers are required. RAID 0+1 is a combination of RAID 0 and RAID 1. Data is striped into two drives then mirrored. It provides high performance and high data protection. This is a costly solution as RAID 1 because the two mirrored drives represent an expensive insurance.
- 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 SiS966/966L SATA with RAID function.

- 1 For RAID function, SiS966/966L support RAID 0, RAID 1, RAID 0+1(SiS966 only), 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 966/966L 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.

SiS966/966L SATA RAID Setup Guide

BIOS Utility Operation

BIOS Utility supports windows 2000/XP.

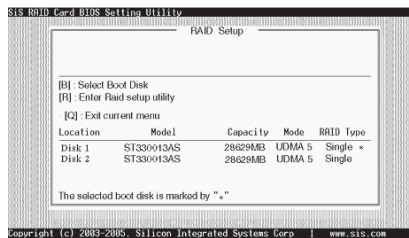
Starting BIOS Utility

- 1 Boot your system. If this is the first time you have booted with the SiS966/966L and the drives installed, the BIOS will display the following:

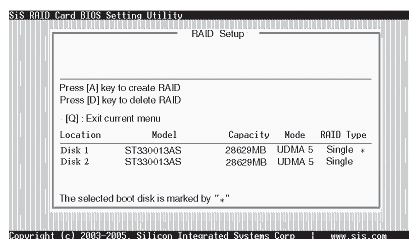
Silicon Integrated Systems Corp. RAID BIOS Setting Utility 1.00.0.XX
 (c) 2003-2006 Silicon Integrated Systems Corp. All Rights Reserved.

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

- 2 Press <Ctrl-S> keys to display the SiS966/966L Utility Main Menu.



- 3 You can press key to select the boot disk on the 966/966L 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

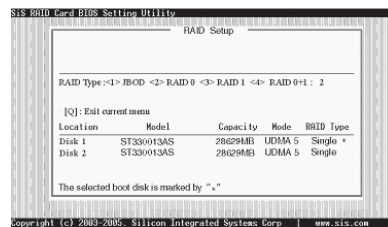
- SiS966/966L controller support RAID 0, RAID 1 and JBOD.

Creating a RAID 0 (Stripe) Array for Performance

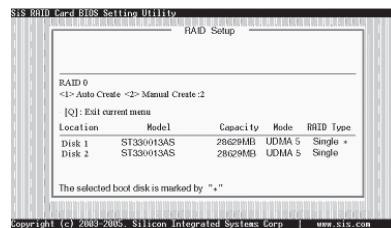
- SiS 180 enables users to create striped arrays with 1, 2, 3, or 4 drives.
- SiS966L supports 2 SATA drivers and SiS966 supports 4 SATA drivers to create a stripe array.

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

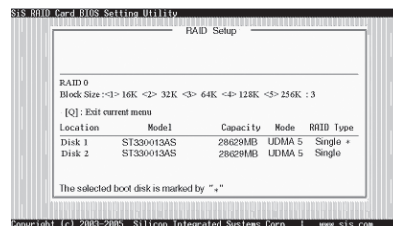
- 1 Press <A> to start creating a RAID array.
- 2 Press <2> and <Enter> to select RAID 0.



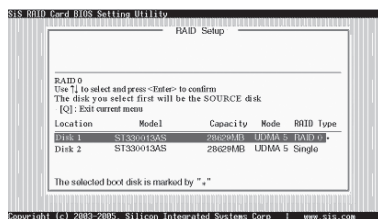
- 3 You will have two selections to create a RAID 0 array. The default value is <1>. If you select <1> **Auto Create**, you can create a RAID 0 array faster and easier. The Blocksize will be selected by its default value "64K". The result after creating will be show on **step 8**. Besides, you also can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



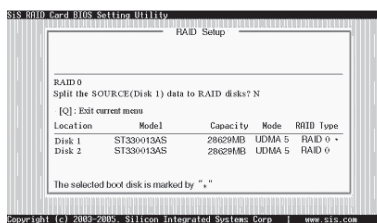
- 4 Press <1>-<5> keys and <Enter> to select Block Size. (Default:64K)



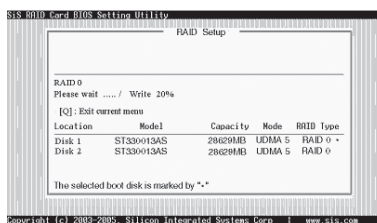
- 5 Use <↑> <↓> to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 0. An the disk you select first will be the SOURCE disk.



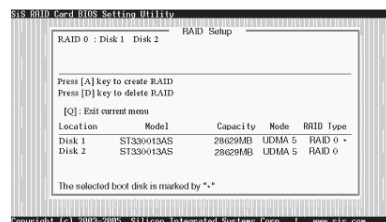
- 6 Next, you will see a message "Split the SOURCE(DISK x) data to RAID disks?". Press <N> and <Enter> to create RAID 0 array only or press <Y> and <Enter> to split the data from source disk to other disks.



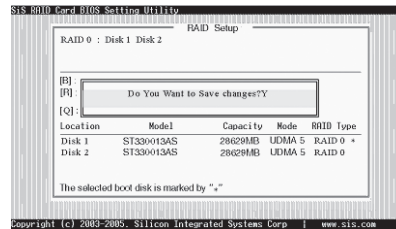
- 7 Starting splitting action, the following frame will be shown.



- 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.



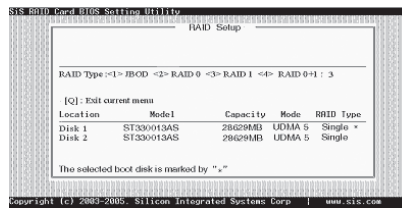
- 9 Press <Q> again to exit this BIOS utility and the red message frame will show. Press <Y> and <Enter> to save changes.
- 10 Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.



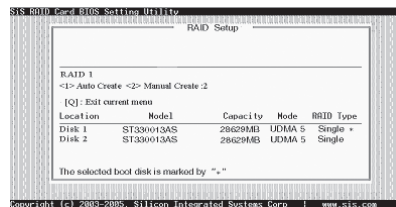
Creating a RAID 1 (Mirror) Array

To create a Mirror array, follow these steps:

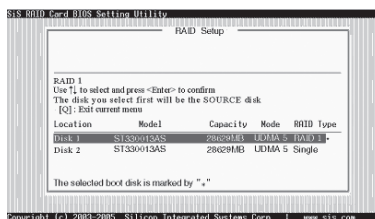
- 1 Press <A> to start creating a RAID array.
- 2 Press <3> and <Enter> to select Mirror.



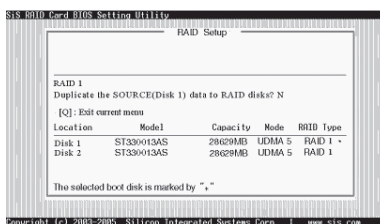
- 3 You will have two selections to create a RAID 1 array. **The default value is <1>.** If you select <1>**Auto Create**, you can create a RAID 1 array faster and easier. The result after creating will be show on **step 7**. Besides, you also can select <2>**Manual Create**, see following steps.



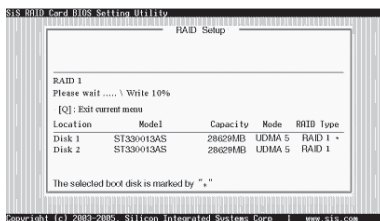
- 4 Use <↑> <↓> to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from **Single** to **RAID 1**. The same as RAID 0, the disk you select first will be the SOURCE disk.



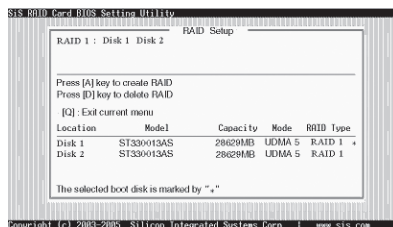
- 5 Next, you will see a message "Duplicate the SOURCE (DISK x) data to RAID disks?". Press <N> and <Enter> to create RAID 1 array only or press <Y> and <Enter> to duplicate the data from source disk to mirror disk.



- 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.

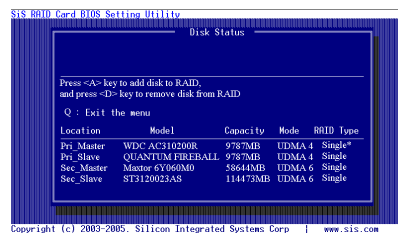


- 8 Press <Q> again to exit this BIOS utility and the red message frame will show as the same as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.
- 9 Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

Creating a RAID 0+1 (Stripe-Mirror) Array

To create a Stripe-Mirror array, follow these steps:

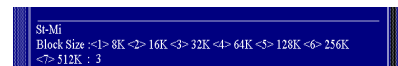
- 1 Press <A> to start creating array.



- 2 Press <4> and <Enter> to select Strpie-Mirror.



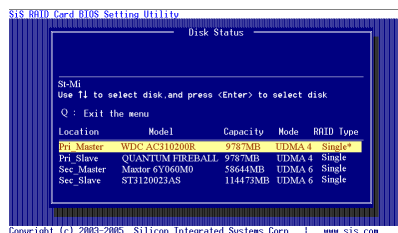
- 3 Press <1>%<7> keys and <Enter> to select Block Size. (Default : 32K)



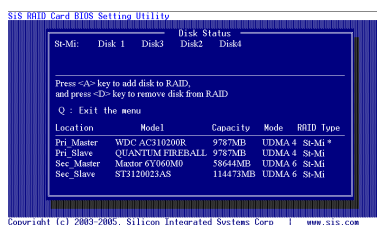
- 4 Press <1>%<2> keys and <Enter> to select Transfer Mode. (Default : DMA)



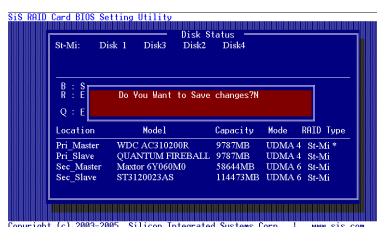
- 5 Use <!> <!"> to select disk , and press <Enter> to select disk, <Q> to exit.



- 6 Press <Q> until escape the setup menu



- 7 Press <Y> and <Enter> to save changes.



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

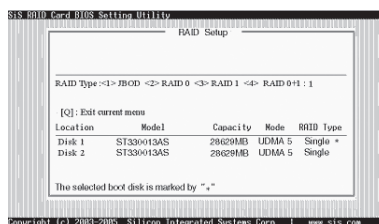
Creating a JBOD Array



- 1 SIS 180 enables users to create JBOD arrays with 2,3, or 4 drives.
- 2 SIS966 supports 4 SATA drivers (SIS966L 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.



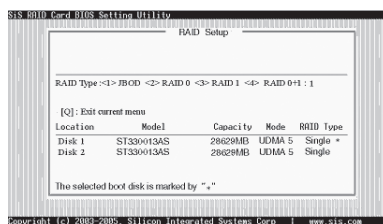
Creating a JBOD Array



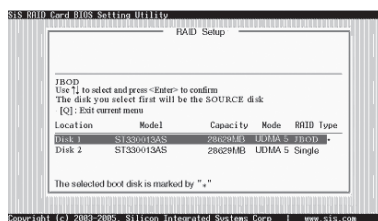
- 1 SIS 180 enables users to create JBOD arrays with 2,3, or 4 drives.
- 2 SIS966 supports 4 SATA drivers (SIS966L supports 2 SATA drivers) to create a JBOD arrays.

To create an JBOD array, follow these steps:

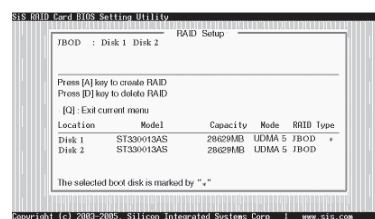
- 1 Press <A> to start creating a RAID array.
- 2 Press <1> and <Enter> to select JBOD.
- 3 You will have two selections to create a JBOD array. **The default value is <1>.** If you select <1>**Auto Create**, you can create a JBOD array faster and easier. The result after creating will be show on **step 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.

SiS966/966L SATA RAID Setup Guide