TÜV CERT

CERTIFICATE

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

hereby certifies in accordance with TÜV CERT
procedure that

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

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

has established and applies a quality system for

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

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

Proof has been furnished that the requirements according to

ISO 9001 : 2000 / EN ISO 9001 : 2000 / JIS Q 9001 : 2000 / ANSI/ASQC Q9001 : 2000

are fulfilled. The certificate is valid until 27 January 2007

Certificate Registration No. 04100 2000 1325

The company has been certified since 2000

Essen, 04.03.2004

RWTÜV

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

ISO14001
CERTIFICATE

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

We hereby certify that

ECS MANUFACTURING (SHANZHEN) CO., LTD.

by reason of its

Environmental Management System
has been awarded this certificate for
compliance with the standard
ISO14001:1996
The Environmental Management System
applies in the following area:
ECS MANUFACTURING (SHANZHEN) CO., LTD.
located at No. 20 & 26 (except 1F, 2F), Free Trade Zone,
Shatoujiao, Shenzhen City, Guangdong Province, P. R. China,
is engaged in manufacturing of Mother Board and Peripheral Card,
and interrelated managerial activities.

Date of issue: 28th Sept. 2004
Date of expiry: 27th Sept. 2007
Signed by:

CNAB

SHENZHEN SOUTHERN CERTIFICATION CO., LTD.

ECS ELITEGROUP

Table of Contents

EXTREME

ECS ELITEGROUP

EXTREME

This chapter entails the newest technology and rich features on the Photon Extreme motherboard.

Reference

1.1 Introduction

Thank you for choosing the ECS PF88 Extreme H motherboard.

PF88 Extreme H is the next generation of high performance motherboard designed to support the LGA775 socket Intel Pentiun4 Processors. This motherboard has an ATX form factor that uses a 4-layer printed circuit board and measures 305 mm x 244 mm.

The PF88 Extreme H motherboard is based on the SiS656 Northbridge and SiS965 chipsets to set a new benchmark for the best desktop platform solution. Supporting up to 4 GB of system memory with DDR2 667/533/400 DDR DIMMs, high resolution graphics via PCI Expess ports, Gigabit LAN, USB 2.0, 8-channel audio, SATA support and RAID function.

SiS656 includes a high speed and high performance Host Interface, a high throughput MuTIOL, a x16 PCI Express bridge and a Dual Channel memory controller. SiS965 integrates one PCI Express 1.0a root complex x1 ports, one Universal Serial Bus 2.0 Host Controllers, the Audio Controller with AC97 Interface, the IDE Master/Slave controllers, 4 ports Serial ATA Host Controller and SiS MuTIOL 1G technology.

1.2 Feature Summary

CPU	• LGA775 Socket for Intel Pentium 4 processor • FSB 1066/800/533MHz (266/200/133MHz Core Clock) • Supports Hyper-Threading Technology
Chipset	• SiS656 & SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Memory	• Dual-channel DDR memory architecture • 4 x 240-pin DDR2 DIMM socket support up to 4 GB • Supports DDR2 667/533/400 • Supports Non-ECC unbuffered 1.8V DDR DIMMs
Expansion Slots	• 2 x PCI Express x16 slots • 1 x Elite Bus slot • 1 x PCI Express x1 slot • 3 x PCI Slots

Storage	• Supported by SiS965
	  - 4 x Ultra DMA133 devices
	  - 4 x SATA devices,
	  - RAID 0, RAID 1, RAID 0+1 , and JBOD configuration
	• Supported by SiI3132
	  - Serial ATA Generation 2 transfer rate of 3.0 Gb/s
	  - 2 x SATA II devices
	  - RAID 0 and RAID 1 configuration

IEEE 1394a	• VIA VT6307 IEEE1394a controller • Supports 2 x IEEE1394a portrs
Audio	• ALC850 8-channel audio CODEC • Compliant with AC'97 2.3 specification
Gigabit LAN	• Marvel 88E1111 Gigabit LAN PHY • 10/100/1000Base-T IEEE 802.3 compliant
Rear panel I/O	• 1 x PS/2 keyboard connector • 1 x PS/2 mouse connector • 4 x USB ports • 1 x RJ45 LAN connector • 2 x Serial ports • 1 x LPT port • 1 x 1394a port • Audio jack for Line-in, Microphone, and 8-channel line out
BIOS features	• Award BIOS with 4Mb Flash ROM • Supports Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Supports ACPI revision 1.0B specificaion
Internal I/O	• 1 x 24-pin ATX Power Supply Connector & 4-pin 12 V Connector

	• 1 x Floppy connector- supports 360K ~ 2.88M Bytes, 3 Mode FDDs or LS120 • 2 x IDE connectors • 6 x Serial ATA connectors • 2 x USB 2.0 headers support additional 4 USB ports • 1 x 1394a header • 1 x SPDIFO1 header • 1 x Front panel switch/LED header • 1 x Front panel audio header • 1 x IR1 header • 1 x CD_IN header • 1 x SPK1 header • CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN connectors
Form Factor	• ATX size • 305mm x 244mm

1.3 Special Features

Extreme Power

Device plug with USB-like ease!

The ultimate I/O speed you need in 5 years

Upgrade your PC to Server-grade power now!

Slash memory access time!

New Generation of I/O interface!

One-key boot device selection!

Awesome overclocking!

Enjoy high-end sound system on your PC!

Overdrive your HDD performance with NCQ!

"Simple Smart" your PC!

Extreme Guardian

Auto restart after power loss!

PC protection tool kit!

A 'time machine' to protect and restore files!

Connect with external Multiple devices with FIS based switching function!

External SATA hot plug, anytime & anywhere. Absolute no limitation!

Extreme Link

Add peripherals and consumer electronics devices!

PCI 2.3 support!

Smart LAN!

All the USB 2.0 connectivity you'll ever need!

More port options!

Industrial-strength LAN power!

Let your PC as a fileserver!

Porvide good performance and data protection!

More options for data storage!

Extreme Genius

Color-coding for easy connections!

Rounded corners for strength and safety!

Eliminate data highway roadblocks!

Ultra sound quality!

Clear & Clean!

1.4 Package Check List

Motherboard

User's Guide

Installation CD

SATA Power Cable

SATA Cables

I/O Shield

IDE & FDD
Ribbon Cable

USB+1394 PCI
Bracket & housing

e-SATA Cable

1.5 Major Components
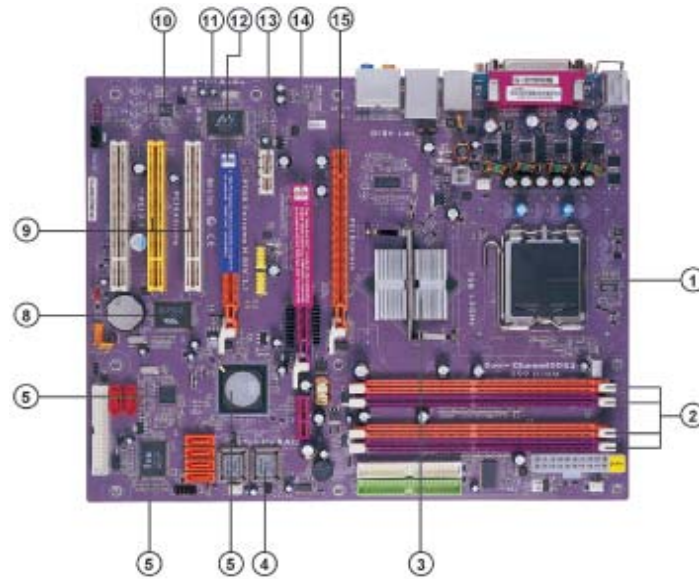
*Accessories are subject to change without prior notice.

1. **CPU socket**

   LGA775 surface mount, Zero Insertion Force socket for latest Intel Pentium 4 Processors support FSB 1066/800/533MHz (266/200 /133MHz Core Clock)

2. **Dual-channel DDR2 DIMM sockets**

   These four 240-pin DIMM sockets support up to 4GB system memory using unbuffered DDR2 667/533/400 DDR DIMMs.

3. **Northbridge controller**

   SiS656 integrates a high speed and high performance Host Interface, a high throughput MuTIOL, a x16 PCI Express bridge and a Dual Channel memory controller.

4. **Flash ROM**

   This 4Mb ROM contains the programmable BIOS program.

5. **Southbridge controller**

   The SiS965 integrated peripheral controller supports various I/O functions including four Serial ATA connectors, dual channel Ultra DMA133/100/66/33 master mode EIDE controller, up to eight USB 2.0 ports, AC'97 audio controller, and PCI 2.3 interface.

6. **Super I/O controller (IT8705)**

   The Winbond IT8705 Low Pin Count (LPC) interface provides the commonly used super I/O functionality. The chipset support a high performance floppy disk controller, a multi-mode parallel port, one serial port, the mouse and keyboard interface.

7. **SiI3132 Serial ATA controller**

   This motherboard incorporates SiI3132 Serial ATA controller, supports Serial ATA Generation 2 transfer rate of 3.0 Gb/s, with RAID 0 and RAID 1 configuration.

8. **IEEE 1394a controller**

   The IEEE 1394a controller provides high-speed and flexible PC connectivity to a wide range of peripherals and devices compliant to IEEE 1394a standards. The IEEE 1394a interface allows up to 400Mbps tranfer rates.

9. **PCI slots**

   These three 32-bit PCI 2.3 expansion slots support bus master PCI cards like SCSI or LAN cards with 133MB/s maximum throughput.

10. **Audio CODEC**

    The audio CODEC is compliant with AC'97 2.3 spec and supports 8-channel audio.

11. **Gigabit LAN**

    The Gigabit LAN delivers transfer rates up to 10/100/1000Mbps Ethernet connection. Ideal for handling large amounts of data such as video, audio and voice.

12. **PCI Express x16 slot for SIMA Card**

    This particular PCI Express x16 slot is exclusively designed to be used with "SIMA Card" concurrently.

13. PCI Express x1 slot

The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 1.0a.

14. Elite Bus slot

This unique Elite Bus slot is designed to be inserted with the SIMA card, accommodating users with additional AMD and Intel platform upgrade cards.

15. PCI Express x16 slot for onboard Intel platform

This particular PCI Express x16 slot is meant to be applied by the onboard Intel platform.

1.6 Headers and Connectors
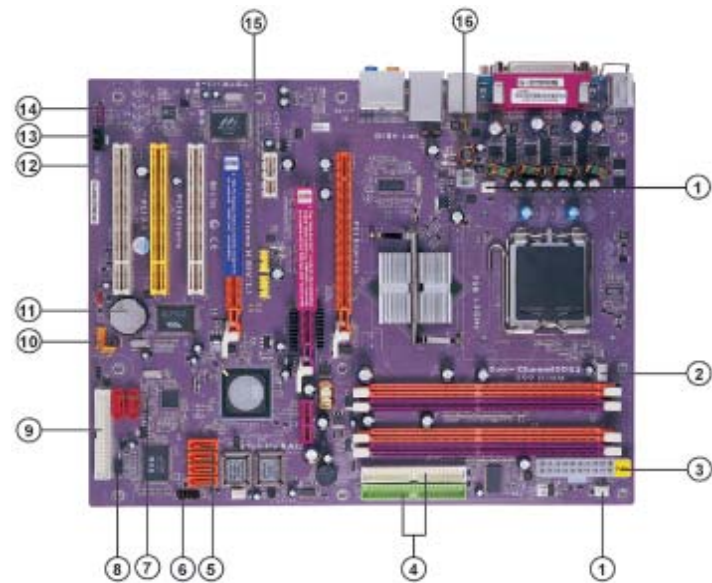
1. **NB_FAN/SYS_FAN/PWR_FAN (Fan Connectors, 3 pin)**
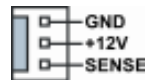
If you installed it in the wrong direction, the chip fan will not work. Sometimes will damage the chip fan.

2. **CPU_FAN (CPU Fan Connector, 4 pin, White)**
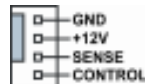
The fan connector supports the CPU cooling fan of 1.1A~2.2A (26.4W max.) at +12V.

3. **ATX_POWER (ATX PWR Connector, 24 pin, White)**
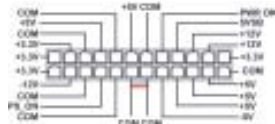
The minimum recommended power is 300W for a fully-configured system. If not, the system may become unstable or may not even boot up.

4. **IDE 1/2 (IDE1/IDE2 Connectors, 40-1 pin, Green and White)**
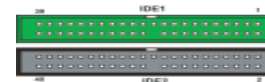
One connector can support two IDE devices, with up to 4 IDE devices supported for IDE1/2. The streamline IDE cable must be at the same side with Pin 1.

5. **SATA1/2/3/4 (Serial ATA Connectors, 7 pin, Orange)**
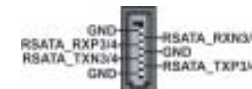
These four SATA connectors support up to 4 SATA hard drives. The current Serial ATA interface allows up to 150MB/s data transfer rate.

6. **PANEL1 (Front Panel Switch/LED Header, 10-1 pin)**
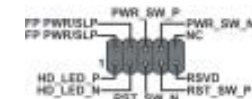
The front panel connector provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases.

7. SATA5/6 (Serial ATA RAID Connectors, 7 pin)
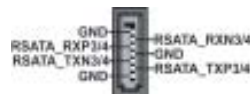
These two SATA II connectors, with transfer rate of 3.0 Gb/s, support-ing SATA hard disks that you may configure as a RAID set. Through the onboard Sil3132 RAID controller you may create a RAID 0 or RAID 1 configuration. Sil3132 also supports NCQ (Native Command Queuing), PM (Port Multipliers), and eSATA (External SATA) function.

8. IR1 (Infrared Header, 6-1 pin, Black)

Infrared ports allow the wireless exchange of information between your computer and similarly equipped devices such as printers, laptops, Personal Digital Assistants (PDAs), and other computers.

9. FDD1 (Floppy Connector, 34-1 pin, White)

Please connect the floppy drive ribbon cables to FDD. It supports 360K, 12M, 720K, 1.44M and 2.88M bytes floppy disk types.

10. 1394A2 (IEEE 1394a Header, 10-1 pin, Orange)
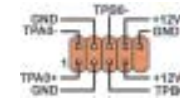
Attach the 10-1 pin 1394 cable plug from the device to this connector. You may also connect a 1394-compliant internal hard disk to this con-nector.

11. Battery

Danger of explosion if battery is incorrectly replaced. Replace only with the same of equivalent type recommended by the manufacturer.

12. SPDIFO1 (SPDIF Out Header, 4 pin, Purple)

This is an optional header that provides an S/PDIO (Sony/Philip Digi-tal Interface) output to digital multimedia device through optical fiber or coxial connector.

13. CD_IN (CD In Connector, 4 pin, Purple)

Right Audio CH
GND
GND
Left Audio CH
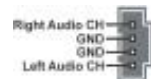
Connect CD-ROM or DVD-ROM audio out to the connector.

14. AUDIO1 (Front Panel Audio Header, 10-1 pin, Purple)

Front Audio detect — NC
AGND — NC
1
Smart jack F left channel — Smart jack E left channel
Smart jack F right channel — SENSE B
Smart jack E right channel
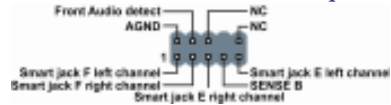
This is an interface for the Intel front panel audio cable that allows convenient connection and control of audio devices.

If your front panel cable is seperated, please connect it to pin1 and pin3 or pin5 and pin7 to activate the MIC function.

15. USB3/USB4 (Front USB Headers, 10-1 pin, Yellow)

USBDy+
USBDy- GND
Power NC
1
Power GND
USBDx- USBDz+
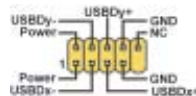
If the USB ports on the rear panel are inadequate, two USB headers are available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed.

16. ATX12V (ATX 12V Power Connector, 4 pin, White)

+12V DC — +12V DC
GND — GND

This connector supplies the CPU operation voltage (Vcore). Don't forget to connect the 4-pin ATX 12V connector, otherwise the system cannot boot up.

1.7 Jumpers
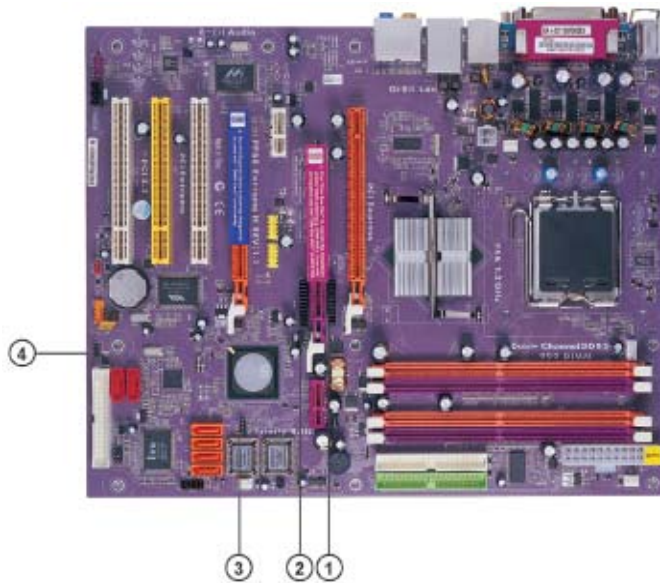
Setting Jumpers

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

1/2. JP33 & JP41 (Activate Elite Bus slot)

These two jumpers work together to activate the onboard Elite Bus slot, so that it will be workable for the upgrade platform after the SIMA card is insterted.

Both Short : Disable the Elite Bus slot function
Both Open : Enable the Elite Bus slot function

3. BIOS_WP (BIOS Flash Protect)

This jumper enables you to prevent the BIOS from being updated (flashed).

1 - 2 : Disable (Default)
2 - 3 : Enable

4. CLR_CMOS (Clear CMOS)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RAM data. Before clearing the CMOS data, make sure to turn the system off.
1 - 2 : Clear
2 - 3 : Normal (Default)

1.8 Rear Panel
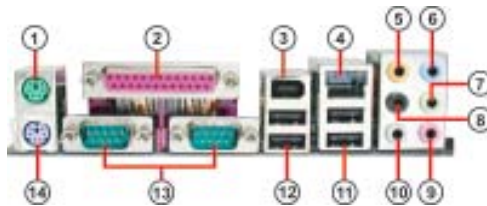
1. **PS/2 mouse port**
   This 6-pin connector is for connecting PS/2 mouse.
2. **Parallel port**
   This LPT port is for printers or other parallel communication devices.
3. **1394_A1 port**
   Use the 1394a port to connect any Firewire device.
4. **RJ-45 port**
   This port allows connection to a Local Area Network (LAN) through a network hub. It supports up to Gigabit tranfer rate.
5. **Center/Bass Jack ***
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Center/Bass speaker out.

6. **Line-in Jack ***
   The function of the jack is microphone input.
7. **Front Out Jack ***
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Front speaker out.
8. **Back Surround Jack** *
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Back-Surround speaker out.
9. **Microphone in Rear Jack ***
   The function of the jack is microphone input rear.
10. **Side Surround Jack ***
   This jack connects a tape player or other audio sources. In 8-channel mode, the function of this jack is Side Surround speaker out.
11/12. **USB 2.0 ports 3/4**
   These Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
13. **Serial ports**
   These two 9-pin serial ports are for serial devices.
14. **PS/2 keyboard port**
   This 6-pin connector is for connecting PS/2 keyboard.

The audio ports with a * sign can be changed to audio input or audio output by changing the driver utility setting.
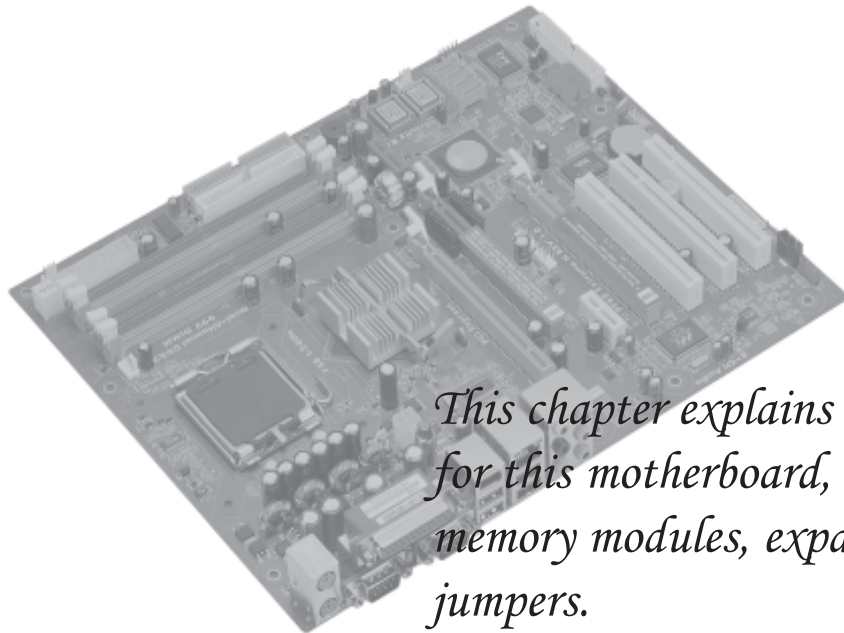
This chapter explains the hardware setup procedure for this motherboard, such as installing the CPU, memory modules, expansion cards, as well as the jumpers.

Reference

2.1 Installing the CPU & the CPU cooling fan

A. 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.
B. 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.
C. Install the CPU on the socket
   · Orientate CPU package to the socket. Make sure you match the triangle marker to the pin 1 location.
D. Close the load plate
   · Slightly push down the load plate onto the tongue side, and hook the lever.
   · CPU is locked completely.
E. Apply thermal grease on top of the CPU.
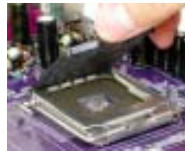
F. Fasten the cooling fan supporting base onto the CPU socket on the motherboard.
G. Make sure the CPU fan is plugged to the CPU fan connector. Please refer to the CPU cooling fan user's manual for more detailed installation procedure.

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.

2.2 Installing Memory Module

1. Push the latches on each side of the DIMM slot down.
2. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.
3. 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.

Table A: Recommended dual-channel DDR2 configurations

DIMM1	DIMM2	DIMM3	DIMM4	Dual Channel
√		√		√
	√		√	√
√	√	√	√	√

Notes: When using dual channel mode, install only same (same density, DRAM technology and DRAM bus width) module for each dual channel.

Memory module install into one or any four sockets will function in single channel mode.

This motherboard can only support 256-Mb, 512-Mb and 1-Gb device technologies for x8 and x16 DDR2 devices.

Table A: DDR2 QVL (Qualified Vender List)

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

Type	Size	Vendor	Model Name
DDR2 400	256MB	Hynix	HYMP532U646-E3 AA
		Nanya	NT256T64UH4A0F-5A CL3
		Samsung	M378T3253FG0-CCC
	512MB	Hynix	HYMP564U648-E3 AA
		Nanya	NT512T64U88A0F-5A CL3
DDR2 533	256MB	Elixir	M2U25664TUH4A0F-37B CL4
		Infineon	HYS64T32000HU-3.7-A
		Kingston	KVR533D2N4
		Samsung	M378T3253FG0-CD5 CL4
	512MB	Elixir	M2U51264TU88A0F-37B
		Kingston	KVR533D2N4
		SAMSUNG	M378T6553BGO-CD5
	1GB	Infineon	HYS64T128020HU-3.7-A
DDR2 667	256MB	MICRON	MT8HTF3264AY-667B5
	512MB	ELPIDA	EBE52UC8AAFV-DF-E
		NANYA	NT512T64U88A0BY-3C

2.3 Connecting IDE, Floppy and SATA cable

1. Connect the IDE/Floppy disk ribbon cable. Make sure the side of the cable with the red stripe on it is plugged into *pin 1* side of the disk connector.

2. Connect the SATA cable to the SATA hard drive or the connector on the motherboard.

IDE connector　　　　**FDD connector**　　　　**SATA connector**

2.4 Installing Motherboard in a case

1. Place the motherboard over the mounting brackets.
2. Secure the motherboard with screws where appropriate.

3. Double check to make sure that the underside of the motherboard is not touching the case or else shorting may occur and make sure that the slots and I/O connectors line up with the holes on the back of the case.
4. Case LED leads are labeled, connect the leads to the panel header on the motherboard.

2.5 Connecting IDE, Floppy & SATA Device

1. If installing two IDE devices on the same ribbon cable, one device must be set to "master" and the other to "slave." Check the accompanying documents for the master/slave settings of IDE Devices, ie.: the hard disk and CD-ROM drives and then set their jumper caps accordingly.
2. Mount the drives in the case.
3. Connect the floppy disk ribbon cable and power cable.
4. Connect the IDE ribbon cable and power cable.

IDE Hard Disk

Floppy Disk Device

SATA Hard Disk

2.6 Installing Expansion cards

1. Remove the slot covers from the case where you will be installing the expansion cards.
2. Install your graphics card in the proper slot if your motherboard does not have integrated graphics.
3. Press the card firmly into the slot
4. Secure the card with the screw from step 1.
5. Install other expansion cards using the same procedure.

Graphics card   **PCI card**

2.6.1 Installing PCIE x16 graphics card

This motherboard features one Elite Bus slot, allowing users to apply additional AMD and Intel platform upgrade cards. However, one platform can accommodate only one PCIE x16 graphics card. Please refer to the instruction below for the correct PCIE x16 graphics card installation.

1. Insert the PCIE x16 graphics card to the PCI Express x16 slot for onboard Intel platform. Users may refer to Chapter 1, page 1-5, item 15 for specific slot location.

2. Insert the PCIE x16 graphics card to the PCIE Express x16 slot for SIMA Card. Users may refer to Chapter 1, page 1-5, item 13 for specific slot location.

Make sure to remove the jumper caps of JP33 & JP41 to activate the Elite Bus slot. Please refer to Chapter 1, page 1-13, for JP33 & JP41 jumper setting reference. Users may use Jumper Cap Remover to help you remove the jumper caps more easily.

2.7 Connecting the Power supply cable

The ATX power connector is keyed for proper insertion. There are two connectors for 4-pin and 24-pin ATX power cable. The plastic clip on the power connector should lock over the plastic tab on the motherboard power connector.

Connecting 20/24-pin power cable

Users please note that the 20-pin and 24-pin power cables can both be connected to the ATX1 connector. With the 20-pin power cable, just align the 20-pin power cable with the pin 1 of the ATX1 connector. **However, using 20-pin power cable may cause the system to become unbootable or unstable because of insufficient electricity.**
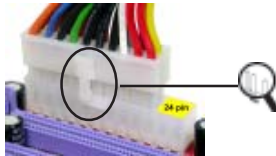
With ATX v1.x power supply, users please note that when installing 20-pin power cable, the latch of power cable clings to the left side of the ATX1 connector latch.
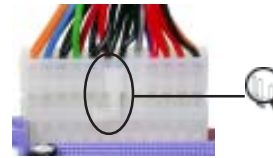
20-pin power cable

24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latch of power cable connector clings to the right side of the ATX1 connector latch.

Users please note that when installing 4-pin power cable, the latches of power cable and the ATX12 match perfectly.

4-pin ATX power connector

2.8 Powering up

Turn on the power to the monitor and the computer. If necessary, format your hard disk drive and install an operating system.
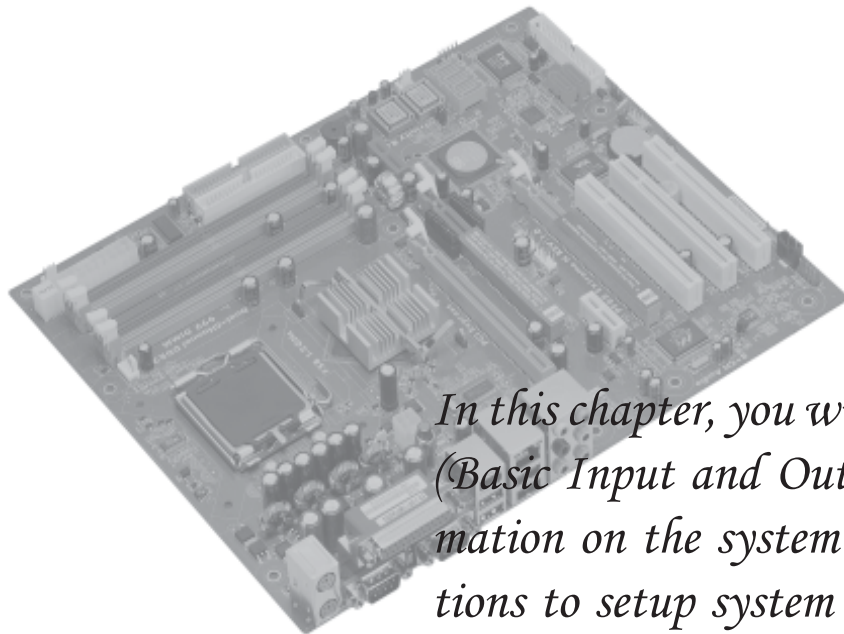
In this chapter, you will learn how to adjust the BIOS (Basic Input and Output System). It provides information on the system's configuration status and options to setup system parameters.

Reference

3.1 Entering the BIOS Setup Menu

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:

```
            Phoenix-Award BIOS CMOS Setup Utility:

┌─────────────────────────────────┬──────────────────────────────┐
│  ►  Standard CMOS Features       │  ►  Frequency/Voltage Control │
│  ►  Advanced BIOS Features       │     Load Fail-Safe Defaults   │
│  ►  Advanced Chipset Features    │     Load Optimized Defaults   │
│  ►  Integrated Peripherals       │     Set Password              │
│  ►  Power Management Setup        │     Save & Exit Setup         │
│  ►  PnP/PCI Configurations       │     Exit Without Saving       │
│  ►  PC Health Status             │                              │
├─────────────────────────────────┼──────────────────────────────┤
│  Esc:  Quit                      │  ↑↓ → ←  :  Select Item      │
│  F10: Save & Exit Setup          │                              │
├─────────────────────────────────┴──────────────────────────────┤
│              Virus Protection, Boot Sequence...                  │
└─────────────────────────────────────────────────────────────────┘
```

3.2 Updating and Recovering the BIOS

A standard configuration has already been set in the Setup Utility. However, if you encounter a configuration error or you need a better performance. You could attempt to update or recover your system BIOS.

3.2-1 Using AWARD Flash to update your BIOS

1. If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten).
2. Create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)
3. Use the Award Flash Utility from the ECS support CD and download the last BIOS file for this motherboard from ECS web site (www.ecs.com.tw). Copy these files to the system diskette you created in step 2.
4. 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.)
5. At the A:\ prompt, type the Flash Utility program name and press <Enter>. You see a screen similar to the following:
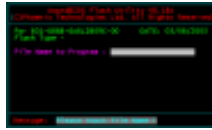
6. Type the filename of the new BIOS in the "File Name to Program" text box. Follow the onscreen directions to update the motherboard BIOS.

7. 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.

3.3 The Main Menu

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>.

3.3-1 Standard CMOS Features

This option displays basic information about your system.

```
                     Phoenix-Award BIOS CMOS Setup Utility
                           Standard CMOS Features
┌─────────────────────────────────────────────────┬─────────────────────────┐
│ Date (mm:dd:yy)      Thu, Mar 24 2005            │      Item Help          │
│ Time (hh:mm:ss)        9  :  33  : 26            │                         │
│                                                  │   Menu Level     ▶      │
│  ▶IDE Channel 0 Master                           │                         │
│  ▶IDE Channel 0 Slave                            │   Change the day, month,│
│  ▶IDE Channel 1 Master                           │   year and century      │
│  ▶IDE Channel 1 Slave                            │                         │
│  ▶IDE Channel 2 Master                           │                         │
│  ▶IDE Channel 2 Slave                            │                         │
│  ▶IDE Channel 3 Master                           │                         │
│  ▶IDE Channel 3 Slave                            │                         │
│   Drive A                   [1.44M, 3.5 in.]     │                         │
│   Drive B                   [None]               │                         │
│   Floppy 3 Mode Support     [Disabled]           │                         │
│                                                  │                         │
│   Video                     [EGA/VGA]            │                         │
│   Halt On                   [All Errors]         │                         │
│                                                  │                         │
│   Base Memory               640K                 │                         │
│   Extended Memory           65535K               │                         │
│   Total Memory              1024K                │                         │
└─────────────────────────────────────────────────┴─────────────────────────┘
 ↑↓→←: 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 [None]

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.

Press <Enter> to display the IDE submenu:

```
              Phoenix-Award BIOS CMOS Setup Utility
                        IDE Channel 0 Slave
┌─────────────────────────────────────────┬──────────────────────┐
│  IDE HDD Auto-Detection    [Press Enter] │  Item Help           │
│                                          │                      │
│  IDE Channel 0 Slave       [Auto]        │  Menu Level    ► ►   │
│  Access Mode               [Auto]        │                      │
│                                          │                      │
│  Capacity                  0MB           │  To auto-detect the  │
│                                          │  HDD's size, head... on │
│  Cylinder                  0             │  this channel        │
│  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.

Note: 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 that lists LBA for an LBA drive.

IDE Channel 0/1/2/3 Master/Slave

Leave this item 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.

Note: 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

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 Features page.

Drive A/B [1.44M, 3.5in./None]

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

Floppy 3 Mode Support [Disabled]

Floppy 3 mode refers to a 3.5-inch diskette with a capacity of 1.2 MB. Floppy 3 mode is sometimes used in Japan.

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.

3-3

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.

3.3-2 Advanced BIOS Features

This option defines advanced information about your system.

```
            Phoenix-Award BIOS CMOS Setup Utility
                  Advanced BIOS Features
┌──────────────────────────────────────────────────────────────────┐
│ ► CPU Feature              [Press Enter]   ▲  ┌─────────────────┐  │
│ ► Hard Disk Boot Priority  [Press Enter]      │   Item Help     │  │
│   CPU L1 & L2 Cache                           │                 │  │
│   Hyper-Threading Technology [Enabled]        │ Menu Level    ► │  │
│   Quick Power On Self Test  [Enabled]         │                 │  │
│   First Boot Device         [Floppy]          │                 │  │
│   Second Boot Device        [Hard Disk]       │                 │  │
│   Third Boot Device         [CDROM]           │                 │  │
│   Boot Other Device         [Enabled]         │                 │  │
│   Swap Floppy Drive         [Disabled]        │                 │  │
│   Boot Up Floppy Seek       [Disabled]        │                 │  │
│   Boot Up NumLock Status    [On]              │                 │  │
│   BIOS Bootblock Protect    [Disabled]        │                 │  │
│   ATA 66/100 IDE Cable Msg. [Enabled]         │                 │  │
│   Typematic Rate Setting    [Disabled]        │                 │  │
│ X Typematic Rate (Chars/Sec0 6                │                 │  │
│ X Typematic Delay (Msec)    250               │                 │  │
│   Security Option           [Setup]        ▼  └─────────────────┘  │
└──────────────────────────────────────────────────────────────────┘
 ↑↓→←: 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)

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

```
            Phoenix-Award BIOS CMOS Setup Utility
                        CPU Feature
┌──────────────────────────────────────────────────────────────────┐
│ Thermal Management   [Thermal Monitor 1]   ┌─────────────────┐     │
│ TM2 Bus Ratio        [0X]                  │   Item Help     │     │
│ TM2 Bus VID          [0.8375V]             │                 │     │
│ Limit CPUID MaxVal   [Disabled]            │ Menu Level   ►► │     │
│ Execute Disable Bit  [Enabled]             │                 │     │
│                                            └─────────────────┘     │
└──────────────────────────────────────────────────────────────────┘
 ↑↓→←: Move   Enter: Select   +/-/PU/PD:Value   F10:Save  ESC:Exit   F1: General Help
      F5:Previous Values      F6:Fail-Safe Defaults      F7:Optimized Defaults
```

Thermal Management [Thermal Monitor 1]

This item sets CPU's thermal control rule to protect CPU from overheat. This feature is only available when CPU supports Thermal Monitor 2.

TM2 Bus Ratio [0 X]

This item helps you to set the frequency (bus ratio) of the throttled performance that will be initiated when the on die sensor goes from not hot to hot. You may set the bus ration number from 0 to 255.

TM2 Bus VID [0.8375V]

This item helps you to set the voltage of the throttled performance that will be initiated when the on die sensor goes from not hot to hot.

Limit CPUID MaxVal [Disabled]

This item limits the CPUID maximum value. Enable this item to install WinNT. Leave this item at the default value for other OS.

Execute Disable Bit [Enabled]

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.

Press <Esc> to return to the Advanced BIOS Features page.

Hard Disk Boot Priority (Press Enter)

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

```
              Phoenix-Award BIOS CMOS Setup Utility
                     Hard Disk Boot Priority
┌─────────────────────────────────────┬───────────────────────────┐
│  1. Pri.Master:                      │     Item Help             │
│  2. Pri.Slave:                       │                           │
│  3. Sec. Master:                     │   Menu Level   ▶▶         │
│  4. Sec. Slave:                      │                           │
│  5. USBHDD0:                         │   Use < ↑ > or < ↓ > to   │
│  6. USBHDD1:                         │   select a device, then press │
│  7. USBHDD2:                         │   <+> to move it up, or <-> to │
│  8. Bootable Add-in Cards            │   move it down the list.  Press │
│                                      │   <ESC> to exit this menu. │
│                                      │                           │
│                                      │                           │
└─────────────────────────────────────┴───────────────────────────┘
  ↑↓→← : Move       PU/PD+/-/:Change Priority   F10:Save  ESC:Exit
  F5:Previous Values     F6:Fail-Safe Defaults   F7:Optimized Defaults
```
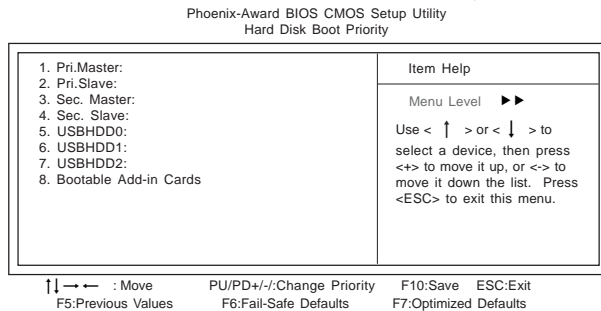
CPU L1 & L2 Cache [Enabled]

All processors that can be installed in this motherboard use interval 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.

Quick Power On Self Test [Enabled]

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

First/Second/Third Boot Device [Floppy/Hard Disk/CDROM]

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.

Swap Floppy Drive [Disabled]

If you have two floppy diskette drives in your system, this item allows you to swap the assigned drive letters so that drive A becomes drive B, and drive B becomes drive A.

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.

Boot Up NumLock Status [On]

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

BIOS Bootblock Protect [Disabled]

This item enables or disables the BIOS bootblock rom to be protected from overwritten.

ATA 66/100 IDE Cable Msg. [Enabled]

This item enables or disables the ATA 66/100 IDE Cable Msg. This message will appear during reboot when you use 40-pin cable on your 66/100 hard disks.

Typematic Rate Setting [Disabled]

If this item is enabled, you can use the following two items to set the typematic rate and the typematic delay settings for your keyboard.

- **Typematic Rate (Chars/Sec):**Use this item to define how many characters per second are generated by a held-down key.

- **Typematic Delay (Msec):** Use this item to define how many milliseconds must elapse before a held-down key begins generating repeat characters

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.

APIC Mode [Enabled]

This item allows you to enable or disable the APIC (Advanced Programmable InterruptController) mode. APIC provides symmetric multiprocessing (SMP) for systems, allowing support for up to 60 processors.

3-6

OS Select For DRAM > 64MB [Non-OS2]

This item is only required if you have installed more than 64 MB of memory and you are running the OS/2 operating system. Otherwise, leave this item at the default.

HDD S.M.A.R.T Capability [Disabled]

The S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) system is a diagnostics technology that monitors and predicts device performance S.M.A.R.T. software resides on both the disk drive and the host computer.

The disk drive software monitors the internal performance of the motors, media, heads and electronics of the drive. The host software monitors the overall reliability status of the drive. If a device failure is predicted, the host software, through the

Client WORKS S.M.A.R.T applet, warns the user of the impending condition and advises appropriate action to protect the data.
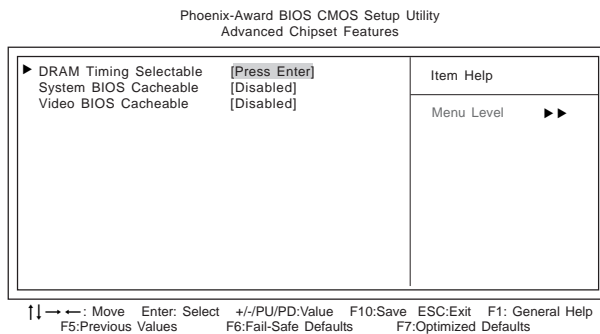
Video BIOS Shadow (Enabled)

This item determines whether the BIOS will be copied to RAM for faster execution.

Small Logo (EPA) Show [Disabled]

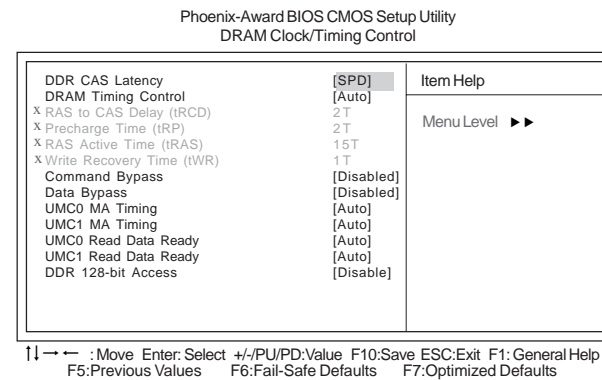Enables or disables the display of the EPA logo during boot.

3.3-3 Advanced Chipset Features

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, this may cause fatal errors or instability into your system.

Phoenix-Award BIOS CMOS Setup Utility
Advanced Chipset Features

```
►  DRAM Timing Selectable      [Press Enter]        Item Help
   System BIOS Cacheable       [Disabled]
   Video BIOS Cacheable        [Disabled]           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
```

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

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

Phoenix-Award BIOS CMOS Setup Utility
DRAM Clock/Timing Control

```
   DDR CAS Latency             [SPD]               Item Help
   DRAM Timing Control         [Auto]
 X RAS to CAS Delay (tRCD)     2 T                 Menu Level  ►►
 X Precharge Time (tRP)        2 T
 X RAS Active Time (tRAS)      15 T
 X Write Recovery Time (tWR)   1 T
   Command Bypass              [Disabled]
   Data Bypass                 [Disabled]
   UMC0 MA Timing              [Auto]
   UMC1 MA Timing              [Auto]
   UMC0 Read Data Ready        [Auto]
   UMC1 Read Data Ready        [Auto]
   DDR 128-bit Access          [Disable]
```

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

DDR CAS Latency Time (SPD)

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

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. The lower the better, but some DRAM does not support low figures.
- **Precharge Time (tRP) (2T):** This is the duration of the time interval during which the Row Address Strobe signal to a DRAM is held low during normal Read and Write Cycles. This is the minimum interval between completing one read or write and starting another from the same (non-page mode) DRAM. Techniques such as memory interleaving, or use of Page Mode DRAM are often used to avoid this delay. Some chipsets require this parameter in order to set up the memory configuration properly. The RAS Precharge value is typically about the same as the RAM Access (data read/write) 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 defines DRAM internal write to read command delay in the same device.

Command Bypass (Disabled)
When enabled, request will bypass the command queue if the queue is empty.

Data Bypass (Disabled)
When enabled, the latency of read data from DRAM back to CPU will be lower.

UMC0/1 MA Timing (Auto)
This option allows you to set the lead off DRAM read and write cycles of channel 0/ channel 1 MA Timing. When set to Delay 1T, memory read/write commands are sent one clock cycle behind the memory

address. When set to Normal, read/write and memory address commands are sent simultaneously.

UMC0/1 Read Data Ready (Auto)
This item defines the channel 0/channel 1 DRAM read data latency.

DDR 128-Bit Access (Disable)
When this option is set to Auto, the DDR will be automatically set to 128-bit. When disabled, the DDR will be set to 64-bit.

Press <Esc> to return to the Advanced Chipset Features page.

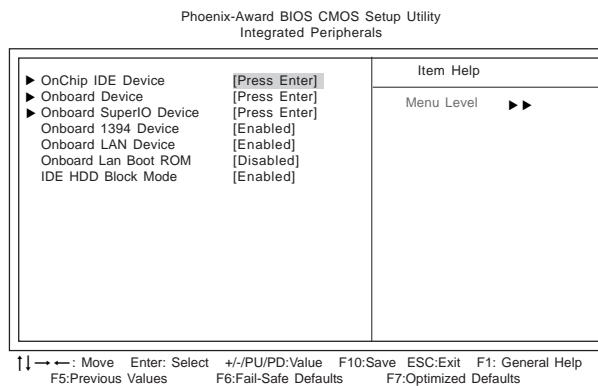### System BIOS Cacheable [Disabled]
This item allows the system to be cached in memory for faster execution. Enable this item for better performance.

Video BIOS Cacheable [Disabled]
This item allows the video BIOS to be cached in memory for faster execution. Enable these items for better performance.
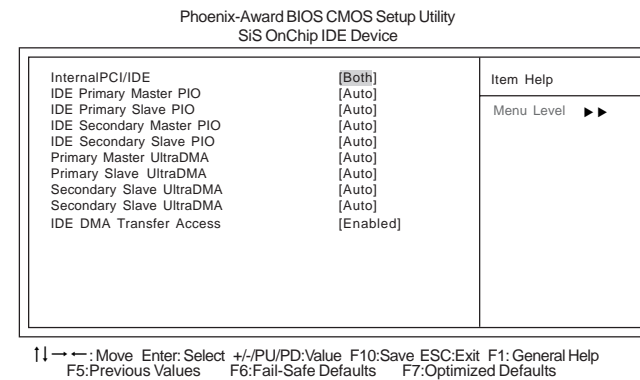
3.3-4 Integrated Peripherals

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

```
                     Phoenix-Award BIOS CMOS Setup Utility
                              Integrated Peripherals
 ┌──────────────────────────────────────────────────────────────────────┐
 │                                                │                       │
 │  ▶ OnChip IDE Device         [Press Enter]     │    Item Help          │
 │  ▶ Onboard Device            [Press Enter]     │                       │
 │  ▶ Onboard SuperIO Device    [Press Enter]     │   Menu Level    ▶ ▶   │
 │    Onboard 1394 Device       [Enabled]         │                       │
 │    Onboard LAN Device        [Enabled]         │                       │
 │    Onboard Lan Boot ROM      [Disabled]        │                       │
 │    IDE HDD Block Mode        [Enabled]         │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 └──────────────────────────────────────────────────────────────────────┘
   ↑↓→←: Move   Enter: Select   +/-/PU/PD:Value   F10:Save  ESC:Exit   F1: General Help
      F5:Previous Values        F6:Fail-Safe Defaults      F7:Optimized Defaults
```

▶ **OnChip IDE Device (Press Enter)**
Scroll to this item and press <Enter> to view the following screen:

```
                     Phoenix-Award BIOS CMOS Setup Utility
                            SiS OnChip IDE Device
 ┌──────────────────────────────────────────────────────────────────────┐
 │   InternalPCI/IDE              [Both]          │    Item Help          │
 │   IDE Primary Master PIO       [Auto]          │                       │
 │   IDE Primary Slave PIO        [Auto]          │   Menu Level    ▶ ▶   │
 │   IDE Secondary Master PIO     [Auto]          │                       │
 │   IDE Secondary Slave PIO      [Auto]          │                       │
 │   Primary Master UltraDMA      [Auto]          │                       │
 │   Primary Slave  UltraDMA      [Auto]          │                       │
 │   Secondary Slave UltraDMA     [Auto]          │                       │
 │   Secondary Slave UltraDMA     [Auto]          │                       │
 │   IDE DMA Transfer Access      [Enabled]       │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 │                                                │                       │
 └──────────────────────────────────────────────────────────────────────┘
   ↑↓→←: Move  Enter: Select  +/-/PU/PD:Value  F10:Save ESC:Exit  F1: General Help
      F5:Previous Values       F6:Fail-Safe Defaults      F7:Optimized Defaults
```

Internal PCI/IDE (Both)
Use these items to enable or disable the internal PCI IDE channels that are integrated on the motherboard.

IDE Primary/Secondary 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.

Primary/Secondary Master/Slave UltraDMA (Auto)

This motherboard 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 motherboard in order to use an UltraDMA device.

IDE DMA Transfer Access (Enabled)

This item allows you to enabled the transfer access of the IDE DMA.

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

▶ **OnChip PCI Device (Press Enter)**

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

```
                    Phoenix-Award BIOS CMOS Setup Utility
                            SiS OnChip PCI Device
┌───────────────────────────────────────────────┬──────────────────────┐
│  USB Controller              [Enabled]         │ Item Help            │
│  USB 2.0 Supports            [Enabled]         │                      │
│  USB Legacy Support          [Enabled]         │ Menu Level    ▶▶     │
│  USB Mouse Support           [Enabled]         │                      │
│  AC97 AUDIO                    [Enabled]        │                      │
│  AC97 Modem                  [Enabled]         │                      │
│  Serial ATA Controller       [Enabled]         │                      │
│  Serial ATA Mode             [IDE]             │                      │
│  Serial ATA2 controller      [Disabled]        │                      │
│                                                │                      │
│                                                │                      │
│                                                │                      │
└───────────────────────────────────────────────┴──────────────────────┘
  ↑↓→←: Move Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help
        F5:Previous Values    F6:Fail-Safe Defaults    F7:Optimized Defaults
```

USB Controller (Enabled)

Enables or disables the onboard USB controller. We recommend users keep the default value. Disabling it might cause the USB devices not to work properly.

USB 2.0 Supports (Enabled)

This item enables or disables the onboard USB 2.0.

USB Legacy Support (Enabled)

Enable this item if you plan to use a keyboard connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

USB Mouse Support (Enabled)

Enable this item if you plan to use a mouse connected through the USB port in a legacy operating system (such as DOS) that does not support Plug and Play.

AC97 AUDIO (Enabled)

Enables or disables the onboard AC 97 audio function. Disable this item if you are going to install a PCI audio add-on card.

AC97 Modem (Enabled)

Enables and disables the onboard modem. Disable this item if you are going to install an external modem.

Serial ATA Controller (Enabled)

Enables or disables the onboard Serial ATA controller. Enable this item if you are to install SATA devices onboard.

Serial ATA Mode (IDE)

Use this item to define the onboard SATA mode. Set this item to RAID if you are to activate the RAID function of the SATA devices.
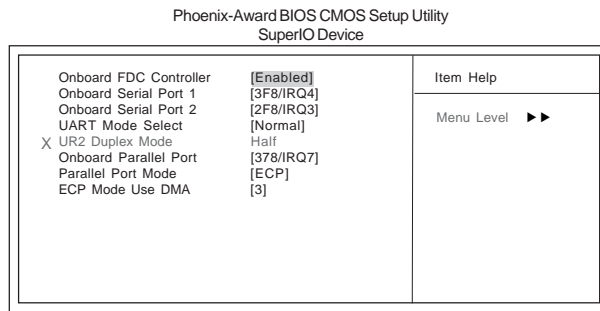
Serial ATA2 Controller (Enabled)

Enables or disables the onboard Serial ATA2 controller. Enable this item if you are to install SATA2 devices onboard.

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-Award BIOS CMOS Setup Utility
                               SuperIO Device
   ┌─────────────────────────────────────────────┬──────────────────┐
   │  Onboard FDC Controller    [Enabled]         │  Item Help       │
   │  Onboard Serial Port 1     [3F8/IRQ4]        │                  │
   │  Onboard Serial Port 2     [2F8/IRQ3]        │                  │
   │  UART Mode Select          [Normal]          │  Menu Level  ▶▶  │
   │ X UR2 Duplex Mode          Half              │                  │
   │  Onboard Parallel Port     [378/IRQ7]        │                  │
   │  Parallel Port Mode        [ECP]             │                  │
   │  ECP Mode Use DMA          [3]               │                  │
   │                                              │                  │
   │                                              │                  │
   │                                              │                  │
   └─────────────────────────────────────────────┴──────────────────┘
   ↑↓→←: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)

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1/2 (3F8/IRQ4)(2F8/IRQ3)

This option is used to assign the I/O address and interrupt request (IRQ) for onboard serial port 1/2 (COM1/COM2).

UART Mode Select (Normal)

This field is available if the Onboard Serial Port 2 field is set to any option but Disabled. UART Mode Select enables you to select the infrared communication protocol-Normal (default), IrDA, or ASKIR. IrDA is an infrared communication protocol with a maximum baud rate up to 115.2K bps. ASKIR is Sharp's infrared communication protocol with a maximum baud rate up to 57.6K bps.

- **UR2 Duplex Mode (Half):** This field is available when UART 2 Mode is set to either ASKIR or IrDA. This item enables you to determine the infrared function of the onboard infrared chip. The options are Full and Half (default).

  Full-duplex means that you can transmit and send information simultaneously. Half-duplex is the transmission of data in both directions, but only one direction at a time.

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 (ECP)

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.
SPP allows data output only. Extended Capabilities Port (ECP) and Enhanced Parallel Port (EPP) are bidirectional modes, allowing both data input and output. ECP and EPP modes are only supported with EPP- and ECP-aware peripherals.

ECP Mode Use DMA (3)

When the onboard parallel port is set to ECP mode, the parallel port can use DMA 3 or DMA 1.

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

Onboard 1394 Device (Enabled)

Enable this item if you plan to use the 1394 device.

Onboard LAN Device (Enabled)

Use this item to enable and disable the onboard LAN function.
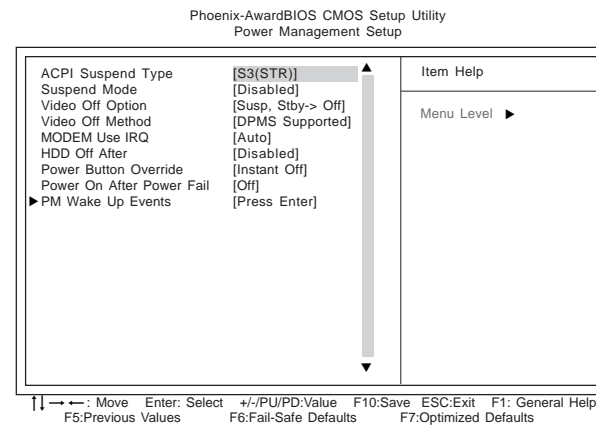
Onboard LAN Boot ROM (Disabled)

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

IDE HDD Block Mode (Enabled)

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

3.3-5 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 Suspend Type        [S3(STR)]     ▲ │  Item Help           │
 │  Suspend Mode             [Disabled]      │                      │
 │  Video Off Option         [Susp, Stby-> Off] │  Menu Level   ▶   │
 │  Video Off Method         [DPMS Supported]│                      │
 │  MODEM Use IRQ            [Auto]          │                      │
 │  HDD Off After            [Disabled]      │                      │
 │  Power Button Override     [Instant Off]  │                      │
 │  Power On After Power Fail [Off]          │                      │
 │ ▶PM Wake Up Events        [Press Enter]   │                      │
 │                                           │                      │
 │                                           │                      │
 │                                           │                      │
 │                                         ▼ │                      │
 ├───────────────────────────────────────────┴──────────────────────┤
 │ ↑↓→←: Move  Enter: Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1: General Help │
 │ F5:Previous Values      F6:Fail-Safe Defaults      F7:Optimized Defaults │
 └───────────────────────────────────────────────────────────────────┘
```

ACPI Suspend Type [S3(STR)]

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.

Suspend Mode [Disabled]

The CPU clock will be stopped and the video signal will be suspended if no Power Management events occur for a specified length of time. Full power function will return when a Power Management event is detected.

Video Off Option [Susp, Stby —> 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.

MODEM Use IRQ [Auto]

If you want an incoming call on a modem to automatically resume the system from a power-saving mode, use this item to specify the interrupt request line (IRQ) that is used by the modem. You might have to connect the fax/modem to the motherboard Wake On Modem connector for this feature to work.

HDD Off After [Disabled]

The IDE hard drive will spin down if it is not accessed within a specified length of time. Options are from 1 Min to 15 Min and Disable.

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.

Power On After Power Fail [Off]

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

▶PM Wake Up Events (Press Enter)

Phoenix-AwardBIOS CMOS Setup Utility
PM Wake Up Events

IRQ [3-7, 9-15], NMI	[Enabled]	Item Help
IRQ 8 Break Suspend	[Disabled]	
Resume By WOL/WOM/RING [Disabled]		Menu Level ▶▶
Resume By MACPME	[Enabled]	
Resume By PCI PME	[Enabled]	
Resume By USB (S3)	[Disabled]	
PS2 KB Wakeup from S3	[Hot Key]	
PS2 MS Wakeup from S3	[Disabled]	
Power up by Alarm	[Disabled]	
Month Alarm	Na	
Day of Month Alarm	0	
Time (hh:mm:ss) Alarm	0 : 0 : 0	
Reload Global Timer Events		
Primary IDE	[Disabled]	
Secondary IDE	[Disabled]	
FDD, COM, LPT Port	[Disabled]	
PCI PIRQ[A-D]#	[Disabled]	

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

IRQ [3-7, 9-15], NMI (Enabled)

This option determines whether any activity for IRQ 3-7/9-15 will cause the system to wake from a power saving mode.

IRQ 8 Break Suspend (Disabled)

Determines whether the system will monitor IRQ 8 activity and wake the system from a power saving mode when IRQ 8 is activated.

Resume By WOL/WOM/RING (Disabled)

Use this item to enable LAN or modem activity to wakeup the system from a power saving mode.

Resume By MACPME (Enabled)

Use this item to enable MAC activity to wake up the system from a power saving mode.

Resume By PCI PME (Enabled)

This item allows users to enable or disable PCI activity to wakeup the system from a power saving mode.

Resume By USB (S3) (Disabled)

This item allows users to enable or disable USB activity to wakeup the system from a power saving mode.

PS2 KB/MS Wakeup from S3 (Hot Key/Disabled)

This option enables or disables you to allow mouse or keyboard activity to awaken the system from power saving mode.

Power up by Alarm (Disabled)

When set to Enabled, the following three fields become available: Month Alarm, Day of Month Alarm, and Time Alarm Upon arrival of the alarm time, it will instruct the

system to wake up. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

** Reload Global Timer Events **

Global Timer (power management) events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything that occurs to a device that is configured as Enabled, even when the system is in a power-down mode.

Primary/Secondary IDE 1/0 (Disabled)

When these items are enabled, the system will restart the power-saving timeout counters when any activity is detected on any of the drives or devices on the primary or secondary IDE channels.

FDD, COM, LPT Port (Disabled)

When this item is enabled, the system will restart the power-saving timeout counters when any activity is detected on the floppy disk drive, serial ports, or the parallel port.

PCI PIRQ[A-D]# (Disabled)

When disabled, any PCI device set as the Master will not power on the system.

Press <Esc> to return to the Power Management Setup page.

3.3-6 PNP/PCI Configurations

These options configure how PnP (Plug and Play) and PCI expansion cards operate in your system. Both the ISA and PCI buses on the motherboard use system IRQs (Interrup 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-Award BIOS CMOS Setup Utility
                     PnP/PCI Configurations

   ┌──────────────────────────────────────────┬──────────────────────┐
   │ Reset Configuration Data    [Disabled]    │     Item Help        │
   │                                           │                      │
   │ Resources Controlled By     [Auto(ESCD)]  │ Menu Level    ▶ ▶    │
   │ X IRQ Resources             Press Enter   │                      │
   │                                           │ Default is Disabled. Select │
   │ PCI/VGA Palette Snoop       [Disabled]    │ Enabled to reset Extended │
   │ INT Pin 1 Assignment        [Auto]        │ System Configuration Data │
   │ INT Pin 2 Assignment        [Auto]        │ ESCD) when you exit Setup if │
   │ INT Pin 3 Assignment        [Auto]        │ you have installed a new add- │
   │ INT Pin 4 Assignment        [Auto]        │ on and the system    │
   │ INT Pin 5 Assignment        [Auto]        │ reconfiguration has caused │
   │ INT Pin 6 Assignment        [Auto]        │ such a serious conflict that │
   │ INT Pin 7 Assignment        [Auto]        │ the OS cannot boot   │
   │ INT Pin 8 Assignment        [Auto]        │                      │
   │                                           │                      │
   │ ** PCI Express relative items**           │                      │
   │ Maximum ASPM supported      [L0s&L1]      │                      │
   │ Maximum Payload Size        [4096]        │                      │
   │ Init Display First          [PCI Slot]    │                      │
   └──────────────────────────────────────────┴──────────────────────┘
   ↑↓→←: Move   Enter: Select   +/-/PU/PD:Value   F10:Save  ESC:Exit   F1: General Help
        F5:Previous Values      F6:Fail-Safe Defaults      F7:Optimized Defaults
```

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:** 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.

  In the Memory Resources submenu, use the first item Reserved Memory Base to set the start address of the memory you want to reserve for the ISA expansion card. Use the section item Reserved Memory Length to set the amount of reserved memory. Press <Esc> to close the Memory Resources submenu.

PCI/VGA Palette Snoop [Disabled]

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

Assign IRQ For USB [Enabled]

Names the interrupt request (IRQ) line assigned to the USB on your system. Activity of the selected IRQ always awakens the system.

Maximum ASPM supported [L0s&L1]

This item controls the maximum level of ASPM supported on the given PCI Express links on the system.

Maximum Payload Size [4096]

This item specifies the maximum TLP payload size for the PCI Express devices. The unit is byte.

INT Pin 1-8 Assignment [Auto]

Identifies the interrupt request (IRQ) line assigned to a device connected to the PCI interface of your system.

3.3-7 PC Health Status

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

```
                       Phoenix-AwardBIOS CMOS Setup Utility
                                 PC Health Status
 ┌──────────────────────────────────────────┬─────────────────────┐
 │ Shutdown Temperature      [Disabled]      │     Item Help       │
 │ Warning Temperature       [Disabled]      │                     │
 │ CPU Core Voltage                          │  Menu Level    ►    │
 │ DDR          Voltage                      │                     │
 │ Vcc          3.3V                         │                     │
 │ Vcc          5.0V                         │                     │
 │              +12V                         │                     │
 │ Voltage Battery                           │                     │
 │ CPU       Temperature                     │                     │
 │ System   Temperature                      │                     │
 │ CPU    FAN   Speed                        │                     │
 │ SYS    FAN   Speed                        │                     │
 │ PWR    FAN   Speed                        │                     │
 └──────────────────────────────────────────┴─────────────────────┘
 ↑↓ → ← : Move   Enter: Select   +/-/PU/PD:Value   F10:Save  ESC:Exit   F1: General Help
        F5:Previous Values      F6:Fail-Safe Defaults     F7:Optimized Defaults
```

Shutdown Temperature [Disabled]

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

Warning Temperature [Disabled]

This item allows users to set the CPU warning temperature. The default setting is Disabled. Users may change it to 60°C/140°F, 65°C/149°F, 70°C/158°F, 75°C/167°F, or 80°C/176°F

System Component Characteristics

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

- CPU Core Voltage
- DDR Voltage
- 3.3V
- 5.0V
- 12V
- Voltage Battery
- CPU Temperature
- System Temperature
- CPU FAN Speed
- SYS FAN Speed
- PWR FAN Speed

3.3-8 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-Award BIOS CMOS Setup Utility
                         Frequency/Voltage Control

    ┌────────────────────────────────────────┬──────────────────────┐
    │  CPU Clock Ratio              [ 0 X]    │    Item Help         │
    │  Auto Detect PCI Clk          [Enabled] │                      │
    │  Spread Spectrum              [Enabled] │   Menu Level    ▶    │
    │  Clock Control By             [Auto]    │                      │
    │ X Async PCI Clock control      Disabled │                      │
    │ X CPU Clock                    100       │                      │
    │ X 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
```

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 DIMM/PCI Clk [Enabled]

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

Spread Spectrum [Enabled]

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

Clock Control By [Auto]

Use this item to set the CPU Host Clock frequency to Auto or by manual setting. Select "Manual" to activate the following items and set each item manually.

- **Async PCI Clock control (Disabled):** This item allows you to select the fixed clock to generate the output to PCI frequency.

- **CPU Clock (100):**USe the CPU Host Clock to set the frontside bus frequency for the installed processor (usually 200MHz, 133MHz or 100MHz.)

- **CPU:DRAM Frequency Ratio (SPD):** This item determines if the DRAM frequency is controlled by SPD or by manually. Do not change the value in this field unless you know the specification of the installed DRAM or the installed CPU quite well.

DRAM Frequency

Use this item to set the frequency of the installed DRAM. We strongly recommend users leave this item at its default value. Inappropriate value may cause the system to be unbootable or crash.

3.3-9 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>.

3.3-10 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. When your hardware does not support the "Optimized Defaults", fatal system errors or instability may occur. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

Users please remain the factory BIOS default setting of "Load Optimized Defaults" when install Operation System onto your system.

3.3-11 Set 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.

3.3-12 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.

3.3-13 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.

Memo
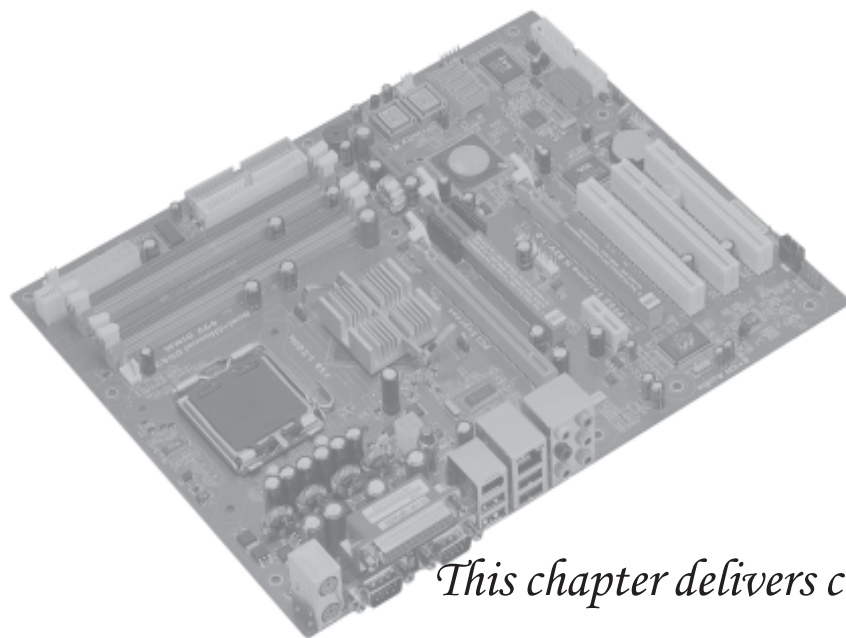
This chapter delivers contents of the ECS support CD.

Reference

4.1 Software CD Information

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.

Note: The Intel High Definition audio functionality unexpectedly quits working in Windows Server 2003 Service Pack 1 or Windows XP Professional x64 Edition. Users need to download and install the update packages from the Microsoft Download Center **"before"** installing HD audio driver bundled in the Driver CD. Pleaes log on to http://support.microsoft.com/default.aspx?scid=kb;en-us;901105#appliesto for more information.

4.2 Running the Software CD

To begin using the software CD, simply insert the CD into your CD-ROM drive. The CD automatically display the multimedia if auto run is enable in your computer.
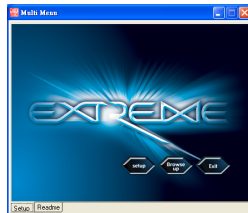
4.3 Setup Tab

The setup tab shows three buttons - **Setup**, **Browse CD**, **Exit**.

Setup button: Click the **Setup** button to run the software installation program. Select from the menu which software you want to install.

1. *Click* **Setup**. *The installation program begins:*
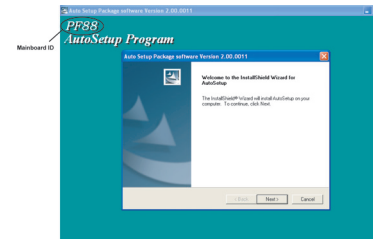
Note: The following screens are examples only. The screens and driver lists will be different according to the motherboard you are installing.

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

*2. Click **Next**. The following screen appears:*
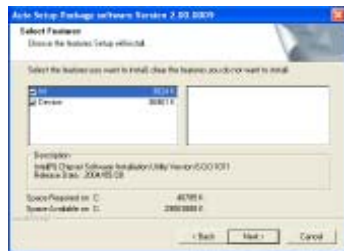
3. Follow the instructions on the screen to install the items.

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.

Browse CD button: The Browse CD button is the standard Windows command that allows you to open Windows Explorer and show the contents of the support CD.

Exit button: The **Exit** button closes the Auto Setup window.

4.4 Application Tab

Lists the software utilities that are available on the CD.

4.5 Read Me Tab

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

4.6 Software Utilities Introduction

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 AWARD WinFlash utility is a Windows version of the DOS Award 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 WINXP\ME\2000\ 98SE. To install the WinFlash utility, run WINFLASH.EXE from the following directory: \UTILITY\WINFLASH

I'm InTouch

I'm InTouch remote access software allows you to log in and work on your faraway computer, just as if you were sitting behind it! Run programs, transfer files, manage e-mail, contacts and calendar events. With I'm InTouch, you always have access to your PC and the important information and programs that you need.

MediaRing Talk - Telephony Software

Go to \UTILITY\MEDIARING EZ NET and run SETUP 331.EXE to install the MediaRing Talk voice modem software for the built-in modem.

WinCinema

■ **WinDVD Creator Plus**

WinDVD Creator Plus is designed for people who want to make their own DVDs but who don't want to learn complicated programs. By taking you through 4 DVD-making steps, WinDVD Creator Plus walks you through capturing video, editing it, adding titles, transitions, effects, music, DVD menus and finally burning the finished product. User also can direct-burn to DVD when DVD burner is available.

■ **WinDVD**

WinDVD is the world's most popular DVD player and supports over 30 new features and enhancements such as improved picture quality, easier-to-use Time-Stretching, MP3 playback, and Video Desktop - which lets you watch movies under your desktop icons while you work or check e-mail.

■ **WinRIP**

WinRIP lets you record, store, organize, and enjoy you music collection - on your PC, CD player, and portable player. Organize your Music Galleryand create your own playlists. You can switch between simple Player mode or full-featured Jukebox mode.

Pro Magic Plus

This amazing software not only provides users with convenient and instant restoration of your computer, but also restores within seconds important data back to the preferred state at a specific point in time. Pro Magic also combines several other functions including anti-virus, backup, uninstall software and multi-booting to satisfy all your system protection needs.

DPU (Data Process Utility)

Specially designed for file protection, security and management this DPU or data processing utility insures the safety of important data through complete file restoration, eliminating file damage even in case of improper operation. User can freely edit original files after a set restore time point. The DPU can even restore even deleted files.

Adobe Reader

This item install the Adobe Acrobat Reader. The Acrobat Reader software is for viewing files saved in Portable Document Format (PDF).

Smart LAN

The motherboard support Marvell Virtual Cable Tester (VCT) technology. It enables end users to remotely diagnose the quality and characteristics of the attached cable. With this feature it is possible to detect and report potential cabling issues such as cable opens, cable shorts, and impedance mismatches. The distance of the fault can be reported within one meter.

Show Shifter

ShowShifter, the award winning software, combines viewing TV, video, CD, MP3 and digital pictures into one easy to use application. With a little help from Showshifter your PC will be the ultimate home media center.
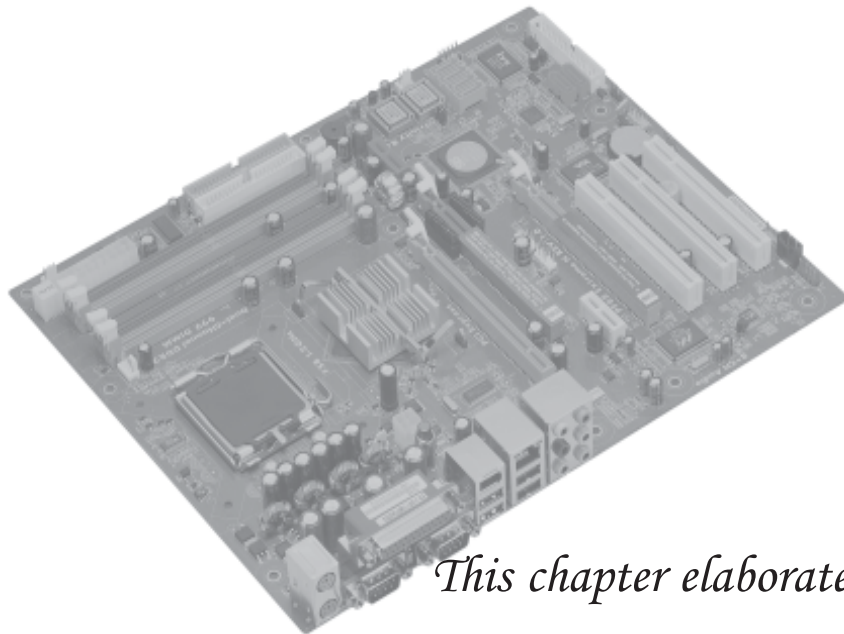
This chapter elaborates SiS965 SATA RAID setup.

Reference

5.1 SiS965 SATA RAID Setup Guide

5.1-1 Introduction for SiS965 SATA RAID Function

The SiS965 S-ATA Host controller support up to four serial ATA on four independent ports. The Serial ATA RAID is designed to provide a cost-effective, high performance RAID solution that adds performance and/or reliability to PC desktops and/or servers using Serial ATA/150 hard disks.

Serial ATA RAID function supports striping (RAID 0), mirroring (RAID 1), and span (JBOD). Please note that the SATA RAID function supports hard disk drives only.

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 150MB/sec per drive, depending on individual drive specifications.

5.1-2 Features

- The SiS965 controller supports up to four Serial ATA (Serial ATA RAID) drives.
- Support RAID function: RAID 0, RAID 1, RAID 0+1, and JBOD.
- Support bootable disk.
- Windows-based RAID Utility software tool (only support Windows XP and 2000).
- BIOS Utility.

5.1-3 Support Operating Systems

Support Microsoft Windows 98/98SE/ME/2000 Professional and Server/XP.

5.1-4 What is RAID?

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

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

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

3 **RAID 1:** Also known as "Mirroring". The goal of RAID 0 is to

ensure data security. Data is written to two or more drives synchro-
nously. That is, 100% duplication of data from one drive to an-
other.

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 usable total
capacity. However, JBOD will not increase any performance or
data security.

5.1-5 Installing Software Drivers

SiS provides RAID driver for SiS965 SATA with RAID function.

1   For RAID function, SiS965 support RAID0, RAID1 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:

"Windows 32bit SiS Raid/IDE Controller",
"Windows 64bit 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 v2.01)
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 SiS965 RAID Utility first and then follow the steps
above.*

Existing Windows 2000/XP/98/Me 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 Com-
puter" 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 **"SiS182 Raid Controller"** should appear.

Confirming Windows 98/Me Driver Installation

1   From Windows 98/Me, open the Control Panel from "My Com-
     puter" followed by the System icon.
2   Choose the "Device Manager" tab.
3   Click the "+" in front of "IDE ATA/ATAPI Controllers" hardware
     type. The driver **"SiS965 IDE/Raid Controller"** should appear.

5.1-6 BIOS Utility Operation

BIOS Utility supports windows 2000/XP/98/Me.

Starting BIOS Utility

1   Boot your system. If this is the first time you have booted with the
     SiS965 and the drives installed, the BIOS will display the following:

```
Silicon Integrated Systems Corp. RAID BIOS Setting Utility v0.XX
(c) 2003-2005 Silicon Integrated Systems Corp. All Rights Reserved.


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

2   Press <Ctrl-S> keys to display the SiS965 Utility Main Menu.
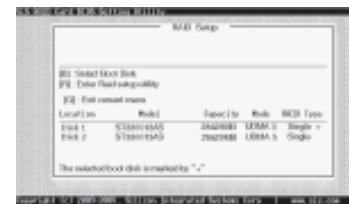
3   You can press <B> key to select the boot disk on the SiS965 con-
     troller. The yellow highlight will show on the disk and you can
     switch it to select the disk you wanted. Press "Enter" key to select
     it and the selected boot device will be marked by "*". The default
     boot device 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.
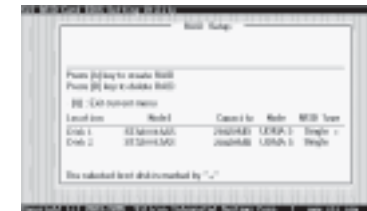
Create RAID

- SIS965 controller support RAID 0, RAID 1 and JBOD.

Creating a RAID 0 (Stripe) Array for Performance

- SiS965 only supports 2 SATA drivers to create a stripe array.

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

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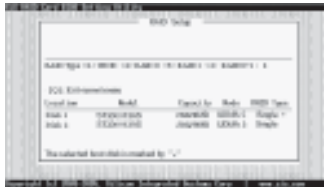
3   You will have two selections to create a RAID 0 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 0 array faster and easier. The Blocksize will be selected by its default value "64K". The result after creating will be show on **step 8**. Besides, you also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

4   Press <1>-<5> keys and <Enter> to select Block Size. (Default:64K)
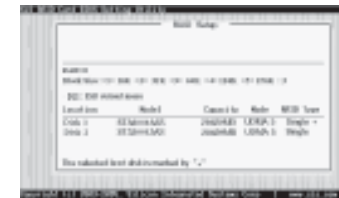
5 Use <↑ > < ↓ > to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 0. An the disk you select first will be the SOURCE disk.
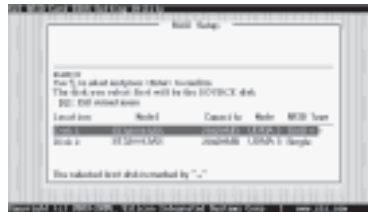
6 Next, you will see a message "Split the SOURCE(DISK x) data to RAID disks?". Press <N> and <Enter> to create RAID 0 array only or press <Y> and <Enter> to split the data from source disk to other disks.
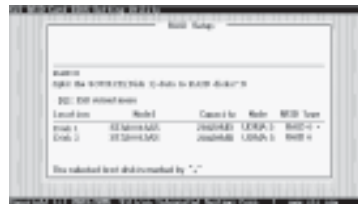
7 Starting splitting action, the following frame will be shown.
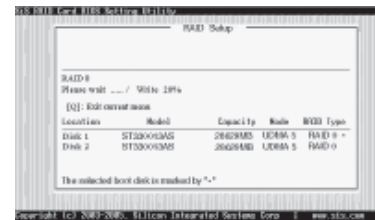
8 After all steps finished, press ,<Q> until escape the setup menu and RAID 0 array will be show on the top of the main frame.
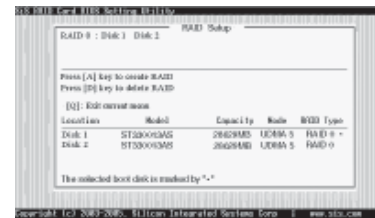
9   Press <Q> again to exit this BIOS utility and the red message frame
     will show. Press <Y> and <Enter> to save changes.

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

*SiS965 enables users to create Mirror arrays with 2 drives
only.*

To create a Mirror array, follow these steps:

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

3   You will have two selections to create a RAID 1 array. **The default
     value is <1>**. If you select **<1>Auto Create**, you can create a
     RAID 1 array faster and easier. The result after creating will be
     show on **step 7**. Besides, you also can select **<2>Manual Create**,
     see following steps.
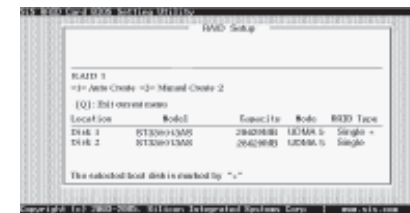
4   Use <↑> <↓> to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from **Single** to **RAID 1**. The same as RAID 0, the disk you select first will be the SOURCE disk.
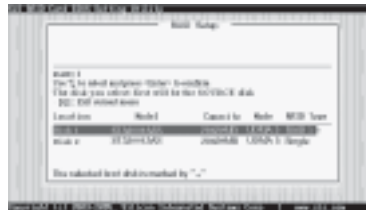
5   Next, you will see a message "Duplicate the SOURCE (DISK x) data to RAID disks?". Press <N> and <Enter> to create RAID 1 array only or press <Y> and <Enter> to duplicate the data from source disk to mirror disk.
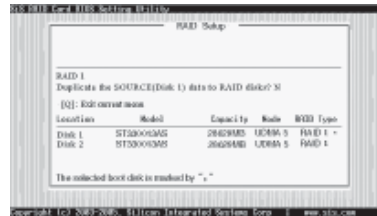
6   Starting duplicating action, the following frame will be showing.
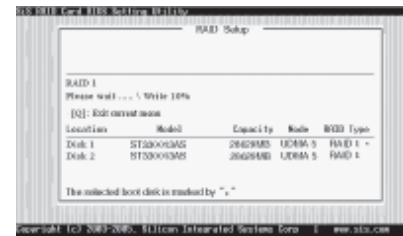
7   After all steps finished, press <Q> until escape the setup menu and RAID 1 array will be show on the top of the main frame.
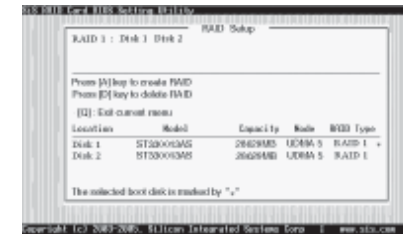
8   Press <Q> again to exit this BIOS utility and the red message frame will show as the same as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.

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

Creating a JBOD Array

SIS965 only supports 2 SATA drivers to create a JBOD arrays.

To create an JBOD array, follow these steps:

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

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

3   You will have two selections to create a JBOD array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a JBOD array faster and easier. The result after creating will be show on **step 5**. Besides, you also can select **<2>Manual Create**, see following steps.
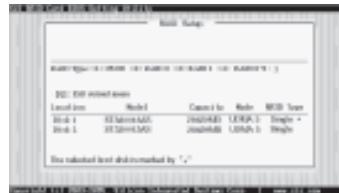
5-8

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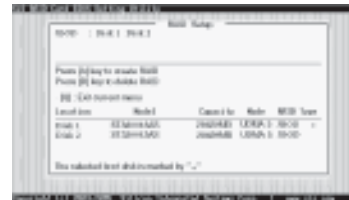
6 Press <Q> again to exit this BIOS utility and the red message frame will show as the same age as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.

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.

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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.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:
- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

Canadian Department of Communications

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

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

Résumé des caractéristiques

CPU	• Socket LGA775 pour processeur Intel Pentium4 • FSB 1066/800/533 MHz (Horloge de noyau de 266/200/133MHz) • Prise en charge de la Technologie Hyper-Threading
Chipset	• SiS656 & SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Mémoire	• Architecture mémoire DDR double canal • 4 x sockets DIMM DDR2 240 broches prenant en charge jusqu'à 4 Go • Prend en charge les DDR2 667/533/400 • DIMMs DDR de 1,8V sans tampon, Non-ECC
Options d'extension	• 2 x logements PCI Express x16 • 1 x logement de Bus Elite • 1 x logement PCI Express x1 • 3 x logements PCI

Stockage	• Pris en charge par SiS965
	  - 4 x périphériques Ultra DMA133
	  - 4 x périphériques SATAII
	  - Configuration RAID 0, RAID 1, RAID 0+1, et JBOD
	• Pris en charge par SiI3132
	  - Vitesse de transfert ATA Série Génération 2 de 3,0Gb/s
	  - 2 x périphériques SATA II
	  - Configuration RAID 0, RAID 1

IEEE 1394a	• Contrôleur VIA VT6307 IEEE1394a • Prend en charge 2 x ports IEEE1394a
Audio	• CODEC audio 8-canaux ALC850 • Conforme aux spécifications AC'97 2.3
LAN Gigabit	• Marvel 88E1111 Gigabit LAN PHY • Conforme 10/100/1000BASE-T IEEE 802.3
E/S du panneau arrière	• 1 x connecteur de clavier PS/2 • 1 x connecteur souris PS/2 • 4 x ports USB • 1 x connecteur LAN RJ45 • 2 x ports Série • 1 x port LPT • 1 x port 1394a • Prises audio pour microphone, ligne d'entrée et ligne de sortie
Caractéristiques du BIOS	• Award BIOS avec ROM Flash de 4Mb • Prend en charge Plug & Play 1.0A, APM 1.2, Multi Boot, DMI • Prend en charge les spécifications 1.0B révision ACPI
E/S interne	• 1 x Connecteur d'alimentation ATX 24 broches & Connecteur 12 V 4 broches

	• 1 x connecteur de lecteur de disquette- prenant en charge 360K ~ 2,88M octets, 3 Lecteurs de disquettes Modes ou LS120
	• 2 x connecteurs IDE
	• 6 x connecteurs ATA Série
	• 2 x embases USB 2.0 supportant 4 ports USB supplémentaires
	• 1 x embase 1394a
	• 1 x embase SPDIFO1
	• 1 x embase de commutateur/LED de panneau avant
	• 1 x embase audio de panneau avant
	• 1 x embase IR1
	• 1 x embase d'entrée CD
	• 1 x embase SPK1
	• Connecteurs CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Facteur de Forme	• Taille ATX
	• 305mm x 244mm

Zusammenfassung der Merkmale

CPU	
	• LGA775 Sockel für Intel Pentium4 Prozessor
	• FSB 1066/800 /533MHz (266/200/133MHz Core-Takt)
	• Unterstützt Hyper-Threading Technologie

Chipsatz	
	• SiS656 & SiS965
	• North Bridge: SiS656
	• South Bridge: SiS965

Arbeitsspeicher	
	• Dual-Kanal DDR Speicherarchitektur
	• 4 x 240-Pin DDR2 DIMM Sockel, unterstützt bis zu 4 GB
	• Unterstützt DDR2 667/533/400
	• Unterstützt Nicht-ECC, ungepufferte 1,8V DDR DIMMs

Erweiterungsmöglichkeiten	
	• 2 x PCI Express x16
	• 1 x Elite Bus-Slot
	• 1 x PCI Express x1
	• 3 x PCI-Slot

Speicher	
	• Unterstützt durch einen SiS965
	- 4 x Ultra DMA133 Geräte
	- 4 x SATA Geräte
	-RAID 0, RAID 1, RAID 0+1 und JBOD-Konfiguration
	• Unterstützt durch einen SiI3132
	-Serial ATA Generation 2, Transferrate von 3.0 Gb/s
	-2 x SATA II Geräte
	-RAID 0, RAID 1 Konfiguration

IEEE 1394a	
	• VIA VT6307 IEEE1394a Controller
	• Unterstützt 2 x IEEE1394a Anschlüsse

Audio	
	• ALC850 8-Kanal Audio CODEC
	• Entspricht AC'97 2.3 Spezifikationen

Gigabit LAN	
	• Marvel 88E1111 Gigabit-LAN PHY
	• Entspricht 10/100/1000BASE-T IEEE 802.3

Rear panel I/O	
	• 1 x PS/2 Tastaturanschluss
	• 1 x PS/2 Mausanschluss
	• 4 x USB Anschlüsse
	• 1 x RJ45 LAN Anschlüss
	• 2 x Seriellanschlusse
	• 1 x LPT Anschlüss
	• 1 x 1394a Anschlüss
	• Audiobuchsen für Mikrofon, Line-In und Line-Out

BIOS Merkmale	
	• Award BIOS mit 4Mb Flash ROM
	• Unterstützt Plug und Play 1.0A, APM 1.2, Multi Boot, DMI
	• Unterstützt ACPI Revision 1.0B Spezifikation

Internes I/O	• 1 x 24-Pin ATX Netzteilanschluss & 4-Pin 12 V Anschluss

	• 1 x Floppylaufwerkanschluss, unterstützt 360K ~ 2.88M Bytes, 3 Modus Festplatten oder LS120
	• 2 x IDE-Stecker
	• 6 x Seriell ATA Anschluss
	• 2 x USB 2.0-Header, unterstützt zusätzlich 4 USB Anschluss
	• 1 x 1394a-Header
	• 1 x SPDIFO1-Header
	• 1 x Schalter in der Frontabdeckung/LED-Anschluss
	• 1 x Audioanschluss in der Frontabdeckung
	• 1 x IR1-Header
	• 1 x CD_IN-Header
	• 1 xSPK1-Header
	• CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN-Stecker
Formfaktor	• ATX-Größe
	• 305mm x 244mm

Indice delle caratteristiche

CPU	• LGA775 Socket per processore Intel Pentium4 • FSB 1066/800/533 MHz (Core clock a 266/200/133 Mhz) • Supportp di Tecnologia Hyper-Threadig
Chipset	• SiS656 & SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Memoria	• Dual-channel DDR memory architecture • 4 x 240-pin DDR2 DIMM socket che supportano sino a 4 GB • Supporta DDR2 667/533/400 • Supporta Non-ECC, unbuffered 1,8V DDR DIMMs
Opzioni d'espansione	• 2 x slots PCI Express x16 • 1 x slot bus Elite • 1 x slot PCI Express x1 • 3 x slots PCI
Deposito	• Supportato da SiS965 - 4 x dispositivi Ultra DMA133 - 4 x dispositivi SATA - Configurazione RAID 0, RAID 1, RAID 0+1 e JBOD • Supportato da SiI3132 - Velocità di trasferimento Generation 2 ATA seriale di 3,0 Gb/s - 2 x dispositivi SATA II - Configurazione RAID 0, RAID 1

IEEE 1394a	• Controller VIA VT6307 IEEE1394a • Supporta 2 x porte IEEE1394a
Audio	• ALC850 8-canale audio CODEC • Conforme alle specifiche AC'97 2.3
Gigabit LAN	• PHY LAN Marvel 88E1111 Gigabit • Conforme a IEEE 802.3 10/100/1000BASE-T
Pannello posteriore I/O	• 1 x connettore tastiera PS/2 • 1 x connettore mouse PS/2 • 4 x porte USB • 1 x connettore RJ45 LAN • 2 x porte Seriale • 1 x porta LPT • 1 x porta 1394a • Prese jack audio per microfono, line-in e line-out
Caratteristiche BIOS	• BIOS Award con 4Mb Flash ROM • Supporta Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Supporta specifiche di revisione ACPI 1.0B
I/O interno	• 1 x connettore di alimentazione 24-pin ATX e connettore 4-pin da 12 V

	• 1 x connettore floppy - supporta 360K ~ 2,88M Byte, 3 Mode FDDs o LS120 • 2 x connettori IDE • 6 x connettori Seriali ATA • 2 x supporti header USB 2.0 con 4 porte USB supplementari • 1 x 1394a header • 1 x SPDIFO1 header • 1 x interruttore del pannello frontale /LED header • 1 x pannello frontale header audio • 1 x IR1 header • 1 x CD_IN header • 1 x SPK1 in header • Connettori CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Form Factor	• Dimensione -ATX • 305mm x 244mm

Resumen de Características

CPU	• LGA775 Socket para procesador Intel Pentium4 • FSB 1066/800/533 MHz (Reloj Central 266/200/133 MHz) • Soporte Hyper-Threading Technology
Chipset	• SiS656 & SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Memoria	• Arquitectura de memoria DDR Canal Dual • 4 x zócalos 240-pin DDR2 DIMM soporta hasta 4 GB • Soporta DDR2 667/533/400 • Soporta DIMMs No-ECC, sin buffer 1.8V DDR
Opciones de expansión	• 2 x PCI Express x16 • 1 x ranura Elite Bus • 1 x PCI Express x1 • 3 x ranuras PCI

Almacenaje	• Soportado por SiS965
	   - 2 x dispositivos Ultra DMA100/66
	   - 4 x dispositivos SATA
	   - Configuración RAID 0, RAID 1, RAID 0+1 , y JBOD
	 • Soportado por SiI3132
	   - Índice de transferencia de Serial ATA Generation 2 en 3.0 Gb/s
	   - 2 x dispositivos SATA II
	   - Configuración RAID 0, RAID 1

IEEE 1394a	• Controlador VIA VT6307 IEEE1394a • Soporta 2 x puertos IEEE1394a
Audio	• ALC850 8-canales audio CODEC • Conformidad con las especificaciones AC'97 2.3
Gigabit LAN	• Marvel 88E1111 Gigabit LAN PHY • Conformidad 10/100/1000BASE-T IEEE 802.3
I/O del panel trasero	• 1 x conector de teclado PS/2 • 1 x conector de ratón PS/2 • 4 x puertos USB • 1 x conectore RJ45 LAN • 2 x puertos Serial • 1 x puerto LPT • 1 x puerto 1394a • Clavijas de audio para micrófono, entrada y salida de línea
Características de BIOS	• Award BIOS con 4Mb Flash ROM • Soporta Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Soporta especificación ACPI revisión 1.0B
I/O Interno	• 1 x Conector de Suministro 24-pin ATX & Conector 4-pin 12 V

	• 1 x conector Floppy - soporta 360K ~ 2.88M Bytes, FDD de 3 Modos o LS120 • 2 x conectores IDE • 6 x conectores Serial ATA • 2 x cabezales USB 2.0 soporta 4 puertos USB adicionales • 1 x cabezal 1394a • 1 x cabezal SPDIFO1 • 1 x interruptor del panel frontal/cabezal LED • 1 x cabezal de audio del panel frontal • 1 x cabezal IR1 • 1 x cabezal CD_IN • 1 x cabezal SPK1 • Conectores PU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Factor de Forma	• Tamaño de ATX • 305mm x 244mm

Sumário de Características

CPU	• Tomada de parede LGA775 para processador Intel Pentium4 • FSB 1066/800/533 MHz (Relógio Central de 266/200/133MHz) • Suporta Tecnologia de Hyper-Threading
Chipset	• SiS656 & SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Memória	• Arquitectura de memória DDR bicanal • 4 x Tomada de parede 240 pinos DDR DIMM suporta até 4 GB • Suporta DDR2 667/533/400 • Suporta sem ECC (Código Corrector de Erros), 1.8V DDR DIMMs sem buffers
Opções de expansão	• 2 x PCI Express x 16 • 1 x Ranhura Elite Bus • 1 x PCI Express x 1 • 3 x Ranhuras PCI

Armazenam-ento	• Suportado por SiS965
	  - 4 x Dispositivos Ultra DMA133
	  - 4 x Dispositivos SATA
	  - RAID 0, RAID 1, RAID 0+1, e configuração JBOD
	• Suportado por SiI3132
	  - Taxa de transferência Generation 2 ATA de Série de 3.0 Gb/seg.
	  - 2 x Dispositivos SATA II
	  - Configuração RAID 0, RAID 1

IEEE 1394a	• Controlador VIA VT6307 IEEE1394a • Suporta 2 x portas IEEE1394a
Áudio	• CODEC áudio 8-canais ALC850 • Cumpre com as especificações AC'97 2.3
Gigabit LAN	• Marvel 88E1111 Gigabit LAN • Compatível com 10/100/1000BASE-T IEEE 802.3
Painel traseiro I/O	• 1 x conector de teclado PS/2 • 1 x conector de rato PS/2 • 4 x portas USB • 1 x conectore RJ45 LAN • 2 x portas de Série • 1 x porta LPT • 1 x porta 1394a • Fichas áudio para microfone, entrada de linha e saída de linha
Características BIOS	• Award BIOS com 4Mb Flash ROM • Suporta dispositivo Plug e Play 1.0A, APM 1.2, Multi Boot, DMI • Suporta especificação da revisão 1.0B ACPI
I/O interno	• 1 x Conector de Fonte de Alimentação 24 pinos ATX & Conector 4 pinos 12 V

	• 1 x Conector flexível - suporta 360K ~ 2.88M Bytes, FDDs de 3 Modos ou LS120
	• 2 x Conectores IDE
	• 6 x Conectores de Série ATA
	• 2 x Colector USB 2.0 suporta 4 portas USB adicionais
	• 1 x Colector 1394a
	• 1 x Colector SPDIFO1
	• 1 x Colector com interruptor/LED do painel traseiro
	• 1 x Colector de áudio do painel traseiro
	• 1 x Colector IR1
	• 1 x Colector CD_IN
	• 1 x Colector SPK1
	• Conectores CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Coeficiente de Forma	• Tamanho ATX • 305mm x 244mm

特徴概要

プロセッサ	・ Intel Pentium4プロセッサ用のLGA775 ソケット ・ FSB 1066/800/533 MHz(266/200/133MHzのコアクロック) ・ Hyper-Threading 技術対応
チップセット	・ SiS656 & SiS965 ・ North Bridge: SiS656 ・ South Bridge: SiS965
メモリ	・ デュアルチャネルDDRメモリのアーキテクチャ ・ 4つの240ピンDDR2 DIMMソケットで最大4 GBまでサポート ・ DDR2 667/533/400サポート ・ Non-ECC非バッファー1.8V DDR DIMM
拡張スロット	・ 2つのPCI Express x16スロット ・ 1つのElite Bus スロット ・ 1つのPCI Express x1スロット ・ 3つのPCI スロット
保存装置	・ SiS965 チップセットがサポートするのは - 2つのUltra DMA100/66 デバイス - 4つのSATAII デバイス - RAID 0、RAID 1、RAID 0+1、およびJBOD の構成に対応 ・ Sil3132がサポートするのは - Serial ATA Generation 2 仕様を採用し、3.0 Gb/秒の転送率が可能 - 2つのSATAII デバイス - RAID 0、RAID 1、および RAID 0+1の 構成

IEEE 1394a	・ VIA VT6307 IEEE1394a コントローラ ・ 2つのIEEE1394a ポートをサポート
オーディオ	・ ALC850 8チャネルオーディオCODEC ・ AC'97 2.3 規格に準拠
デュアルLAN	・ Marvel 88E1111 Gigabit LAN PHYを採用 ・ 10/100/1000BASE-T IEEE 802.3に準拠
背面パネル入出力	・ 1つのPS/2 キーボードコネクタ ・ 1つのPS/2 マウスコネクタ ・ 4つのUSBポート ・ 1つのRJ45 LAN コネクタ ・ 2つのシリアルポート ・ 1つのLPTポート ・ 1つの1394aポート ・ マイク、ラインイン、ラインアウト用オーディオジャック
BIOSの諸機能	・ 4 Mb Flash ROM のAward BIOS ・ Plug&Play 1.0A、APM 1.2、Multi Boot、およびDMIをサポート ・ ACPI revision 1.0B 規格に準拠
内部入出力	・ 1つの24ピンATX 電源サプライコネクタと4ピン12 V コネクタ

	• 1つのフロッピーディスクドライブコネクタ、360Kから 2.88Mバイトの3 Mode FDDとLS120をサポート • 2つのIDEコネクタ • 6つのシリアルATAコネクタ • 2つのUSB 2.0ヘッダーでさらなる4つのUSBポートを増設可能 • 1つの1394a ヘッダー • 1 つのSPDIFO1ヘッダー • 1 つの前面パネルスイッチ/LED ヘッダー • 1つのフロントパネルオーディオヘッダー • 1つのIR1 ヘッダー • 1つのCD入力ヘッダー • 1つのSPK1 ヘッダー • CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN コネクタ
寸法	• ATXサイズ • 305mm x 244mm

특성 요약

CPU	
	• 인텔 펜티엄 4 프로세서를 위한 LGA775 소켓
	• FSB 1066/800/533 MHz (266/200/133 MHz 코어 클록)
	• Hyper-Threading 기술 지원

칩셋	
	• SiS656 & SiS965
	• North Bridge: SiS656
	• South Bridge: SiS965

메모리	
	• 듀얼 채널 DDR 메모리 아키텍처
	• 4 x 240 핀 DDR2 DIMM 소켓, 최대 4 GB 지원
	• DDR2 667/533/400 지원
	• Non-ECC, unbuffered 1.8V DDR DIMMs 지원

확장 옵션	
	• 2 x PCI 익스프레스 x16
	• 1 x Elite Bus 슬롯
	• 1 x PCI 익스프레스 x1
	• 3 x PCI 슬롯

저장	
	• SiS965 지원
	- 4 x Ultra DMA133 장치
	- 4 x SATA 장치
	-RAID 0, RAID 1, RAID 0+1 , 및 JBOD 구성
	• SiI3132 지원
	-Serial ATA Generation 2 전송 속도 3.0 Gb/s
	-2 x SATA 장치
	-RAID 0, RAID 1 구성

IEEE 1394a	
	• VIA VT6307 IEEE1394a 컨트롤러
	• 2 x IEEE1394a 포트 지원

오디오	
	• ALC850 8-채널 오디오 코덱
	• AC' 97 2.3 사양 부합

듀얼 랜	
	• Marvel 88E1111 기가바이트 LAN PHY
	• 10/100/1000BASE-T IEEE 802.3 부합

뒷 패널 I/O	
	• 1 x PS/2 키보드 커넥터
	• 1 x PS/2 마우스 커넥터
	• 4 x USB 포트
	• 1 x RJ45 LAN 커넥터
	• 2 x 시리얼 포트
	• 1 x LPT 포트
	• 1 x 1394a 포트
	• 마이크, 라인 입력 및 라인 출력용 오디오 잭

BIOS 특성	
	• 4Mb 플래시 ROM의 Award BIOS
	• 플러그 앤 플레이 1.0A, APM 1.2, Multi Boot, DMI 지원
	• ACPI 1.0B 사양 지원.

내부 I/O	
	• 1 x 24 핀 ATX 파워 써플라이 커넥터 및 4 핀 12 V 커넥터

하드웨어	• 1 x 플로피 커넥터 - 360K ~ 2.88M Bytes, 3 모드 FDD 또는 LS120 지원 • 2 x IDE 커넥터 • 6 x 시리얼 ATA 커넥터 • 2 x USB 2.0 헤더, 추가적으로 4 개의 USB 포트 지원s • 1 x 1394a 헤더 • 1 x SPDIFO1 헤더 • 1 x 앞 패널 스위치/LED 헤더 • 1 x 앞 패널 오디오 헤더 • 1 x IR1 헤더 • 1 x CD_IN 헤더 • 1 x SPK1 헤더 • CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN 커넥터
규격	• ATX 사이즈 • 305mm x 244mm

功能摘要

中央處理器	• Intel Pentium4 處理器的LGA775 插座 • 前端匯流排(FSB)為1066/800/533MHz (266/200/133MHz的核心時脈) • 支援超執行緒(Hyper-Threading)技術
晶片組	• SiS656 & SiS965 • 北橋晶片：SiS656 • 南橋晶片：SiS965
記憶體	• 雙通道DDR2 記憶體架構 • 4個240針DDR2 DIMM 插槽支援至4 GB • 支援DDR2 400/533/667 • 支援非ECC型無緩衝1.8V DDR DIMM
擴充槽	• 2個PCI Express x16槽 • Elite Bus槽1個 • 1個PCI Express x1槽 • 3個PCI槽
儲存裝置	• 以SiS965晶片支援 　– 2個Ultra DMA133 裝置 　– 4個SATA 裝置 　– 支援RAID 0、RAID 1、RAID 0+1、及 JBOD 架構 • 以 SiI3132支援 　– Serial ATA 第二代，傳輸率高達3.0 Gb/秒 　– 2個 SATA II 裝置 　– 支援RAID 0、RAID 1 設定

IEEE 1394a	• VIA VT6307 IEEE1394a 控制器 • 支援2個IEEE1394a 埠
音訊	• ALC850 8聲道音訊CODEC • 相容於AC'97 2.3 規格
Gigabit LAN	• 採用Marvel 88E1111 Gigabit LAN • 相容於10/100/1000BASE-T IEEE 802.3
背面板 輸出入介面	• 1個PS/2 鍵盤連接器 • 1個PS/2 滑鼠連接器 • 4個USB埠 • 1個RJ45 LAN 插孔 • 2個序列埠 • 1個LPT埠 • 1個1394a埠 • 麥克風音頻插座、線級輸入及線級輸出
BIOS功能	• 採4Mb Flash ROM的Award BIOS • 支援Plug and Play 1.0A、 APM 1.2、 Multi Boot、及 DMI • 支援ACPI 修訂版1.0B 規格
內部輸出入 介面	• 1個24針ATX 電源供應器連接器及4針12 V 連接器

	1個軟碟機連接器，可支援360K至2.88M位元組之3 Mode 軟碟機及LS120軟碟機 2個IDE連接器 6個序列ATA 連接器 2個USB 2.0接頭，可支援4個額外的USB埠 1個1394a接頭 1個SPDIFO1接頭 1個前面板開關及1個LED 接頭 1個前面板音訊接頭 1個IR1接頭 1個CD_IN接頭 1個SPK1接頭 - CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN 連接器
主機板尺寸	- ATX 尺寸 305mm x 244mm

功能摘要

CPU	
	• 用于 Intel Pentium4处理器的 LGA775 插座
	• FSB 1066/800/533MHz (266/200/133MHz 核心时钟)
	• 支持超线程(Hyper-Threading)技术

芯片组	
	• SiS656 & SiS965
	• 北桥：SiS656
	• 南桥：SiS965

内存	
	• 双通道 DDR 内存架构
	• 4 个 240 线 DDR2 DIMM 插槽，内存最大可支持 4 GB
	• 支持 DDR2 667/533/400
	• 支持非 ECC，非缓冲 1.8V DDR DIMM

扩展选项	
	• 2 个 PCI Express x16 插槽
	• 1 个 Elite 总线插槽
	• 1 个 PCI Express x1插槽
	• 3 个 PCI 插槽

存储	
	• 支持 SiS965
	- 4 个 Ultra DMA133 设备
	- 4 个 SATA 设备
	- RAID 0、RAID 1、RAID 0+1 和 JBOD 配置
	• 支持 SiI3132
	- 串行 ATA Generation 2，传输速率 3.0 Gb/s
	- 2 个 SATA II 设备
	- RAID 0, RAID 1 配置

IEEE 1394a	
	• VIA VT6307 IEEE1394a 控制器
	• 支持 2 个 IEEE1394a 接口

音频	
	• ALC850 8 声道音频编解码器
	• 兼容 AC'97 v2.3 规格

Gigabit LAN	
	• Marvel 88E8053 千兆 LANPHY
	• 符合 10/100/1000BASE-T IEEE 802.3 标准

后面板 I/O	
	• 1 个 PS/2 键盘接口
	• 1 个 PS/2 鼠标接口
	• 4 个 USB 端口
	• 1 个 RJ45 LAN 接口
	• 2 个串口
	• 1 个 LPT 端口
	• 1 个 1394a 端口
	• 麦克风、线入和线出声音插孔

BIOS 功能	
	• Award BIOS (4Mb Flash ROM)
	• 支持即插即用 1.0A、APM 1.2、Multi Boot、DMI
	• 支持 ACPI Revision 1.0B 规格

集成 I/O	
	• 1 个 24 针 ATX 电源接口和 1 个 4 针 12 V 接口

	• 1 个软驱接口- 支持 360K ~ 2.88M 字节，3 Mode FDD 或 LS120 • 2 个 IDE 接口 • 6 个串行 ATA 接口 • 2 个 USB 2.0 接头，支持另外 4 个 USB 端口 • 1 个 1394a 接口 • 1 x SPDIFO1 接口 • 1 个前面板开关/LED 接头 • 1 个前面板音频接头 • 1 个 IR1 接口 • 1 个 CD_IN 接口 • 1 个 SPK1 接口 • CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN 接口
外形	• ATX 尺寸 • 305mm x 244mm

Характеристики

CPU	• Разъем LGA775 для процессоров типа Intel Pentium4 • FSB 1066/800/533МГц (тактовая частота 266/200/133МГц) • Поддержка технологии Hyper-Threading
Чипсет	• SiS656 и SiS965 • Северный мост: SiS656 • Южный мост: SiS965
Память	• Архитектура памяти Dual-channel DDR • Четыре 240-штырьковых сокета для DDR2 DIMM с поддержкой до 4 ГБ памяти • Поддержка DDR2 667/533/400 • Поддержка небуферизуемой памяти Non-ECC 1.8V DDR DIMM
Возможности расширения	• 2 слот PCI Express x16 • 1 слот Elite Bus • 1 слот PCI Express x1 • 3 слота PCI

Массовая память	• Поддерживаемая SiS965
	  - 4 устройства Ultra DMA133
	  - 4 устройства SATA
	  - Конфигурация RAID 0, RAID 1, RAID 0+1 и JBOD
	• Поддерживаемая SiI3132
	  - Serial ATA 2-го поколения со скоростью трансфера 3.0 Гб/с
	  - 2 устройства SATA II
	  - Конфигураци RAID 0, RAID 1

IEEE 1394a	• Контроллер VIA VT6307 IEEE1394a • Поддержка 2 портов IEEE1394a
Аудио	• 8-канальный аудио CODEC ALC850 • Совместимость со спецификацией AC'97 2.3
Gigabit LAN	• Marvel 88E1111 Gigabit LAN • Совместимость с технологией 10/100/1000BASE-T IEEE 802.3
Гнезда входа/ выхода на тыльной панели	• 1 гнездо клавиатуры PS/2 • 1 гнездо мыши PS/2 • 4 порта USB • 1 гнездо RJ45 LAN • 2 серийный порт • 1 порт LPT • 1 порт 1394a • Гнездо для подключения микрофона, гнезда аудио-входа и выхода
Особенности BIOS'a	• Award BIOS с 4Мб Flash ROM • Поддержка Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Поддержка ACPI вер.1.0B
Внутренние гнезда входа/выхода	• 1 24-штырьковое гнездо питания ATX и 4-штырьковое гнездо 12 V

	• 1 гнездо подключения накопителя НГМД с поддержкой форматов 360K ~ 2.88МБ, 3 формата FDD или LS120 • 2 коннектора IDE • 6 гнезд Serial ATA • 2 гнезда USB 2.0 с поддержкой 4 дополнительных портов USB • 1 гнездо 1394a • 1 разъем SPDIFO1 • 1 гнездо выключателя/индикатора передней панели • 1 аудио гнездо передней панели • 1 разъем IR1 • 1 разъем CD_IN • 1 разъем SPK1 • Коннекторы CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Габариты	• Стандарт ATX • 305мм x 244мм

Cechy

CPU	• Gniazdo LGA775 dla procesora Intel Pentium4
	• FSB 1066/800/533MHz (zegar 266/200/133MHz)
	• Obsługuje technologię Hyper-Threading
Chipset	• SiS965 & SiS656
	• Mostek północny: SiS965
	• Mostek południowy: SiS656
Pamięć	• Architektura pamięci dwukanałowej DDR
	• Cztery 240-nóżkowe złącza DDR2 DIMM obsługujące do 4 GB pamięci
	• Obsługuje DDR2 667/533/400
	• Obsługuje niebuforowaną pamieć 1.8V DDR DIMM typu non-ECC
Możliwości rozbudowy	• 2 złącze PCI Express x16
	• 1 złącze Elite Bus
	• 1 złącza PCI Express x1
	• 3 złącza PCI
Urządzenia pamięc masowej	• Obsługiwane przez SiS965
	- 4 urządzenia Ultra DMA133
	- 4 urządzenia SATA
	- Możlwe konfiguracje: RAID 0, RAID 1, RAID 0+1 , oraz JBOD
	• Obsługiwane przez SiI3132
	- Serial ATA 2 generacji o zdolności przesyłania danych 3.0 Gb/s
	- 2 urządzenia SATA II
	- Konfiguracje RAID 0, RAID 1

IEEE 1394a	• Kontroller VIA VT6307 IEEE1394a
	• Obsługuje 2 złącza IEEE1394a
Audio	• 8-kanałowe audio CODEC ALC850
	• Zgodne ze specyfikacją AC'97 w wersji 2.3
Gigabit LAN	• Marvel 88E1111 Gigabit LAN PHY
	• Zgodne z IEEE 802.3 - 10/100/1000BASE-T
Gniazda We/Wy na tylnym panelu	• 1 gniazdo klawiatury PS/2
	• 1 gniazdo myszy PS/2
	• 4 gniazda USB
	• 1 złącze RJ45 LAN
	• 2 gniazda szeregowy
	• 1 gniazdo LPT
	• 1 gniazdo 1394a
	• Gniazdo wejściowe mikrofonowe, gniazdo wejściowe i yjściowe dzwięku (audio)
Cechy BIOSu	• Award BIOS, zaopatrzony w 4Mb Flash ROM
	• Obsługuje technologie Plug and Play 1.0A, APM 1.2, Multi Boot, DMI
	• Obsługuje technologię ACPI w wersji 1.0B
Wewnętrzne gniazda We/Wy	• 1 gniazdo 24-nóżkowe zasilacza ATX i 4-nóżkowe gniazdo zasilania 12 V

	• 1 gniazdo napędu dyskietek, obsługuje formaty 360K ~ 2.88M Bajt, 3 Mode FDD lub LS120 • 2 złącza IDE • 6 złącza Serial ATA • 2 złącza USB 2.0 obsługujące 4 dodatkowe porty USB • 1 złącze 1394a • 1 złącze SPDIFO1 • 1 złącze włącznika / wskaźnika LED na panelu przednim • 1 gniazdo audio na panelu przednim • 1 złącze IR1 • 1 złącze CD_IN • 1 złącze SPK1 • Złącza CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Wymiary	• Standard ATX • 305mm x 244mm

Souhrn vlastností

CPU	• Patice LGA775 pro procesory Intel Pentium4 • Frekvence sběrnice FSB 1066/800/533 MHz (frekvence jádra 266/200/133 MHz) • Podpora technologie „Hyper-Threading"
Čipová sada	• SiS656 a SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Paměť	• Dvojkanálová paměťová architektura DDR • 4 x 240kolíková patice DDR2 DIMM, podporující paměť do kapacity až 4 GB • Podpora DDR2 667/533/400 • Podpora modulů Non-ECC 1,8 V DDR DIMM bez vyrovnávací paměti
Rozšiřující sloty	• 2 x slot PCI Express x16 • 1x slot sběrnice Elite • 1 x slot PCI Express x1 • 3 x slot PCI

Disková zařízení	• Podporovaná SiS656
	  - 4 x zařízení Ultra DMA133
	  - 4 x zařízení SATAII
	  - Konfigurace RAID 0, RAID 1, RAID 0+1 a JBOD
	• Podporovaná SiI3132
	  - Serial ATA Generation 2 s přenosovou rychlostí 3,0 Gb/s
	  - 2 x zařízení SATA II
	  - Konfigurace RAID 0, RAID 1

IEEE 1394a	• Řadič VIA VT6307 IEEE1394a • Podpora 2 portů IEEE 1394a
Zvuk	• 8kanálový zvukový kodek ALC850 • Splòuje požadavky standardu AC'97 2.3
LAN Gigabit	• Řadič gigabitové sítě LAN, Marvell 88E1111 PHY • Podpora standardu 10/100/1000BASE-T IEEE 802.3
Vstupy/ výstupy na zadním panelu	• 1x konektor klávesnice PS/2 • 1x konektor myši PS/2 • 4x port USB • 1x konektor LAN RJ45 • 2x sériový port • 1x port LPT • 1x port 1394a • Zvukové konektory pro mikrofon, zvukový vstup a výstup
Vlastnosti BIOS	• Award BIOS s 4 Mb Flash ROM • Podpora Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Podpora standardu ACPI verze 1.0B
Interní vstupy/ výstupy	• 1x 24kolíkový napájecí konektor ATX a 4kolíkový konektor 12 V

	• 1x konektor floppy diskových mechanik – podpora 360 kB až 2,88 MB, 3 režimy FDD nebo LS120
	• 2x konektor IDE
	• 6x konektor Serial ATA
	• 2x rozhraní USB 2.0 s podporou dalších 4 USB portů
	• 1x rozhraní 1394a
	• 1x rozhraní SPDIFO1
	• 1x rozhraní pro spínač na předním panelu/LED
	• 1x rozhraní pro zvukový vstup/výstup na předním panelu
	• 1x infračervené rozhraní IR1
	• 1x rozhraní CD_IN
	• 1x rozhraní SPK1
	• Konektory CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Velikost	• Rozměry standardu ATX
	• 305mm x 244mm

Sumarul caracteristicilor

Unitatea centrală (CPU)	• Soclu LGA775 pentru procesoare Intel Pentium4 • FSB de 1066/800/533 MHz (Frecvenţă internă de 266/200/133 MHz) • Compatibil cu tehnologia Hypre-Threading
Set de chipuri	• SiS656 şi SiS965 • North Bridge: SiS656 • South Bridge:SiS965
Memorie	• Architectură cu module de memorie DDR cu canal dual • Patru socluri DDR2 DIMM cu 240 de ace, capacitate maximă de 4 GB • Funcţionează cu module DDR2 de 667/533/400 • Funcţionează cu module DDR DIMM de 1,8 V fără zonă tampon, ne-ECC
Sloturi de extindere	• Două sloturi PCI Express de 16x • Un conector de magistrală Elite • Un slot PCI Express de 1x • Trei sloturi PCI

Stocare	• Compatibila cu SiS965
	  - Patru unităţi Ultra DMA133
	  - Patru unităţi SATA
	  - RAID 0, RAID 1, RAID 0+1 , şi configuraţie JBOD
	• Compatibilă cu SiI3132
	  - Serial ATA Generaţia 2-a cu o rată de transfer de 3.0 Gb/s
	  - Două unităţi SATA II devices
	  - Configuraţie RAID 0, RAID 1

IEEE 1394a	• Controler VIA VT6307 IEEE1394a • Permite două porturi IEEE1394a
Audio	• CODEC audio ALC850 cu 8 canale • Compatibil cu specificaţia AC'97 2.3
LAN dual	• Marvel 88E1111 Gigabit LAN PHY • Compatibil cu 10/100/1000BASE-T IEEE 802.3
I/O de pe panoul din spate	• Un conector de tastatură PS/2 • Un conector de mouse PS/2 • Patru porturi USB • Un conectoare LAN RJ45 • Două porturi serial • Un port LPT • Un port 1394a • Mufe audio pentru microfon, intrare şi ieşire audio
Caracteristici BIOS	• Award BIOS cu Flash ROM de 4 Mb • Compatibil cu Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • Compatibil cu ACPI, versiunea 1.0B
I/O internă	• Un conector cu 24 ace pentru alimentare cu energie şi conector de 12 V cu 4 ace

	• Un conector Floppy, pentru dischete de 360 KB–2,88 MB, FDD cu 3 moduri sau LS120 • Două conectoare IDE • Şase conectoare ATA seriale • Două conectoare USB 2.0, cu posibilitate pentru alte 4 porturi USB • Un conector 1394a • Un conector SPDIFO1 • Un comutator/conector LED pe panoul frontal • Un conector audio pe panoul frontal • Un conector IR1 • Un conector CD_IN • Conector intrare SPK1 • Conectoare CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Caracteristici externe	• Dimensiuni ATX • 305mm x 244mm

Параметри

Процесор	• Сокет LGA775 за процесор Intel Pentium4 • Шина FSB 1066/800/533MHz (266/200/133MHz Core Clock) • Поддръжка на технологията Hyper-Threading
Чипсет	• SiS656 & SiS965 • Северен мост: SiS656 • Южен мост: SiS965
Памет	• двуканална архитектура на паметта DDR • 4 слота 240-pin за DDR2 DIMM с поддръжка на общ капацитет до 4 GB • поддръжка на модули DDR2 667/533/400 • поддръжка на Non-ECC небуферирани модули 1.8V DDR DIMM
Слотове за разширяване	• 2 слот PCI Express x16 • 1 x Elite Bus слот • 1 слота PCI Express x1 • 3 слота PCI

Възможности за съхраняване на данни	• поддържани от SiS965
	  - 4 устройства Ultra DMA133
	  - 4 устройства SATA
	  - Конфигурация RAID 0, RAID 1, RAID 0+1 и JBOD
	• поддържани от SiI3132
	  - Serial ATA от второ поколение със скорост на трансфер 3.0 Gb/s
	  - 2 устройства SATA II
	  - RAID 0 и RAID 1

IEEE 1394a	• контролер VIA VT6307 IEEE1394a • поддръжка на 2 порта IEEE1394a
Аудио	• 8-канален аудио CODEC ALC850 • Съвместимост със спецификацията AC'97 2.3
Gigabit LAN	• Мрежов контролер Marvel 88E1111 Gigabit LAN PHY • Съвместимост с 10/100/1000BASE-T IEEE 802.3
Портове Вход/Изход на задния панел	• 1 порт PS/2 за клавиатура • 1 порт PS/2 за мишка • 4 порта USB • 1 конектора RJ45 LAN • 2 сериен порта • 1 порта LPT • 1 порта 1394a • Аудио жакове за микрофон, линеен вход и линеен изход
Параметри на BIOS	• Award BIOS с 4Mb Flash ROM • поддръжка на спецификацията Plug and Play 1.0A, APM 1.2, Multi Boot, DMI • поддръжка на спецификацията ACPI revision 1.0B
Интегриран Вход/ Изход контролер	• 1 конектор 24-pin ATX Power Supply и конектор 4-pin 12 V

	• 1 конектор за флопидисково устройство с поддръжка на устройства 360K ~ 2.88M Bytes, 3 Mode FDD или LS120 • 2 конектора IDE • 6 конектора Serial ATA • 2 колектора USB 2.0 с поддръжка на 4 допълнителни USB порта • 1 колектор 1394a • 1 концентратор SPDIFO1 • 1 колектор за бутоните и LED-индикацията на предния панел • 1 колектор за аудио вход/изход на предния панел • 1 концентратор IR1 • 1 концентратор CD-in • 1 концентратор SPK1 • конектори за вентилатор CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN
Размери	• ATX • 305mm x 244mm

Jellemzők összefoglalása

Központi egység(CPU)	• LGA775 foglalat Intel Pentium4 processzoroknak • 1066/800/533 MHz-es FSB (266/200/133 MHz-es központi órajel) • Támogatja a Hyper-Threading technológiát
Lapkakészlet	• SiS656 és SiS965 • North Bridge: SiS656 • South Bridge: SiS965
Memória	• Duál csatornás DDR memória kiépítés • Négy 240 tűs DDR2 DIMM foglalat, maximum 4 GB-os kapacitással • 667/533/400-as DDR2 egységekkel működik • 1,8 V-os puffermentes nem ECC DDR DIMM egységeket is támogat
Bővítési foglalatok	• Két 16-szoros PCI Express • Egy Elite gyűjtősín csatlakozó • Egy egyszeres PCI Express • Három PCI foglalat

Tárolás	• Az SiS965 által támogatott
	  - Négy Ultra DMA 133 eszköz
	  - Négy SATA eszköz
	  - RAID 0, RAID 1, RAID 0+1 , és JBOD konfiguráció
	• A SiI3132 által támogatot
	  - Második generációs soros ATA 3.0 Gb/s átviteli sebességgel
	  - Két SATA II eszköz
	  - RAID 0, RAID 1 konfiguráció

IEEE 1394a	• VIA VT6307 IEEE1394a vezérlő • Két IEEE1394 portot támogat
Audio	• 8 csatornás ALC850 audio CODEC • Megfelel az AC'97 2.3-as specifikációnak
Gigabit LAN	• Marvel 88E1111 Gigabit LAN PHY • 10/100/1000BASE-T IEEE 802.3-vel kompatibilis
Hátsó panelen levő I/O	• Egy PS/2 billentyűzet csatlakozó • Egy PS/2 egércsatlakozó • Négy USB port • Egy RJ45 LAN csatlakozó • Két soros port • Egy LPT port • Egy 1394a port • Audio csatlakozók mikrofon, bemenet és kimenet számára
BIOS jellemzők	• Award BIOS 4 Mb Flash ROM-mal • 1.0A Plug and Play, APM 1.2, Multi Boot, DMI támogatása • Kompatibilis az ACPI 1.0B változatával
Belső I/O	• Egy 24 tűs ATX tápforrás csatlakozó és négytűs 12 V-os csatlakozó

	• Egy floppy meghajtó 360 kB–2,88 MB lemezeknek, 3 üzemmódú FDD meghajtók vagy LS120 • Két IDE csatlakozó • Hat soros ATA csatlakozó • Két USB 2.0 csatlakozó, és további 4 USB porttal tud működni • Egy 1394a csatlakozó • Egy SPDIFO1 csatlakozó • Egy elülső panelen levő kapcsoló/LED csatlakozó • Az elülső panelen levő audio csatlakozó • Egy IR1 csatlakozó • Egy CD_IN csatlakozó • Egy SPK1 csatlakozó • CPU_FAN/NB_FAN/SYS_FAN/PWR_FAN csatlakozók
Alaki jellemzők	• ATX méret • 305mm x 244mm