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, R.O.C.
No. 22, Alley 38, Lane 91, Sec. 1, Nei Hu Road, Taipei, Taiwan 114, R.O.C.
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

CERTIFICATION EZEC

ISO14001 CERTIFICATE

Certificate NO.: 05-2001-065

We hereby certify that

ECS Manufacturing(Shenzhen) 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:

The manufacture of Mother Board and Peripheral Card and interrelated management activities of ECS Manufacturing(Shenzhen) Co.,Ltd. which is located in No.20,Free Trade Zone,Shatoujiao,Shenzhen, P. R.China.

Date of issue: 30th Dec 2001
Date of expiry: 29th Dec 2004
Signed by:

SHENZHEN ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATION CENTER

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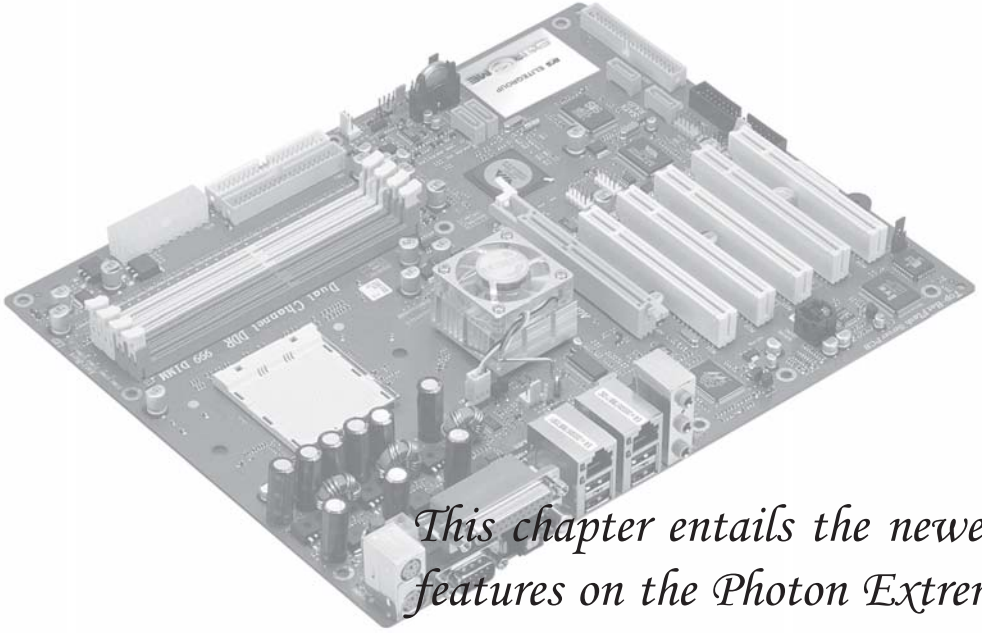


This chapter entails the newest technology and rich features on the Photon Extreme motherboard.

Reference

1.1 Introduction

Thank you for choosing the ECS KV2 Extreme motherboard.

The KV2 Extreme is the next generation of high performance motherboard designed to support the AMD K8 processors.

This motherboard has an ATX form factor that uses a 6-layer printed circuit board and measures 305 mm x 244 mm.

The KV2 Extreme motherboard is based on the VIA K8T800 PRO Northbridge and VT8237 chipset to set a new benchmark for the best desktop platform solution. Supporting up to 4 GB of system memory with PC3200/2700/2100/1600 DDR DIMMs, high resolution graphics via an AGP8X slot, Dual LAN, USB 2.0, 6-channel audio, Digital S/PDIF out and SATA support and RAID function.

1.2 Package Check List

Motherboard

User's Guide

Installation CD

SATA Power Cable

Top Hat Flash

I/O Shield

Two Streamlined IDE & FDD Ribbon Cable

Two SATA Cable

Cross Over Cable

USB+1394 PCI Bracket & housing

All pictures are for reference only.

1.3 Feature Summary

CPU	• Socket 939 for AMD Athlon 64 FX processor • High-performance Hyper Transport CPU Interface • Transfer rate of 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memory	• Dual-channel DDR memory architecture • 4 x 184-pin DDR DIMM socket support up to 4 GB • Support DDR400/333/266/200 unbuffered DDR SDRAM
Expansion Slots	• 1 x AGP 8X/4X slot • 5 x PCI slots
Storage	• Supported by VIA8237 - 4 x Ultra DMA133/100/66 devices - 2 x SATA devices - RAID 0 and RAID 1 configuration • Supported by SiS180 - 2 x Ultra DMA133/100/66 devices - 2 x SATA devices - RAID 0, RAID 1, RAID 0+1 configuration

IEEE 1394a	• VIA VT6307 IEEE1394a controller • Supports 2 x IEEE1394a connectors
Audio	• Realtek ALC655 6-channel audio CODEC • Compliant with AC'97 2.3 specification
Dual LAN	• Marvel 88E8001 Gigabit LAN Controller • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Rear panel I/O	• 1 x PS/2 keyboard • 1 x PS/2 mouse connector • 4 x USB ports • 2 x RJ45 LAN connectors • 1 x Parallel port (LPT1) • 1 x Serial port (COM1) • 2 x Digital SPDIF (Optical & Coaxial) out • 1 x Audio port (Line-in, Line-out, Mic-in)
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 20-pin ATX Power Supply Connector & 4-pin 12 V Connector • 1 x Floppy connector- supports 360K ~ 2.88M Bytes, 3 Mode FDDs or LS120 • 3 x IDE connectors • 4 x Serial ATA connectors • 2 x USB 2.0 header support additional 4 USB ports • 2 x 1394a headers • 1 x EZ-Watcher header (optional) • 1 x SMBus header • 1 x Front panel switch/LED header • 1 x Front panel audio header • CD in/AUX in header • CPUFAN/NB_FAN/CASFAN connectors
Form Factor	• ATX size • 305mm x 244mm

1.4 Special Features

Extreme Power

Device plug with USB-like ease!

Slash memory access time!

Play complex 3D games without compromise!

One-key boot device selection!

Uncompromising DVD audio quality!

The best aluminum capacitors empowering!

6-layer PCB!

Extreme Guardian

Auto restart after power loss!

PC protection toolkit!

A 'time machine' to protect and restore files!

Become your own BIOS 'doctor'!

PC 'health' monitor!

Memory module alert!

Dr. LED!

Know your AGP!

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!

Auto-negotiate your 10/100M LAN!

Server class dual LAN for both Internet & Intranet!

Double digital audio!

Let your PC as a fileserver!

SATA RAID!

Extreme Genius

Color-coding for easy connections!

Customize your start-up screen!

Flash BIOS from Windows!

Rounded corners for strength and safety!

Cool operations, cool appearance!

Eliminate data highway roadblocks!

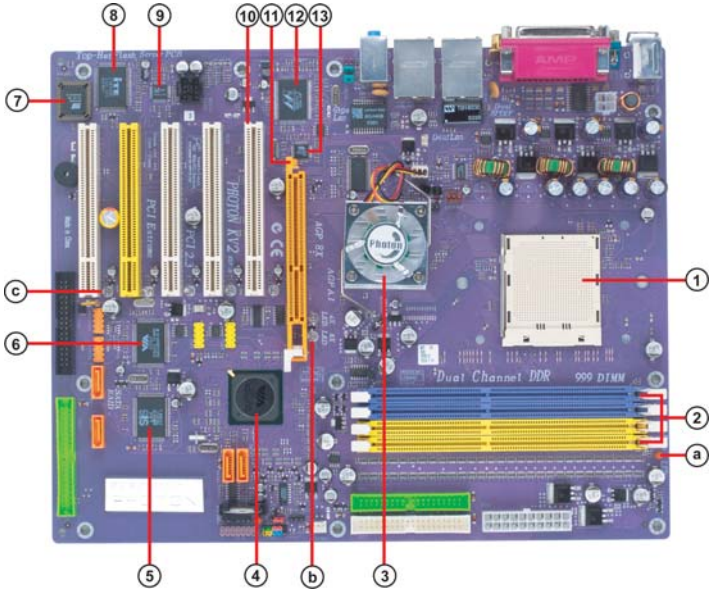
Ultra sound quality!

Overclock CPU quickly and easily!

Dust proof auto shutter!

Clear & Clean!

1.5 Major Components



1. ***CPU socket***

   Socket 939 surface mount, Zero Insertion Force socket for AMD K8 Athlon 64 FX Processor support FSB 1000/800/600/400/200 MHz that allows up to 8 GB/s data transfer rates.

2. ***Dual channel DDR DIMM sockets***

   These four 184-pin DIMM sockets support up to 4GB system memory using unbuffered PC3200/2700/2100/1600 DDR DIMMs.

3. ***Northbridge controller***

   The VIA K8T800 PRO links with AMD 64 processor through a 16-bit/ 1 GHz data transfer rate for a total bandwidth of 8 GB/s Hyper-Transport interface. It also supports AGP 3.0 specification.

4. ***Southbridge controller***

   The VIA VT8237 integrated peripheral controller supports various I/O functions including two Serial ATA ports, dual channel UltraDMA-133/100/66/33 master mode EIDE controller, up to eight USB 2.0 ports, AC'97 2.1 interface, and PCI 2.2 interface.

5. ***SiS 180 Serial ATA controller***

   This motherboard incorporates the high performance SiS 180 IDE RAID controller, which supports RAID 0, RAID 1 and RAID 0+1 configuration.

6. *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.

7. *Flash ROM*

This 4Mb ROM contains the programmable BIOS program.

8. *Super I/O (ITE 8705F) controller*

This Super I/O provides the commonly used functionality. The chipset supports a high performance floppy disk controller, a multimode parallel port, one serial port, a game port, the mouse and keyboard interface.

9. *Audio CODEC*

The audio CODEC is compliant with AC'97 v2.3 spec and supports 6-channel audio.

10. *PCI slots*

These five 32-bit PCI 2.2 expansion slots support bus master PCI cards like SCSI or LAN cards with 133MB/s maximum throughput.

11. *AGP Slot*

This Accelerated Graphics Port (AGP) slot supports AGP 8X and 4X mode graphic cards for 3D graphical applications.

12. *Gigabit LAN controller*

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

13. *10/100Mbps LAN PHY*

The 10/100Mbps LAN PHY delivers a transfer rates up to 10/100 Mbps.

A. *Anti-Burn LED indicator*

When this LED is light up, do not remove the memory module from your DIMM slot or else your memory module will be damaged.

B. *AGP A.I indicator*

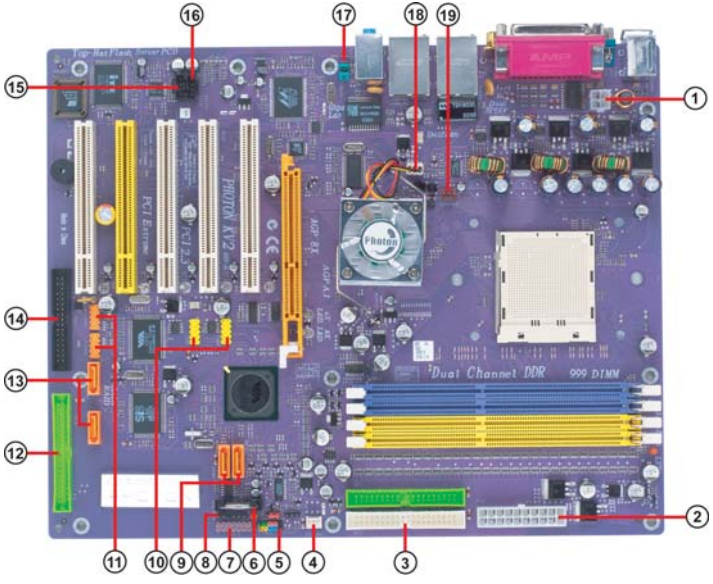
These two LEDs indicate which type of graphics card you have installed.

4X- Yellow LED; 8X-Blue LED

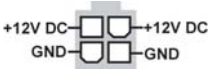
C. *PCI LED indicator*

The blinking PCI LED indicates the PCI slot activity. These LEDs will stop blinking when add card has been installed. Blinking means no add card installed or add card was not properly installed.

1.6 Headers and Connectors

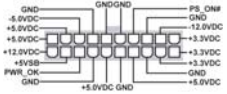


1. *ATX12V*



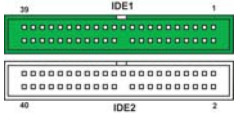
This connector supplies the CPU operation voltage (Vcore). Don't forget to connect the 4-pin ATX 12V connector, otherwise the system cannot boot up.

2. *ATX 1 (ATXPWR, 20 pin)*



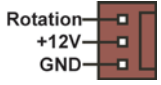
AC power cord should only be connected to your power supply until after ATX power cable and other related devices are firmly connected to the motherboard. Make sure that your ATX12V power supply could provide 8A of 12V and at least 1A on the +5V standby. The minimum recommended voltage is 230W or 300W. If not, the system may become unstable or may not even boot up.

3. IDE 1/2 (IDE1/IDE2 Connectors, 40-1 pin, Green and White)



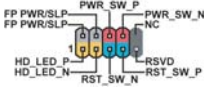
These are supported by VIA8237 South Bridge. Please connect the first hard disk to IDE 1 and connect the CD-ROM to IDE 2. The streamline IDE cable must be the same side with the Pin 1.

4. CASFAN1 (Case Fan Connector, 3 pin)



This connector allows you to link with the cooling fan on the system case to lower the system temperature.

5. Panel1 (Front Panel Header, 10-1 pin)

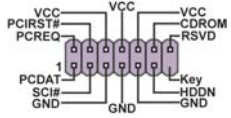


The front panel connector provides a standard set of switch and LED connectors commonly found on ATX or micro-ATX cases.

6. Battery

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

7. EZJ1 (EZ-Watcher Interface Header, 14-1 pin) (optional)



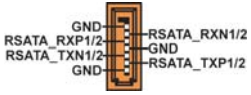
This connector is for use with EZ-Watcher interface only. The EZ-Watcher allows you to adjust the CPU frequency according to your desire.

Note: EZ-Watcher is an optional device, please contact your nearest dealer for the device.

8. SMBus1 (SMBus Header, 6-1 pin)

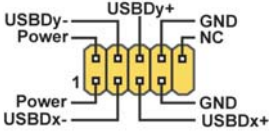
This connector allows you to connect SMBus (System Management Bus) devices. Devices communicate with an SMBus host and/or other SMBus devices using the SMBus interface.

9. SATA 1/2 (Serial ATA Connectors, 7 pin, Orange)



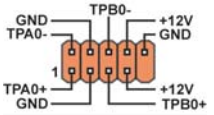
These next generation connectors are delivered by VIA 8237 South Bridge support the thin Serial ATA cables for Serial ATA hard disks. The current Serial ATA interface allows up to 150MB/s data transfer rate, faster than the standard parallel ATA with 133MB/s (UltraATA 133)

10. USB 3/4 (Front USB Headers, 10-1 pin, Yellow)



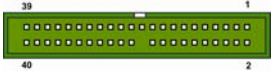
If the USB ports on the rear panel are inadequate, two USB headers are available for additional USB ports. The USB header complies with USB 2.0 specification that supports up to 480 Mbps connection speed. This speed advantage over the conventional 12 Mbps on USB 1.1.

11. 1394A1/A2 (10-1 pin Headers, Orange)



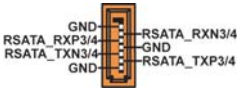
Attach the 10-1 pin 1394 cable plug from the device to this connector. You may also connect a 1394-compliant internal hard disk to this connector.

12. IDE 3 (IDE RAID ATA133 Connector, 40-1 pin, Green)



This connector supports either RAID 0 or RAID 1 configuration through the onboard SiS180 controller. You can connect two UltraATA 133 hard disks to this connector and set up a disk array configuration. You may also set up the UltraATA 133 hard disks with the Serial ATA hard disks on the Serial ATA RAID connectors to create a multi-RAID configuration.

13. SATA 3/4 (Serial ATA RAID Connectors, 7 pin, Orange)

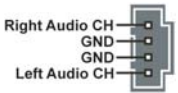


These Serial ATA connectors support SATA hard disks that you may configure as a RAID set. Through the onboard SiS180 RAID controller you may create a RAID 0, RAID 1, RAID 0+1, or multiRAID configuration together with the RAID ATA133 connector.

14. FDD1 (Floppy Connector, 34-1 pin, Black)

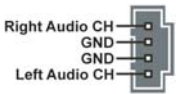
Please connect the floppy drive ribbon cables to FDD. It supports 360K, 12M, 720K, 1.44M and 2.88M bytes floppy disk types.

15. CDIN1 (CD In Connector, 4 pin)



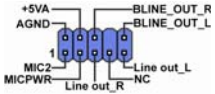
Connect CD-ROM or DVD-ROM audio out to the connector.

16. AUXIN1 (AUX In Connector, 4 pin)



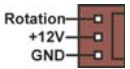
Connect other device (such as PCI TV Tuner audio out) to the connector.

17. Audio1 (Front Panel Audio Header, 10-1 pin)



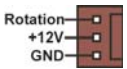
This is an interface for the Intel front panel audio cable that allows convenient connection and control of audio devices. By default, the pins labeled LINE OUT_R/BLINE_OUT_R and the pins LINE OUT_L/BLINE_OUT_L are shorted with jumper caps. Remove the caps only when you are connecting the front audio cable.

18. NBFAN1 (Northbridge Fan Connector, 3 pin)



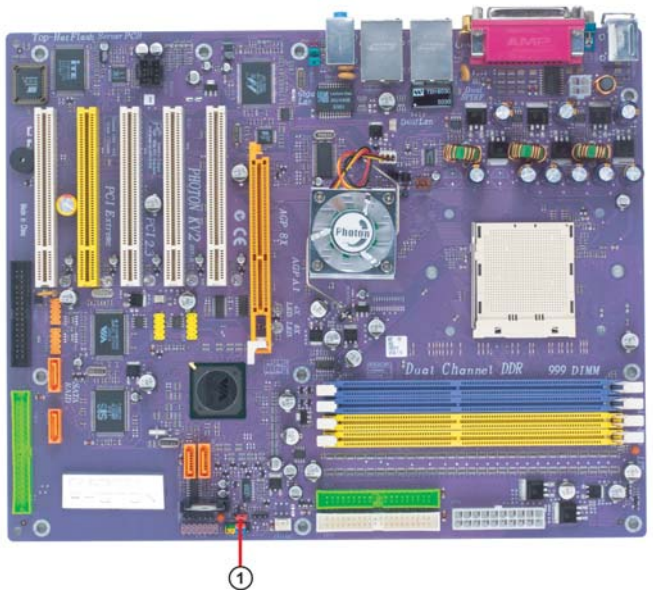
If you installed wrong direction, the chip fan will not work. Sometimes will damage the chip fan.

19. CPUFAN1 (CPU Fan Connector, 3 pin)



Please note, a proper installation of the CPU cooler is essential to prevent the CPU from running under abnormal condition or damaged by overheating. The CPU fan connector supports maximum current up to 600 mA.

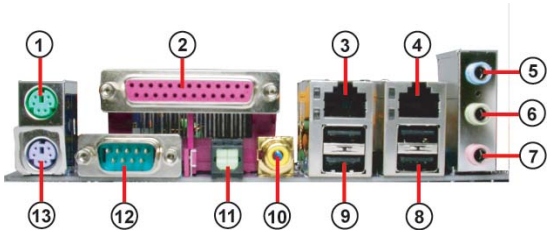
1.7 Jumpers



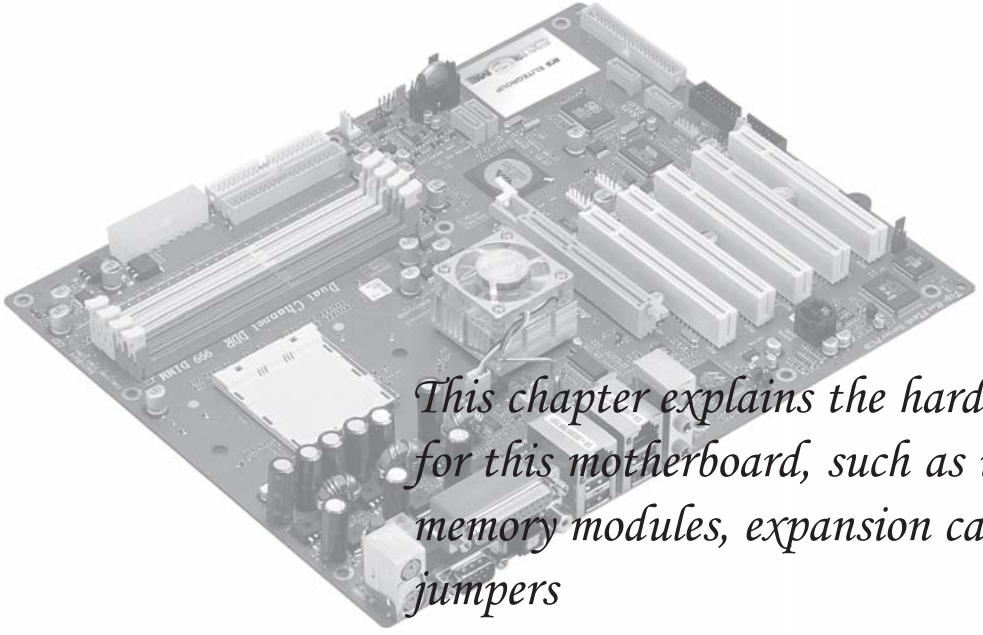
1. *JP1 (Clear CMOS)*

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 RTC RAM data. Before clearing the CMOS data, make sure to turn the system off.

1.8 Rear Panel



1. ***PS/2 mouse port***
   This 6-pin connector is for connecting PS/2 mouse.
2. ***Parallel port***
   This 25-pin port connects a parallel printer, a scanner, or other devices.
3. ***RJ-45 port***
   This port allows connection to a Local Area Network (LAN) through a network hub. It supports up to 10/100Mbps transfer rate.
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. ***Line in jack***
   This jack connects a tape player or other audio sources. In 6-channel mode, the function of this jack becomes Rear Speaker Out.
6. ***Line out jack***
   This jack connects a headphone or a speaker. In 6-channel mode, the function of this jack becomes Front Speaker Out.
7. ***Microphone jack***
   This jack connects a microphone. In 6-channel mode, the function of this jack becomes Basss/Center Speaker Out.
8. ***USB 2.0 ports 3 and 4***
   These Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
9. ***USB 2.0 ports 1 and 2***
   These Universal Serial Bus (USB) ports are available for connecting USB 2.0.
10. ***Coaxial S/PDIF output port***
    This jack connects to external digital audio output devices.
11. ***Optical S/PDIF output port***
    This jack connects to external digital audio output devices
12. ***Serial port***
    This 9-pin COM1 port is for serial devices.
13. ***PS/2 keyboard port***
    This 6-pin connector is for connecting PS/2 keyboard.

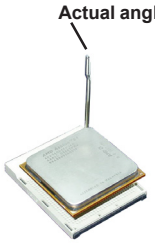


This chapter explains the hardware setup procedure for this motherboard, such as installing the CPU, memory modules, expansion cards, as well as the jumpers

Reference

2.1 Installing the CPU

1. Angling the rod to 65-degree may feel tight, continue to pull the rod to 90-degree angle.
2. Position the CPU above the socket such that its notched or marked corner matches the socket corner near the base of the lever, while making sure that the CPU is parallel to the socket. Then insert the CPU into the socket.



Warning: If the CPU does not fit, please change the insert orientation. Do not force the CPU into the socket.

3. Close the socket by lowering and locking the lever.

2.2 Installing the CPU cooling FAN

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

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

Warning: We recommend you to apply the thermal tape to provide better heat conduction between your CPU and cooling fan.

2.3 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: DDR (memory module) QVL (Qualified Vendor List)

The following DDR400 memory modules have been tested and qualified for use with this motherboard.

Size	Vendor	Module Name
128MB	SAMSUNG	M368L1713DTM-CC4
	Micron	MT8VDDT1664AG-403B2
	NANYA	NT128D64SH4B1G-5
	Infineon	HYS64D16301GU-5-B
	NANYA	NT128D64SH4B1G-5T
256MB	SAMSUNG	M368L3223DTM-CC4
	NANYA	NT256D64S88B1G-5
	Micron	MT16VDDT3264AG-403B2
	Infineon	HYS64D32300GU-5-B
	Micron	MT8VDDT3264AG-40BC4
	NANYA	NT256D64S88B1G-5T
	Infineon	HYS64D32300HU-5-C
512MB	SAMSUNG	M368L6423DTM-CC4
	NANYA	NT512D64S8HB1G-5
	Micron	MT16VDDT6464AG-40BC4
	NANYA	NT512D64S8HB1G-5T
	SAMSUNG	M368L6423ETM-CC4
	Infineon	HYS64D64320HU-5-C

Table B: Unbuffered DIMM Support for 939-pin

Data Bus	Chip Selects				Maximum DRAM Speed	
	MEMCS_1L_L*	MEMCS_2H_L*	MEMCS_2L_L*	MEMCS_2H_L*	1T	2T
64-bits	Single rank	N/A	N/A	N/A	DDR400	DDR400
	Double rank	N/A	N/A	N/A	DDR400	DDR400
	N/A	N/A	Single rank	N/A	DDR400	DDR400
	N/A	N/A	Double rank	N/A	DDR400	DDR400
	Single rank	N/A	Single rank	N/A	DDR333	DDR400
	Single rank	N/A	Double rank	N/A	DDR200	DDR400
	Double rank	N/A	Single rank	N/A	DDR200	DDR400
	Double rank	N/A	Double rank	N/A	DDR200	DDR333
128-bits	Single rank	Single rank	N/A	N/A	DDR400	DDR400
	Double rank	Double rank	N/A	N/A	DDR400	DDR400
	N/A	N/A	Single rank	Single rank	DDR400	DDR400
	N/A	N/A	Double rank	Double rank	DDR400	DDR400
	Single rank	Single rank	Single rank	Single rank	DDR333	DDR400
	Single rank	Single rank	Double rank	Double rank	DDR200	DDR400
	Double rank	Double rank	Single rank	Single rank	DDR200	DDR400
	Double rank	Double rank	Double rank	Double rank	DDR200	DDR333

Note for "*": Memory types must be set to values consistent with system hardware.

Table C: Recommended dual-channel DDR configurations

DDR1	DDR2	DDR3	DDR4	Dual Channel
√	√			√
		√	√	√
√	√	√	√	√

Notes: 1. When using dual channel mode, install only same (same density, DRAM technology and DRAM bus width) module for each deal channel.

2. Please note that those types not in the **Table B** will not boot up.

3. The KV2 Extreme doesn't support three memory modules. If three memory modules are inserted, the system will not boot.

2.4 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.

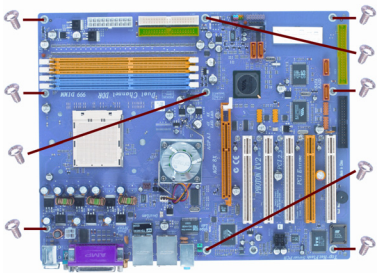
IDE connector

FDD connector

SATA connector

2.5 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.

2.6 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.

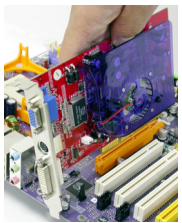
IDE Hard Disk

Floppy Disk Device

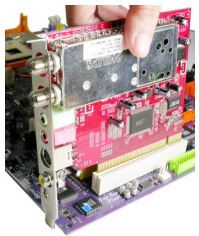
SATA Hard Disk

2.7 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

2.8 Connecting the Power supply cable

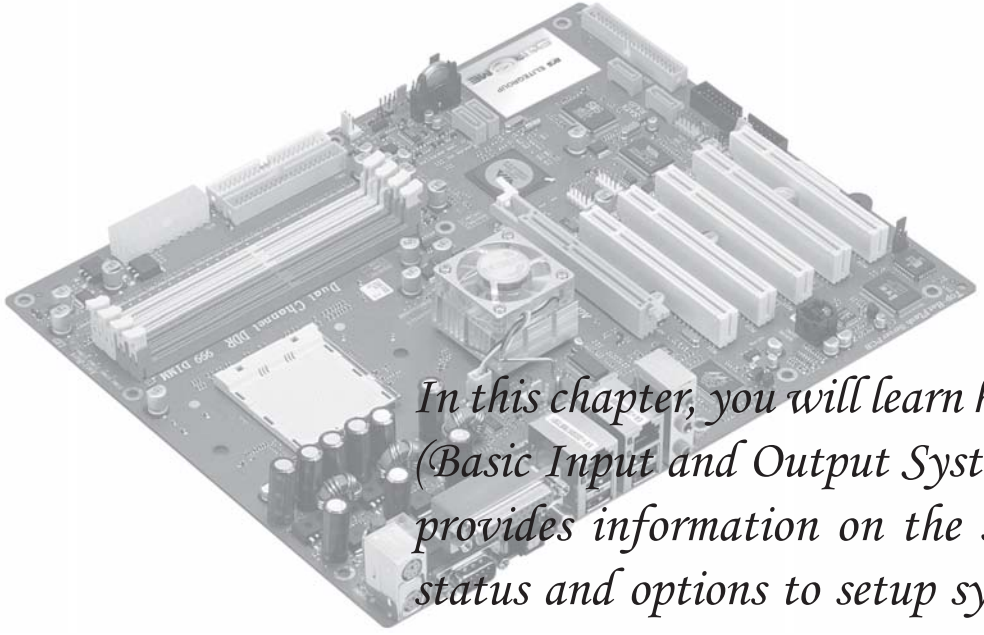
The ATX power connector is keyed for proper insertion. There are two connectors 4-pin and 20-pin ATX power cable. The plastic clip on the power connector should lock over the plastic tab on the motherboard power connector.

20-pin ATX power connector

4-pin ATX power connector

2.9 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) setup menus. It provides information on the system's configuration status and options to setup system parameters.

Reference

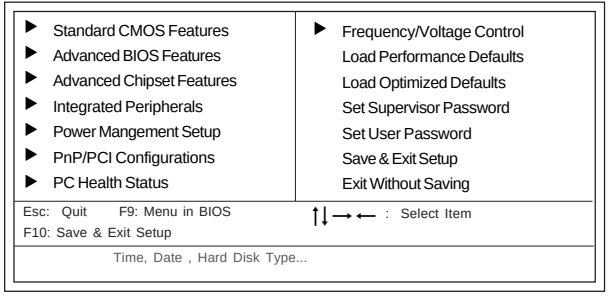
3.1 Entering the BIOS Setup Menu

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-AwardBIOS CMOS Setup Utility:

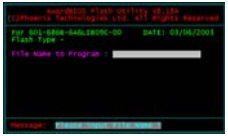


3.2 Updating and Recovering the BIOS

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.

3.2-2 Using ECS EZ Flash to update your BIOS

The ECS EZ Flash feature allows you to easily update the BIOS without having to go through the long process of booting from a diskette and using a DOS-based utility.

Note: EZ Flash only supports Windows 2000/XP.

1. Download the last BIOS file for this motherboard from ECS web site (www.ecs.com.tw). Copy these files to any storage device that you have.
2. Enable the utility from ECS support CD, then click the "Load" button and select the BIOS that you have downloaded in advance.

3. Select the "Flash" button.

4. The Utility will update the new BIOS into the motherboard Flash ROM.

5. Click the "Reboot" button if you want to adopt the new BIOS or choose the "Cancel" button if you still want to use the previous BIOS.

3.2-3 Using ECS Top-Hat Flash to recover your BIOS

The ECS Top-Hat Flash kit allow you to restore BIOS from ECS website (www.ecs.com.tw) or ECS support CD, in case you current BIOS on the motherboard or get corrupted, please follow the procedures below to recover your BIOS.

1. Please find the BIOS ROM located on your motherboard. (Figure A)
2. Find the cut edge corner on the Flash ROM. (Figure B)
3. Find the cute edge corner on the Top Hat Flash. (Figure C)
4. Orient the cut edge Top Hat Flash to BIOS ROM's and press the flash ROM into the lower socket of Top Hat Flash. (Figure D & E)
5. Then, power on your computer.


Figure A


Figure B


Figure C


Figure D


Figure E

6. After the computer boots up, remove the Top Hat Flash.
7. Download the BIOS file from ECS web site (www.ecs.com.tw) or ECS support CD and use Flash Utility to reflash the original Flash ROM.
8. You can choose either AWARD Flash utility in DOS mode or ECS "EZ Flash Utility" in windows to reflash the BIOS.

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-AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Wed, Feb 25 2004	Item Help
Time (hh:mm:ss)	9 : 33 : 26	
▸ IDE Channel 0 Master		Menu Level ▸
▸ IDE Channel 0 Slave		
▸ IDE Channel 1 Master		Change the day, month, year and century
▸ IDE Channel 1 Slave		
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
Video	[EGA/VGA]	
Halt On	[All, But Keyboard]	
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:Performance Defaults F7:Optimized Defaults

Date and Time

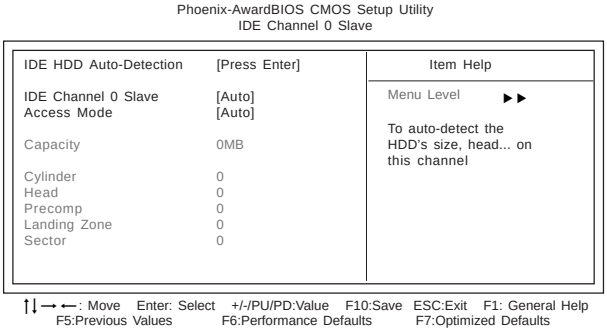
The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make

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:



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 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/Drive 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.

Video [EGA/VGA]

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

Halt On [All, But Keyboard]

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 chanages to these fields.

3.3-2 Advanced BIOS Features

This option defines advanced information about your system.

Phoenix-AwardBIOS CMOS Setup Utility
Advanced BIOS Features

	ATA 66/100 IDE Cable Msg.	[Enabled]
▶	Hard Disk Boot Priority	[Press Enter]
	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]
	Typematic Rate Setting	[Disabled]
X	Typematic Rate (Chars/Sec0	6
X	Typematic Delay (Msec)	250
	Security Option	[Setup]
	APIC Mode	[Enabled]
	HDD S.M.A.R.T. Capability	[Disabled]
	VIdeo BIOS Shadow	[Enabled]
	Small Logo(EPA) Show	[Disabled]

Item Help

Menu Level ▶

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

ATA 66/100 IDE Cable Msg (Enabled)

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.

▶ Hard Disk Boot Priority

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

Phoenix-AwardBIOS CMOS Setup Utility
Hard Disk Boot Priority

1. Pri.Master:
2. Pri.Slave:
3. Sec. Master:
4. Sec. Slave:
5. USBHDD0:
6. USBHDD1:
7. USBHDD2:
8. Bootable Add-in Cards

Item Help

Menu Level ▶▶

Use < ↑ > or < ↓ > to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.

↑↓→←: Move PU/PD+/-/:Change Priority F10:Save ESC:Exit

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 diskete 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.

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 Interrupt Controller) mode. APIC provides symmetric multi-processing (SMP) for systems, allowing support for up to 60 processors.

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)

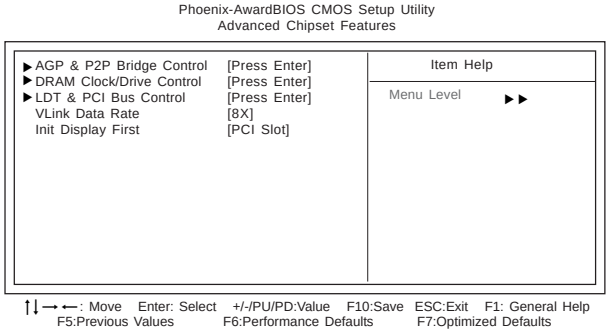
This item determines whether the BIOS will be copied to RAM for faster execution.

Small Logo (EPA) Show [Disabled]

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

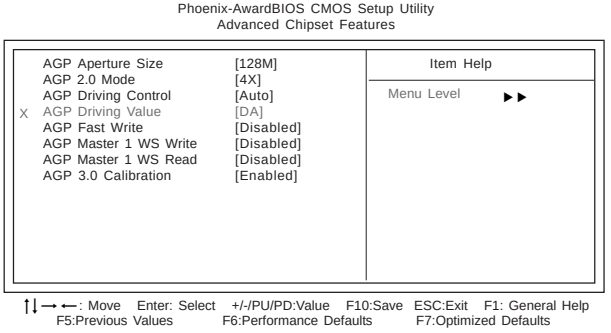
3.3-3 Advanced Chipset Features

These items define critical timing parameters of the mainboard. 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.



▶ AGP & P2P Bridge Control (Press Enter)

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



AGP Aperture Size [128M]

This item defines the size of aperture if you use an AGP graphics adapter. The AGP aperture refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this item at the default value.

AGP 2.0 Mode (4X)

This item allows you to enable or disable the caching of display data for the processor video memory. Enabling AGP-8X Mode can greatly improve the display speed. Disable this item if your graphics display card does not support this feature.

AGP Driving Control (Auto)

This item is used to signal driving current on AGP cards to auto or manual. Some AGP cards need stronger than normal driving current in order to operate. We recommend that you set this item to the default.

- **AGP Driving Value:** When AGP Driving Control is to set Manual, use this item to set the AGP current driving value.

AGP Fast Write (Disabled)

This item lets you enable or disable the caching of display data for the video memory of the processor. Enabling this item can greatly improve the display speed. Disable this item if your graphics display card does not support this feature.

AGP Master 1 WS Write (Disabled)

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, providing greater stability.

AGP Master 1 WS Read (Disabled)

This implements a single delay when reading to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability

AGP 3.0 Calibration cycle(Enabled)

This item is used to implement dynamic compensation to recalibrate the AGP bus over time for AGP 3.0 compatible chipset.

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

▶ DRAM Clock/Timing Control (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
DRAM Clock/Drive Control

		Item Help
Current CPU Frequency		
Current DRAM Frequency		
Max Memclock (Mhz)	[Auto]	Menu Level ▶▶
1T/2T Memory Timing	[Auto]	Places an artificial memory clock limit on the system. Memory is prevented from running faster than this frequency
CAS# latency (Tcl)	[Auto]	
RAS# to CAS# delay(Trcd)	[Auto]	
Min RAS# active time (Tras)	[Auto]	
Row precharge Time (Trp)	[Auto]	

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

Current CPU Frequency/Current DRAM Frequency

These two items show the CPU and DRAM frequency.

Max Memclock (Mhz)(Auto)

When DDR Timing Setting by is set to Manual, use this item to set the DRAM frequency.

1T/2T Memory Timing (Auto)

This item enables you to specify the waiting time for the CPU to issue the next command after issuing the command to the DDR memory. We recommend that you leave this item at the default value.

CAS# latency (Tcl) (Auto)

This item determines the operation of SDRAM memory CAS (column address

strobe). It is recommended that you leave this item at the default value. The 2T setting requires faster memory that specifically supports this mode.

RAS# to CAS# delay (Trcd)(Auto)

This item specifies the RAS# to CAS# delay to Rd/Wr command to the same bank.

Min RAS# active time (Tras)(Auto)

This item specifies the minimus RAS# active time.

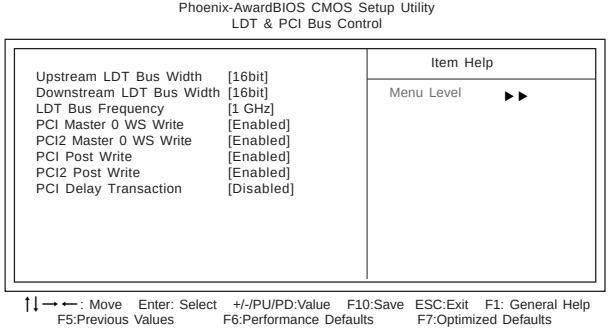
Row Precharge Time (Trp)(Auto)

This item specifies the Row precharge to Active or Auto-Refresh of the same bank.

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

▶ LDT & PCI Bus Control (Press Enter)

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



Upstream/Downstream LDT Bus Width (16 bit)

The LDT bus (Lighting Data Transport) is the bus between the North and South Bridge, and boosts no less that 6.4 GB/sec on a 16 bit upstream and a 16 bit downstream dataflow.

LDT Bus Frequency (1 GHz)

This option allows you to specify the maximum operating frequency for the LDT transmitter clock.

PCI/2 Master 0 WS Write (Enabled)

When enabled, writes to the PCI bus are executed with zero wait states, providing faster data transfer.

PCI/2 Post Write (Enabled)

When enabled, writes from the CPU to PCU bus are buffered, to compensate for the speed differences between the CPU and PCI bus. When disabled, the writes are not buffered and the CPU must wait until the write is complete before starting another write cycle.

PCI Delay Transaction (Disabled)

The motherboard's chipset has an embedded 32-bit post write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1.

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

VLink Data Rate (8X)

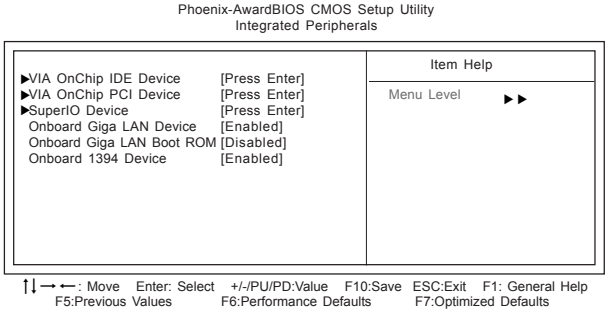
This option allows you to select the data transfer rate between the Northbridge and Southbridge chipsets.

Init Display First (PCI Slot)

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

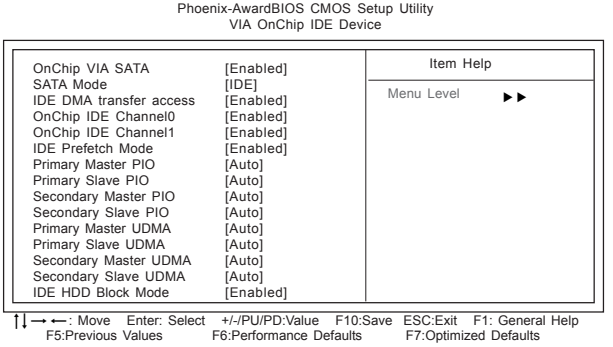
3.3-4 Integrated Peripherals

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



▶ VIA OnChip IDE Device (Press Enter)

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



OnChip VIA SATA (Enabled)

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

SATA Mode (IDE)

Use this item to select the mode of Serial ATA

IDE DMA transfer access (Enabled)

This item allows you to enable the transfer access of the IDE DMA then burst onto the PCI bus and nonburstable transactions do not.

On-Chip IDE Channel 0/1 (Enabled)

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

IDE Prefetch Mode (Enabled)

The onboard IDE drive interface supports IDE prefetching, for faster drive access. If you install a primary and secondary add-in IDE interface, set this field to Disabled if the interface does not support prefetching.

Primary/Secondary Master/Slave PIO (Auto)

Each IDE channel supports a master device and a slave device. These four items let you assign the kind of PIO (Programmed Input/Output) was used by the 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)

Each IDE channel supports a master device and a slave device. This motherboard supports UltraDMA technology, which provides faster access to IDE devices.

If you install a device that supports UltraDMA, change the appropriate 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.

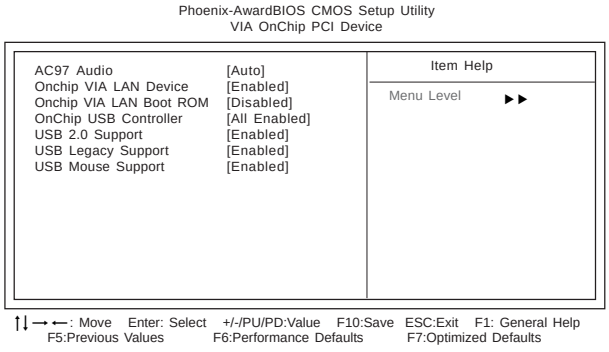
IDE HDD Block Mode (Enabled)

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 and improves the speed of access to IDE devices.

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

▶ VIA OnChip PCI Device (Press Enter)

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



AC97 Audio (Auto)

Enables and disables the onboard audio chip. Disable this item if you are going to install a PCI audio add-in card.

OnChip VIA LAN Device (Enabled)

Enables and disables the onboard LAN.

OnChip VIA LAN Boot ROM (Disabled)

Enables and disables the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

OnChip USB Controller (All Enabled)

Enable this item if you plan to use the Universal Serial Bus ports on this motherboard.

USB 2.0 Support (Enabled)

Enable this item if your system supports USB 2.0.

USB Legacy Support (Enabled)

This item allows the BIOS to interact with a USB keyboard or mouse to work with MS-DOS based utilities and non-Windows modes.

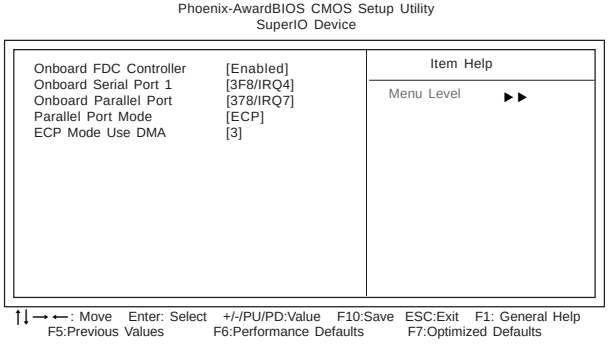
USB Mouse Support (Enabled)

Enables 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.

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

▶ SuperIO Device (Press Enter)

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



Onboard FDC Controller (Enabled)

This option enables the onboard floppy disk drive controller.

Onboard Serial Port 1 (3F8/IRQ4)

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

Onboard Parallel Port (378/IRQ7)

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

Parallel Port Mode (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 bi-directional 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 Giga LAN Device (Enabled)

Enables and disables the onboard LAN chip.

Onboard GIGA LAN Boot ROM (Disabled)

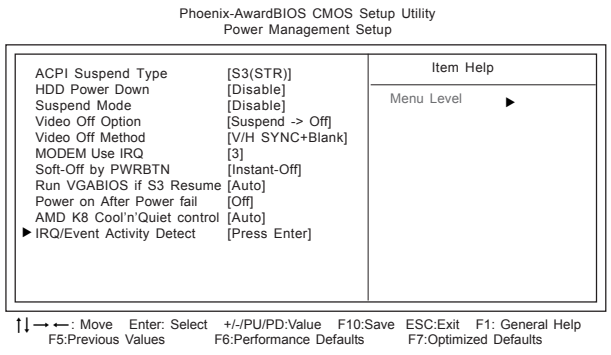
Use this item to enable and disable the booting from the onboard LAN or a network add-in card with a remote boot ROM installed.

Onboard 1394 Device (Enabled)

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

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.



ACPI Suspend Type [S3(STR)]

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

HDD Power Down [Disabled]

The IDE hard drive will spin down if it is not accessed within a specified length of time.

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 (Suspend —> Off)

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

Video Off Method (V/H SYNC+Blank)

This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

MODEM Use IRQ (3)

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.

Soft-Off by PWRBTN (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 resumed by Wake Up Alarms. This item lets you install a software power down that is controlled by the power button on your system. If the item is set to Instant-Off, then the power button causes a software power down. If the item is set to Delay 4 Sec. then you have to hold the power button down for four seconds to cause a software power down.

Run VGABIOS if S3 Resume [Auto]

This item allows the system to initialize the VGA BIOS from S3 (Suspend to RAM) sleep state.

Power on After Power-fail (Off)

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

AMD K8 Cool'n'Quiet control (Auto)

This item helps the system to lower the frequency when CPU idles. When the frequency decreases, the temperature will drop automatically as well.

▶IRQ/Event Activity Detect (Press Enter)

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

Phoenix-AwardBIOS CMOS Setup Utility
IRQ/Event Activity Detect

	PS2KB Wakeup Select	[Hot key]
	PS2KB Wakeup from S1-S3	[Disabled]
X	Power Button Lock for S3	Disabled
	PS2MS Wakeup from S1-S3	[Disabled]
	USB Resume from S3	[Disabled]
	VGA	[OFF]
	LPT & COM	[LPT/COM]
	HDD & FDD	[ON]
	PCI Master	[OFF]
	PowerOn by PCI Card	[Enabled]
	Modem Ring Resume	[Disabled]
	RTC Alarm Resume	[Disabled]
X	Date (of Month)	0
X	Resume Time (hh: mm: ss)	0: 22: 0
	IRQs Activity Monitoring	[Press Enter]

Item Help

Menu Level ▶▶

When Select Password, Please press ENTER key to change Password Max 8 numbers.

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

PS2KB Wakeup Select (Hot key)

This option allows you to set hot key combination to turn on the system by keyboard.

PS2KB/MS Wakeup from S1-S3 (Disabled)

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

- **Power Button Lock for S3 (Disabled):** When this item is disabled, power button will not be locked.

USB Resume from S3 (Disabled)

When set to Enabled, the system power will resume the system from a power saving mode if there is any USB port activity.

VGA (Off)

When set to On, the system power will resume the system from a power saving mode if there is any VGA activity.

LPT & COM (LPT/COM)

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

HDD & FDD (ON)

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

PCI Master (OFF)

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

PowerOn by PCI Card (Enabled)

Use this item to enable PCI activity to wakeup the system from a power saving mode.

Modem Ring Resume (Disabled)

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

RTC Alarm Resume (Disabled)

When set to Enabled, additional fields become available and you can set the date (day of the month), hour, minute and second to turn on your system. When set to 0 (zero) for the day of the month, the alarm will power on your system every day at the specified time.

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

▶IRQs Activity Monitoring (Press Enter)

This screen enables you to set IRQs that will resume the system from a power saving mode.

Phoenix-AwardBIOS CMOS Setup Utility
IRQs Activity Monitoring

Primary INTR	[ON]	Item Help
IRQ4 (COM1)	[Enabled]	Menu Level ▶▶
IRQ5 (LPT2)	[Enabled]	
IRQ6 (Floppy Disk)	[Enabled]	
IRQ7 (LPT1)	[Enabled]	
IRQ8 (RTC Alarm)	[Disabled]	
IRQ9 (IRQ2 Redir)	[Disabled]	
IRQ10 (Reserved)	[Disabled]	
IRQ11 (Reserved)	[Disabled]	
IRQ12 (PS/2 Mouse)	[Enabled]	
IRQ13 (Coprocessor)	[Enabled]	
IRQ14 (Hard Disk)	[Enabled]	
IRQ15 (Reserved)	[Disabled]	

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

Set any IRQ to Enabled to allow activity at the IRQ to wake up the system from a power saving mode.

Press <Esc> to return to the IRQ/Event Activity Detect pages

3.3-6 PNP/PCI Configurations

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

Reset Configuration Data	[Disabled]	Item Help
Resources Controlled By	[Auto(ESCD)]	Menu Level ▶▶
X IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	[Disabled]	Default is Disabled. Select Enabled to reset Extended System Configuration Data ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the OS cannot boot
Assign IRQ For USB	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1: General Help
F5:Previous Values F6:Performance 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(ESCD)]

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

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

IRQ Resources [Press Enter]

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

PCI/VGA Palette Snoop [Disabled]

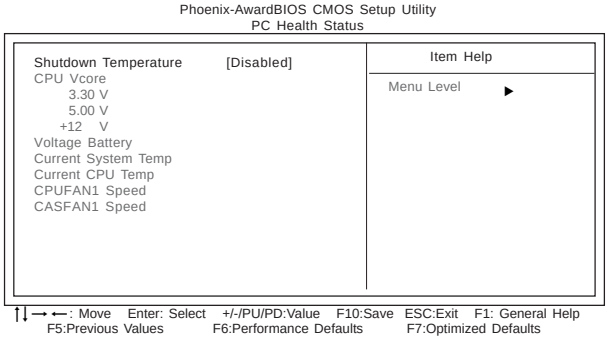
This item is designed to overcome problems that can be caused by some non-standard VGA cards. This board includes a built-in VGA system that does not require palette snooping so you must leave this item disabled.

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.

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.



Shutdown Temperature [Disabled]

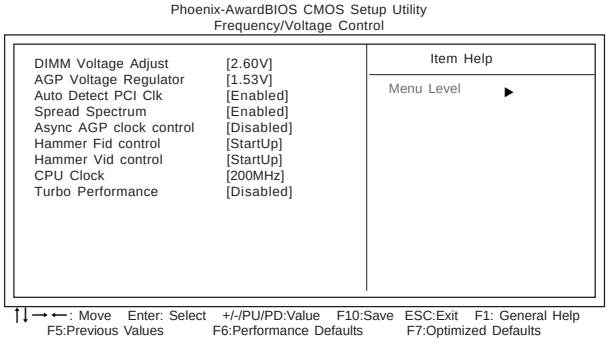
Enables you to set the maximum temperature the system can reach before powering down.

System Component Characteristics

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

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.



DIMM Voltage Adjust (2.60V)

This item adjusts the voltage delivered to the DIMM memory.

AGP Voltage Regulator (1.53V)

This item regulates the voltage delivered to the AGP.

Auto Detect PCI/DIMM Clk (Enabled)

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

Spread Spectrum (Enabled)

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

Async AGP clock control (Disabled)

This item allows you to set the AGP clock in asynchronous status.

Hammer Fid control (StartUp)

This item allows you to adjust CPU frequency ID.

Hammer Vid control (StartUp)

This item allows you to adjust CPU voltage ID.

CPU Clock(200MHz)

This item allows you to adjust the CPU clock to 200Mhz to 511MHz. You can key-in the numbers within the range to make a precise and ideal adjustment.

Turbo Performance (Disabled)

This function only works when loading performance Defaults setting.

3.3-9 Load Performance Defaults

This option opens a dialog box that lets you install performance 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. If you want to make your system for greater effectiveness, then install the performance defaults. If you only want to install performance defaults for a specific option, select and display that option, and then press <F6>.

Notes: To load performance defaults may make system unstable or unbootable.

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. You can cause fatal errors or instability if you install the optimized defaults when your hardware does not support them. If you only want to install setup defaults for a specific option, select and display that option, and then press <F7>.

3.3-11 Set Supervisor/User Password

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

ENTER PASSWORD

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter BIOS Setup freely.

PASSWORD DISABLED

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

If you have selected "**Setup**" at "Security Option" from "BIOS Features Setup" menu, you will be prompted for the password only when you enter BIOS Setup.

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

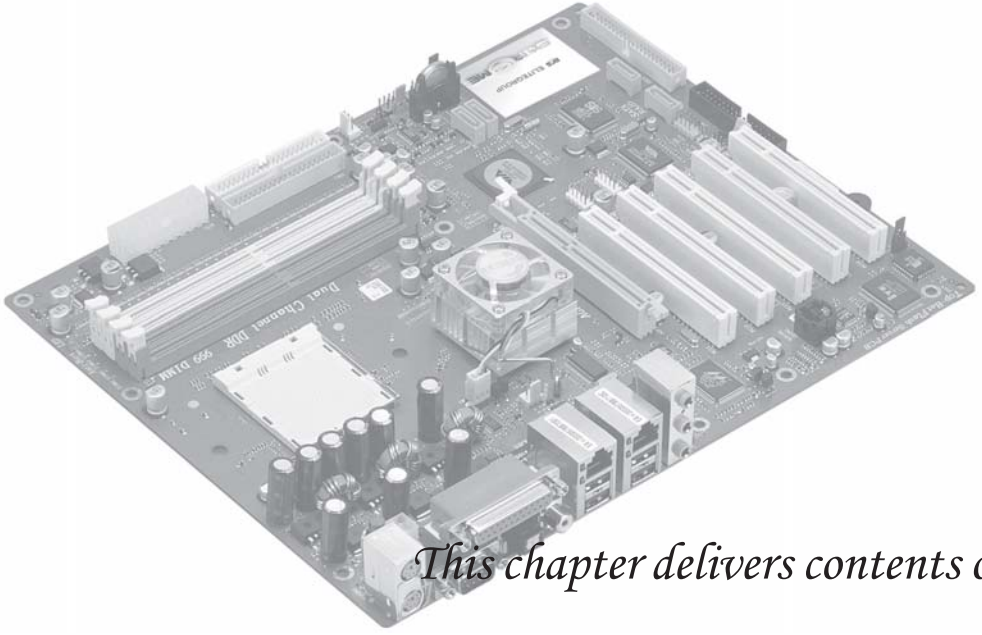
3.3-12 Save & Exit Setup

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.

Note: If you have made settings that you do not want to save, use the "Exit Without Saving" item and press <Y> to discard any changes you have made.



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

4.2 Running the Software CD

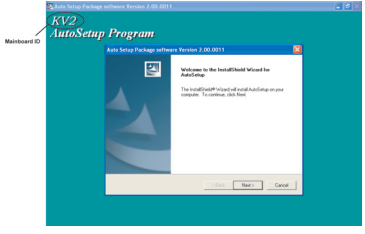
To begin using the software CD, simply insert the CD into your CD-ROM drive. The CD automatically display the multimedia if auto run is enable in your computer.

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.

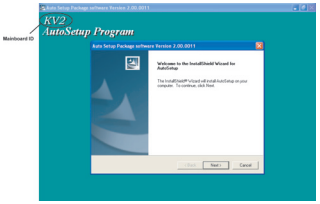
1. *Click* ***Setup****. The installation program begins:*



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. *Check the box next to the items you want to install. The default options are recommended.*

4. *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 Memory 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, rin WINFLASH.EXE from the following directory: \UTILITY\WINFLASH

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 email.

- **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

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.

Extreme Utilities

- **Omni-Guardian**

Omni-Guardian is a self-diagnostic utility for PC system. It will protect PC hardware by monitoring several critical items including power supply voltage, CPU Fan speed, and CPU & System temperature. These are all important to Windows System. Some errors maybe result in permanent hurt of your system. User could set the reasonable range. Once when system monitors some being out of range, an obvious warning or beeping message will remind users to make a proper treatment. Omni-Guardian only supports under Window 2000/XP.

- **Fuzzy Over Clocking**

Fuzzy Over Clocking is a utility that allow users to over clock your CPU speed. It only supports under Windows 2000/XP.

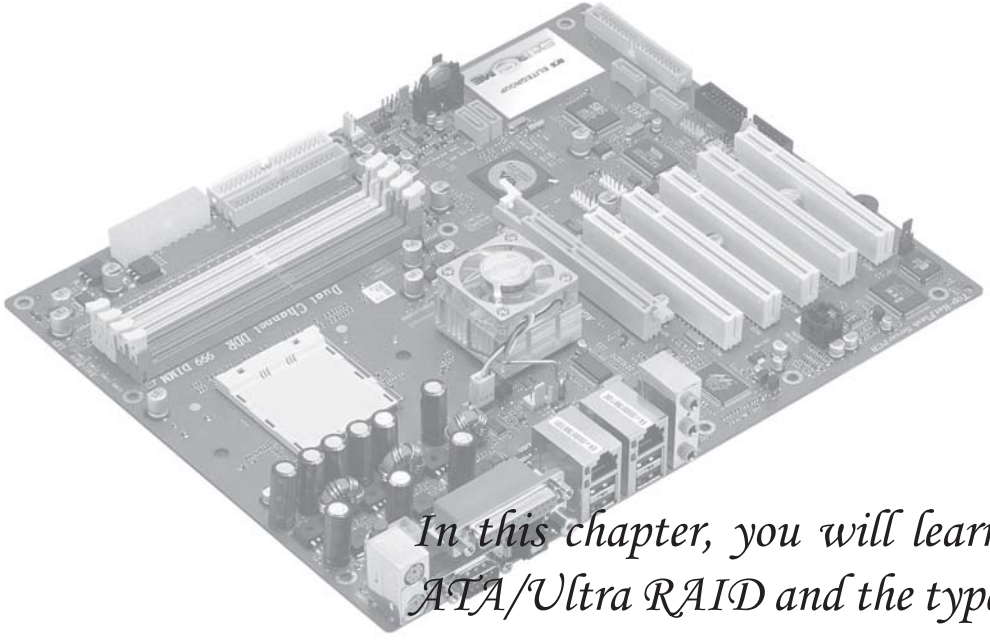
- **EZ-Flash**

EZ-Flash provide users an easy-to-use tool which can maintain the BIOS easily. Also, it has two major functions, one is to save the current BIOS, the

other is to update a new BIOS. EZ-Flash only supports under Windors 2000/XP.

■ **MyPic**

User can build their own BIOS image which will display a customized picture at the boot-up time. MyPic only supports Windows 2000/XP which is an application to make a rom file.



In this chapter, you will learn how to create Serial ATA/Ultra RAID and the type of RAID we support.

Reference

5.1 VIA RAID Configurations

The motherboard includes a high performance Serial ATA RAID controller integrated in the VIA VT8237 Southbridge chipset. It supports RAID 0, RAID 1 and JBOD with two independent Serial ATA channels.

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 seurity or performance purposes or both.

RAID 0: (called data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage.

RAID 1: (called data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system.

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

5.1-1 Install the Serial ATA (SATA) hard disks

The VIA VT8237 Southbridge chipset supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a RAID set.

- If you are creating a RAID 0 (striping) array of performance, use two new drives.
- If you are creating a RAID 1 (mirroring) array for protection, you can use two new drives or use an existing drive and a new drive (the new drive must be of the same size or larger than the existing drive). If you use two drives of different sizes, the smaller capacity hard disk will be the base storage size. For example, one hard disk has an 80GB storage capacity and the other hard disk has 60GB storage capacity, the maximum storage capacity for the RAID 1 set is 60GB. The SATA hard disks only support data backup, not support boot device.

Follow these steps to install the SATA hard disks for RAID configuration.

i Before setting up your new RAID array, verify the status of your hard disks. Make sure the Master/Slave jumpers are configured properly.

ii Both the data and power SATA cables are new cables. You cannot use older 40-pin 80-conductor IDE or regular IDE power cables with Serial ATA drives. Installing Serial ATA (SATA) hard disks require the use of

new Serial ATA cable (4-conductor) which supports the Serial ATA protocol and a Serial ATA power cable.

iii Either end of the Serial ATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

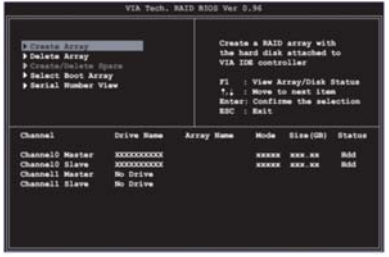
1 Install the Serial ATA hard disks into the drive bays.
2 Connect one end of the Serial ATA cable to the motherboard's primary Serial ATA connector (SATA1).
3 Connect the other end of Serial ATA cable to the master Serial ATA hard disk.
4 Connect one end of the second Serial ATA cable to the motherboard's secondary Serial ATA connector (SATA2)
5 Connect the other end of Serial ATA cable to the secondary Serial ATA hard disk.
6 Connect the Serial ATA power cable to the power connector on each drive.
7 Proceed to section "Entering VIA Tech RAID BIOS Utility" for the next procedure.

Note: Please note that SiS180 does not support hot plug function.

5.1-2 Entering VIA Tech RAID BIOS Utility

1 Boot-up your computer
2 During POST, press <TAB> to enter VIA RAID configuration utility. The following menu options will appear.

Note: The RAID BIOS information on the setup screen shown is for reference only. What you see on your screen may not by exactly the same as shown.

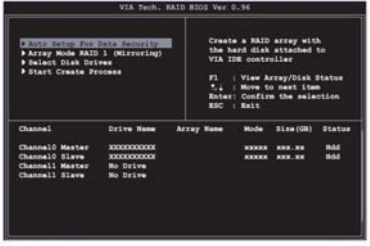


On the upper-right side of the screen is the message and legend box. The keys on the legend box allow you to navigate through the setup menu options. The message describes the function of each menu item. The following lists the keys found in the legend box with their corresponding functions.

F1	View Array
↑↓	Move to the next item
Enter	Confirm the selection
ESC	Exit

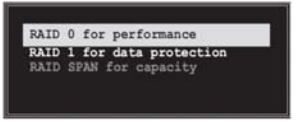
5.1-3 Create Array

1 In the VIA RAID BIOS utility main menu, select **Create Array** then press the <Enter> key. The main menu items on the upper-left corner of the screen are replaced with create array menu options.



5.1-4 RAID 0 for performance

1 Select the second option item **Array Mode**, then press the <Enter> key. The RAID system setting pop-up menu appears.



2 Select **RAID 0 for performance** from the menu and press <Enter>. From this point, you may choose to auto-configure the RAID array by selecting Auto Setup for Performance or manually configure the RAID array for stripped sets. If you want to manually configure the RAID array continue with next step, otherwise, proceed to step #5.

3 Select **Select Disk Drives**, then press <Enter>. Use arrow keys to select disk drives, then press <Enter> to mark selected drive. An asterisk is placed before the selected drive.

4 Select **Block Size**, then press <Enter> to set array block size. Lists of valid array block sizes are displayed on a pop-up menu.

Tip For server system, it is recommended to use a lower array block size. For multimedia computer system used mainly for audio and video editing, a higher array block size is recommended for optimum performance.

Use arrao keys to move selection bar on items and press <Enter> to select.

5 Select Start Create Process and press <Enter> to setup hard disk for RAID system. The following confirmation appears:

The same confirmation message appears when the Auto Setup for Performance option is selected.

Press "Y" to confirm or "N" to return to the configuration options.

5.1-5 RAID 1 for data protection

1 Select the second option item Array Mode, then press the <Enter> key. The RAID system setting pop-up menu appears.

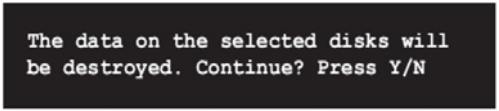
2 Select RAID 1 for data protection from the menu and press <Enter>. Select next task from pop-up menu. The task Create only creates the mirrored set without creating a backup. Create and duplicate creates both mirrored set and backup.

3 Select task and press <Enter>. The screen returns to Create Array menu items. From this point, you may choose to auto-configure the RAID array by selecting Auto Setup for Data Security or manually configure the RAID array for mirrored sets. If you want to manually configure the RAID array continue with next step, otherwise, proceed to step #5.

4 Select Disk Drives, then press <Enter>. Use arrow keys to select disk drive/s, then press <Enter> to mark selected drive. (An asterisk is placed before a selected drive.)

5 Select Start Create Process and press <Enter> to setup hard disk for RAID system. The following confirmation message appears:

The same confirmation message appears when the Auto Setup for Performance option is selected.



Press “Y” to confirm or “N” to return to the configuration options.

5.1-6 Delete Array

1 In the VIA RAID BIOS utility main menu, select **Delete Array** then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays.

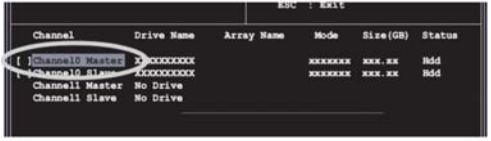
2 Press the <Enter> key to select a RAID array to delete. The following confirmation message appears.

Press “Y” to confirm or “N” to return to the configuration options.

5.1-7 Select Boot Array

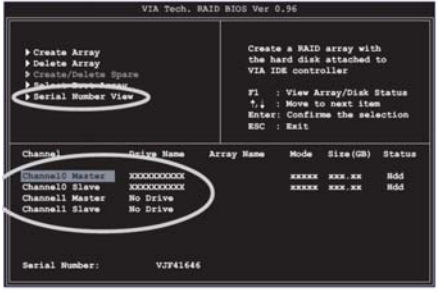
1 In the VIA RAID BIOS utility main menu, select Boot Array then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays.

2 Press the <Enter> key to select a RAID array for boot. The Status of the selected array will change to Boot. Press <ESC> key to go return to menu items. Follow the same procedure to deselect the boot array.



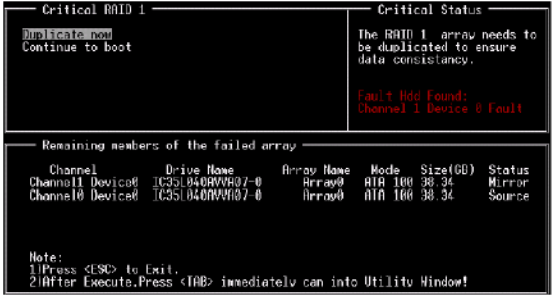
5.1-8 Serial Number View

1 In the VIA RAID BIOS utility main menu, select Serial Number View then press the <Enter> key. The focus is directed to the list of channel used for IDE RAID arrays. Move the selection bar on each item and the serial number is displayed at the bottom of the screen. This option is useful for identifying same model disks.



5.1-9 Duplicate Critical RAID 1 Array

When booting up the system, BIOS will detect if the RAID 1 array has any inconsistencies between user data and backup data. If BIOS detects any inconsistencies, the status of the disk array will be marked as critical, and BIOS will prompt the user to duplicate the RAID 1 in order to ensure the backup data consistency with the user data.



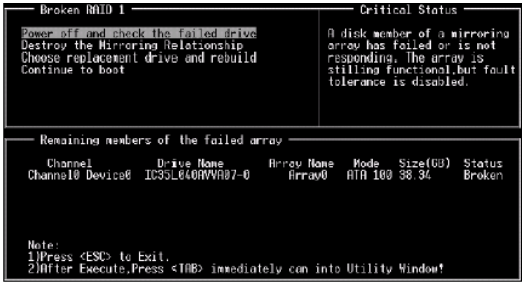
If user selects **Continue to boot**, it will enable duplicating the array after booting into OS.

5.1-10 Rebuild Broken RAID 1 Array

When booting up the system, BIOS will detect if any member disk drives of RAID has failed or is absent. If BIOS detects any disk drive failures or missing disk drives, the status of the array will be marked as broken.

If BIOS detects a broken RAID 1 array but there is a spare hard drive available for rebuilding the broken array, the spare hard drive will automatically become the mirroring drive. BIOS will show a main interface just like a duplicated RAID 1. Selecting **Continue to boot** enables the user to duplicate the array after booting into operating system.

If BIOS detects a broken RAID 1 array but there is no spare hard drive available for rebuilding the array, BIOS will provide several operations to solve such problems.



1. Power off and Check the Failed Drive:

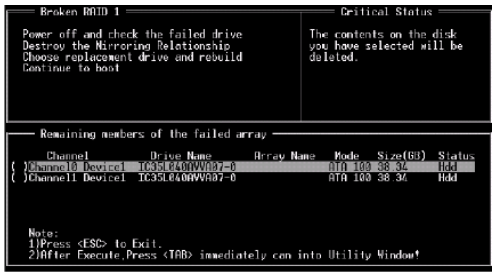
This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

2. Destroy the Mirroring Relationship:

This item cancels the data mirroring relationship of the broken array. For broken RAID 1 arrays, the data on the surviving disk will remain after the destroy operation. However, **Destroy the Mirroring Relationship** is not recommended because the data on the remaining disk will be lost when the hard drive is used to create another RAID 1 array.

3. Choose Replacement Drive and Rebuild:

This item enables users to select an already-connected hard drive to rebuild the broken array. After choosing a hard drive, the channel column will be activated.



Highlight the target hard drive and press <Enter>, a warning message will appear. Press **Y** to use that hard drive to rebuild, or press **N** to cancel. Please note selecting option **Y** will destroy all the data on the selected hard drive.

4. Continue to boot:

This item enables BIOS to skip the problem and continue booting into OS.

5.2 Installing RAID Software & Drivers

5.2-1 Install Driver in Windows OS

New Windows OS (2000/XP/NT4) Installation

The following details the installation of the drivers while installing Windows XP.

1. Start the installation:
   Boot from the CD-ROM. Press **F6** when the message "Press F6 if you need to install third party SCSI or RAID driver' appears.
2. When the Windows Setup window is generated, press **S** to specify an Additional Device(s).
3. Insert the driver diskette ***VIA VT8237 Disk Driver*** into drive A: and press <Enter>.
4. Depending on your operation system, choose **VIA Serial ATA RAID Controller (Windows XP), VIA Serial ATA RAID Controller (Windows 2000) or VIA Serial ATA RAID Controller (Windows NT4)**

from the list that appears on Windows XP Setup screen, 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 XP Setup screen press the <Enter> key. Setup will now load all device files and the continue the Windows XP installation.

Existing Windows XP Driver Installation

1 Insert the ECS CD into the CD-ROM drive.

2 The CD will auto-run and the setup screen will appear.

3 Under the Driver tab, click on **VIA SATA RAID Utility.**

4 The drivers will be automatically installed.

Confirming Windows XP Driver Installation

1 From Windows XP, open the **Control Panel** from **My Computer** followed by the System icon.

2 Choose the **Hardware** tab, then click the **Device manager** tab.

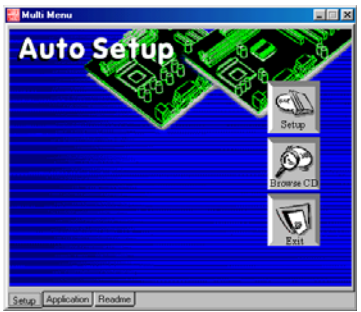
3 Click the "+" in front of the **SCSI and RAID Controllers** hardware type. The driver **VIA IDE RAID Host Controller** should appear.

Installation of VIA SATA RAID Utility

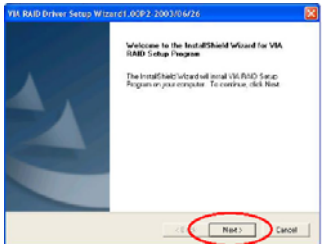
The VIA SATA RAID Utility is the software package that enables high-performance RAID 0 arrays in the Windows*XP operating system. This version of VIA SATA RAID Utility contains the following key features:

- Serial ATA RAID driver for Windows XP
- VIA SATA RAID utility
- RAID0 and RAID1 functions

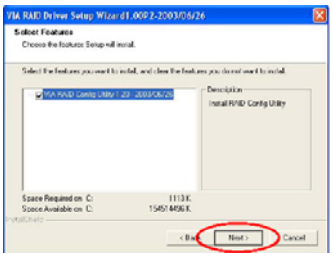
Insert the ECS CD and click on the **Setup** to install the software.



The **InstallShield Wizard** will begin automatically for installation. Click on the **Next** button to proceed the installation in the welcoming window.

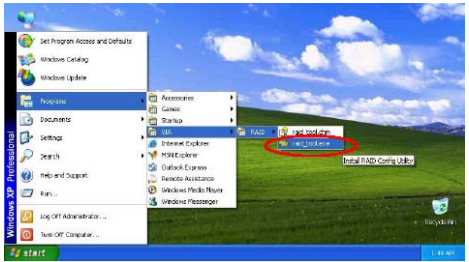


Put a check mark in the check box to install the feature you want. Then click **Next** button to proceed the installation.



5.3 Using VIA RAID Tool

Once the installation is complete, go to Start---> Programs---> VIA---> raid_tool.exe to enable VIA RAID Tool.



After the software is finished installation, it will automatically started every time Windows is initiated. You may double-click on the icon shown in the system tray of the tool bar to launch the **VIA RAID Tool** utility.

The main interface is divided into two windows and the toolbar above contain the main functions. Click on these toolbar buttons to execute their specific functions. The left windowpane displays the controller and disk drives and the right windowpane displays the details of the controller or disk drives. The available features are as following:

View by Controller

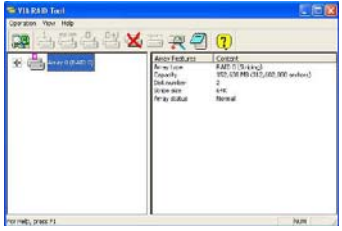
View by Devices

View Event log

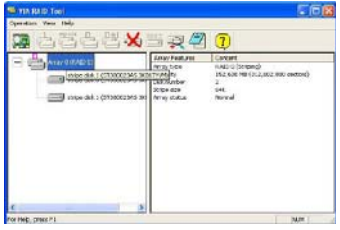
Help Topics

It means that VT8237 SATA RAID only has the feature of monitoring the statuses of RAID 0 and RAID 1.

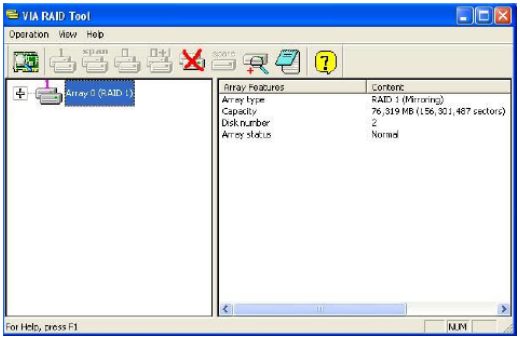
Click on  or  button to determine the viewing type of left windowpane. There are two viewing types: By controllers and by device. Click on the object in the left windowpane to display the status of the object in the right windowpane. The following screen shows the status of Array 0-RAID 0.



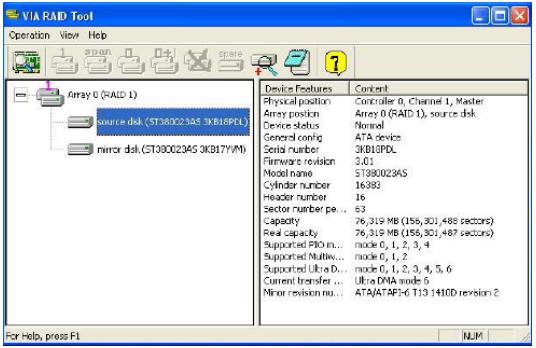
Click on the plus (+) symbol next to Array 0--RAID 0 to see the details of each disk.



You may also use the same  or  button to view the statuses of Array 0--RAID 1.



Click on the plus (+) symbol next to Array 0; RAID 1 to see the details of each disk.



5.4 Introduction for SiS180 RAID Function

The 180 S-ATA controller is a hybrid solution that combines two independent SATA ports and one Ultra ATA port for support of up to two Serial ATA (Serial ATA RAID) and two Ultra ATA (Ultra ATA RAID) drives.

5.4-1 Serial/Ultra ATA RAID Interfaces

The Serial/Ultra 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, Ultra ATA/133, Ultra ATA/100, Ultra ATA/66 hard disks.

Serial/Ultra ATA RAID function supports striping (RAID 0), mirroring (RAID 1), striping + mirroring (RAID 0+1) and span (JBOD). Please note that the function supports hard disk drives only and the 964 S-ATA controller don't support Striping + mirroring (Raid 0+1).

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

Serial/Ultra ATA RAID striped arrays can double the sustained data transfer rate of Serial ATA/150 and Ultra ATA/133 drives. Serial/Ultra ATA RAID fully supports Serial ATA/150 and Ultra ATA/133 specification of up to 150MB/sec per drive, depending on individual drive specifications.

5.5 Features

- The SiS 180 controller support two Serial ATA (Serial ATA RAID) and two Ultra ATA (Ultra ATA RAID) drives.
- Support RAID function: RAID 0, RAID 1, JBOD and RAID 0+1. (RAID 0+1 function can be used by 180 controller with all hard drivers on it.)
- Support bootable disk except for RAID 0+1.
- Windows-based RAID Utility software tool (only support Windows XP and 2000).
- BIOS Utility.

Note: Please note that RAID 0+1 use 4 devices. (2 parallel devices and 2 SATA deviecs.)

5.6 Support Operating Systems

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

5.7 What is RAID?

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

1. **RAID:** (Redundant Array of Independent Disk Drives) use jointly several hard drives to increase data transfer rates and data security. It depends on the number of drives present and RAID function you select to fulfill the security or performance purposes or both.
2. **RAID 0:** Also known as "Stripping". All of the data are distributed evenly to all of the existing drives. You gain benefits on performance because the data transfer rate is multiplied by the number of drives. However, RAID 0 has high risks of data security. All of the stored data will be lost if even any one drive in the RAID set crashes.
3. **RAID 1:** Also known as "Mirroring". Two hard drives are required. The goal of RAID 0 is to ensure data security. Data is written to two or more drives synchronously. That is, 100% duplication of data from one drive to another.
4. **RAID 0+1:** Also known as "StripeMirror". At least four hard drives are required. RAID 0+1 is a combination of RAID 0 and RAID 1. Data is striped into two drives then mirrored. It provides high performance and high data protection. This is a costly solution as RAID 1 because the two mirrored drives represent an expensive insurance.
5. **JBOD:** (Just a Bunch of Drives). Also known as "Spanning". Two or more hard drives are required. Several hard disk types configured as a single hard disk. The hard drives are simply hooked up in series. This expands the capacity of your drive and results in a useable total capacity. However, JBOD will not increase any performance or data security.

5.8 Installing Software Drivers

SiS provides RAID driver for SiS180 SATA with RAID function.

1. For RAID function, SiS180 support RAID0, RAID1, RAID 0+1 and JBOD.

5.8-1 New Windows 2000/XP Installation

1. Start the installation:
   Boot from the CD-ROM. Press F6 when the message "Press **F6** key if you need to install third party SCSI or RAID driver" appears.
2. When the Windows 2000/XP Setup window is generated, press **S** key to specify an Additional Device(s).
3. Insert the driver diskette into drive A: and press Enter.
4. Choose one of the following items:
   "WinXP SiS Raid/IDE Controller",
   "Win2000 SiS Raid/IDE Controller",

that appears on screen, and then press the Enter key.

5. Press Enter to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, Press Enter to continue with installation.
6. From the Windows 2000/XP Setup screen, press the Enter key. Setup will now load all device files and then continue the Windows 2000/XP installation.
7. Please install the driver package again (ex. SiS RAID driver v1.00) while the operation system has been setup.

Remark: If you would like to install windows to any RAID set, you should create RAID from BIOS utility or SiS180 RAID Utility first and then follow the steps above.

5.8-2 Existing Windows 2000/XP/98/Me Installation

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

5.8-3 Confirming Windows 2000/XP Driver Installation

1. From Windows 2000/XP, open the Control Panel from "My Computer" followed by the System icon.
2. Choose the "Hardware" tab, then click the "Device Manager" tab.
3. Click the "+" in front of "SCSI and RAID Controllers" hardware type. The driver **"SiS 180 Raid Controller"** should appear.

5.8-4 Confirming Windows 98/Me Driver Installation

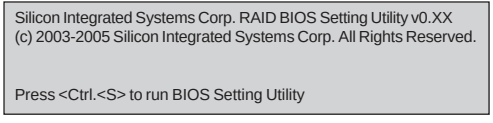
1. From Windows 98/Me, open the Control Panel from "My Computer" followed by the System icon.
2. Choose the "Device Manager" tab.
3. Click the "+" in front of "IDE ATA/ATAPI Controllers" hardware type. The driver **"SiS 180 IDE Dual Channel"** and **"SiS 180 IDE/ RAID Controller"** should appear.

5.9 BIOS Utility Operation

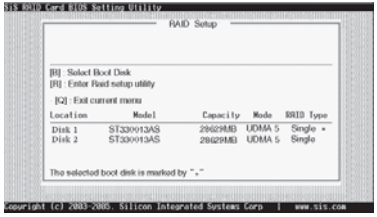
BIOS Utility supports windows 2000/XP/98/Me.

5.9-1 Starting BIOS Utility

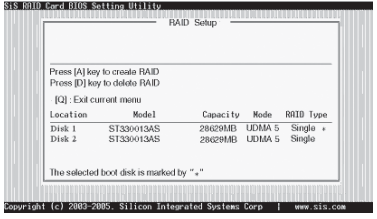
1. Boot your system. If this is the first time you have booted with the SiS180 and the drives installed, the BIOS will display the following:



2. Press <Ctrl-S> keys to display the SiS 964/180 Utility Main Menu.



3. You can press <B> key to select the boot disk on the 180 controller. The yellow highlight will show on the disk and you can switch it to select the disk you wanted. Press "Enter" key to select it and the selected boot device will be marked by "*". The default boot device will be set as **Disk 1**.
4. Press <R> to display the RAID setup menu below. This is the fastest and easiest method to creating your first array.



5.9-2 Create RAID

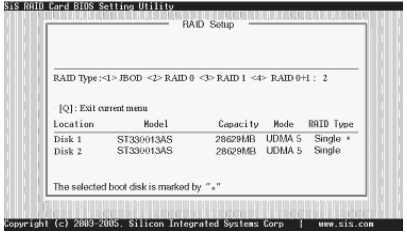
♦ SIS 180 controller support RAID 0, RAID 1, JBOD and RAID 0+1.

5.9-3 Creating a RAID 0 (Stripe) Array for Performance

♦ SIS 180 enables users to create striped arrays with 2, 3, or 4 drives.

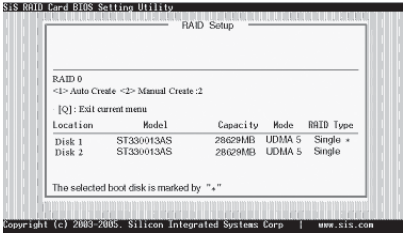
To create an array for best performance, follow these steps:

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

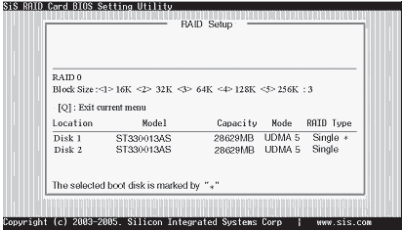


3. You will have two selections to create a RAID 0 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 0 array faster and easier. The Blocksize will be selected by its default value "64K". The result after creating will be show on **step**

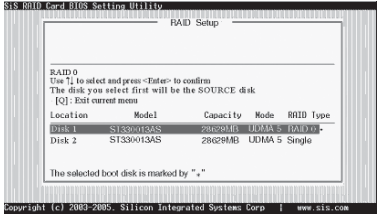
8. Besides, you also can select **<2>Manual Create**, see following steps.



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

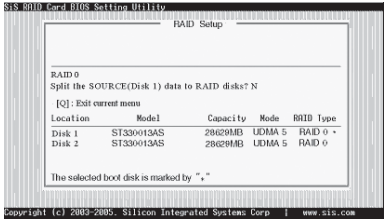


5. Use <↑> <↓> to select disk, and press <Enter> to select disk, <Q> to exit. When you press <Enter> on the disk you wanted, the RAID Type will be changed from Single to RAID 0. An the disk you select first will be the SOURCE disk.

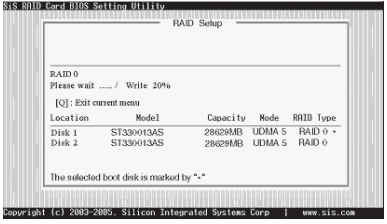


6. Next, you will see a message “Split the SOURCE(DISK x) data to RAID disks?”. Press <N> and <Enter> to create RAID 0 array only or press <Y> and <Enter> to split the data from source disk to other disks

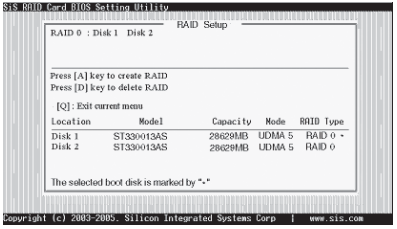
.



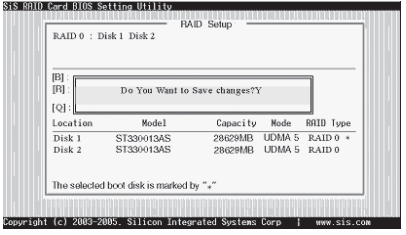
7. Starting splitting action, the following frame will be shown.



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.

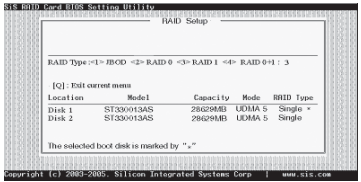


5.9-4 Creating a RAID 1 (Mirror) Array

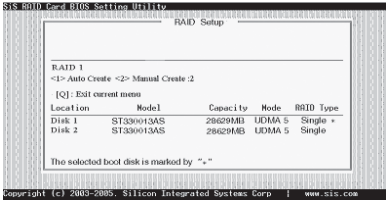
♦ SIS180 enables users to create Mirror arrays with 2 drives only.

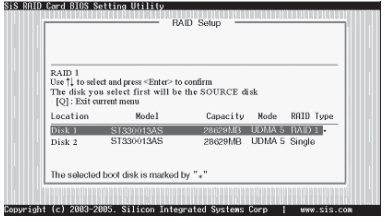
To create a Mirror array, follow these steps:

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

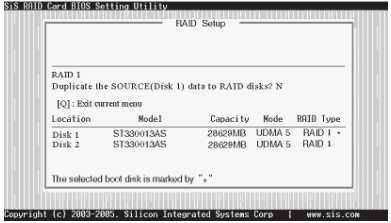


3. You will have two selections to create a RAID 1 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 1 array faster and easier. The result after creating will be show on **step 7**. Besides, you also can select **<2>Manual Create**, see following steps.
4. Use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

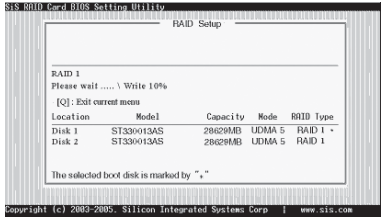




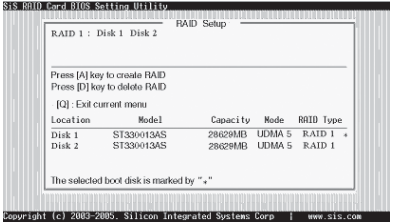
5. Next, you will see a message "Duplicate the SOURCE (DISK x) data to RAID disks?". Press <N> and <Enter> to create RAID 1 array only or press <Y> and <Enter> to duplicate the data from source disk to mirror disk.



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.

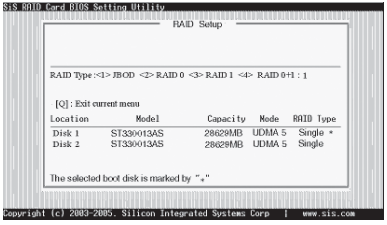
5.9-5 Creating a JBOD Array

♦ SIS180 enables users to create JBOD arrays with 2, 3, or 4 drives.

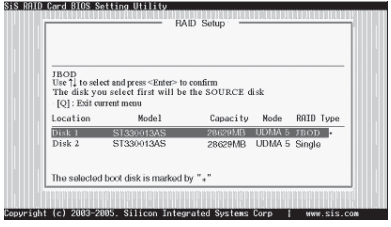
To create an JBOD array, follow these steps:

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

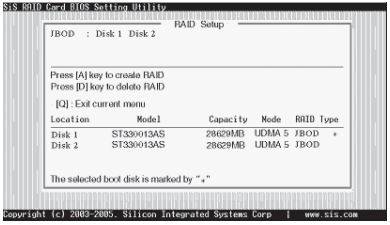
on **step 5**. Besides, you also can select **<2>Manual Create**, see following steps.



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



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



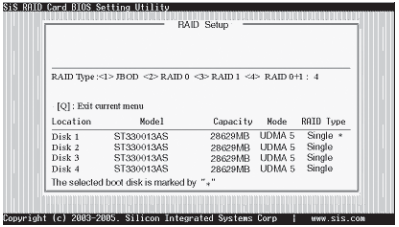
6. Press <Q> again to exit this BIOS utility and the red message frame will show as the same age as the creation of the RAID 0 array. Press <Y> and <Enter> to save changes.
7. Once the array has been created, you will need to FDISK and format the array as if it were a new single hard drive.

5.9-6 Creating a RAID 0+1 (Stripe-Mirror) Array

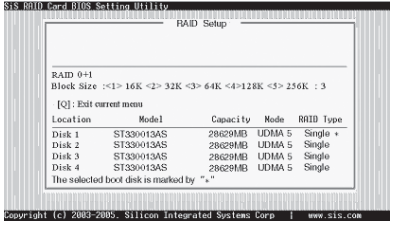
- SIS180 supports Stripe-Mirror array with 4 drives.

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

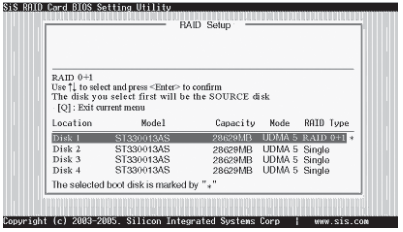
1. Press <A> to start creating a RAID array.
2. Press <4> and <Enter> to select RAID 0+1.



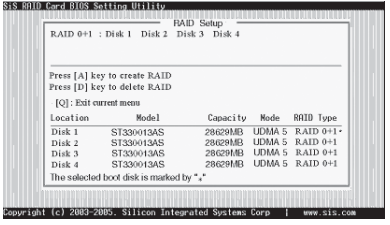
3. You will have two selections to create a RAID 0+1 array. **The default value is <1>**. If you select **<1>Auto Create**, you can create a RAID 0+1 array faster and easier. The result after creating will be show on **step 6**. Besides, you also can select **<2>Manual Create**, see following steps.
4. Use <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+1**.



6. After all steps finished, press <Q> until escape the setup menu and RAID 0+1 array will be show on the top of the main frame.



7. 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.

Remark: On DOS, it can't support RAID 0+1 function. So you can't use FDISK to format the array as if it were a new single hard driver. If you want to format this single hard driver, you must need to use disk manager of OS to format it.

Résumé des caractéristiques

CPU	• Socket 939 pour processeur AMD Athlon 64 FX • Interface de CPU HyperTransport de Haute performance • Vitesse de transfert de 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Mémoire	• Architecture mémoire DDR double canal • 4 x sockets DIMM DDR 184 broches prenant en charge jusqu'à 4 Go • Prend en charge les SDRAM DDR sans mémoire tampon DDR400/333/266/200
Options d'extension	• 1 x logement AGP 8X/4X • 5 x logements PCI
Stockage	• Pris en charge par VIA8237 - 4 x périphériques Ultra DMA133/100/66 - 2 x périphériques SATA - Configuration RAID 0 et RAID 1 • Pris en charge par SiS180 - 2 x périphériques Ultra DMA133/100/66 - 2 x périphériques SATA - Configuration RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Contrôleur VIA VT6307 IEEE1394a • Prend en charge 2 x connecteurs IEEE1394a
Audio	• CODEC audio Realtek ALC655 6-canaux • Conforme aux spécifications AC'97 2.3
LAN Double	• Contrôleur LAN Gigabit Marvel 88E8001 • PHY Fast Ethernet VIA VT6103L 10/100 Mbps
E/S du panneau arrière	• 1 x Clavier PS/2 • 1 x connecteur souris PS/2 • 4 x ports USB • 2 x connecteurs LAN RJ45 • 1 x Port Parallèle (LPT1) • 1 x port Série (COM1) • 2 x sorties SPDIF numériques (Optique & Coaxiale) • 1 x port Audio (Entrée de ligne, sortie de ligne, entrée Micro)
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 20 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 • 3 x connecteurs IDE • 4 x connecteurs ATA Série • 2 x embases USB 2.0 supportant 4 ports USB supplémentaires • 2 x embases 1394a • 1 x embase EZ-Watcher (optionnelle) • 1 x embase SMBus • 1 x embase de commutateur/LED de panneau avant • 1 x embase audio de panneau avant • Embase entrée CD/entrée AUX • Connecteurs CPUFAN/NB_FAN/CASFAN
Facteur de Forme	• Taille ATX • 305mm x 244mm

Zusammenfassung der Merkmale

CPU	• Sockel 939 für AMD Athlon 64 FX Prozessor • Hochleistungs-HyperTransport-CPU-Schnittstelle • Übertragungsgeschwindigkeiten: 2000/1600/1200/800/400 MT/s
Chipsatz	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Arbeitsspeicher	• Dual-Kanal DDR Speicherarchitektur • 4 x 184-Pin DDR DIMM Sockel, unterstützt bis zu 4 GB • Unterstützt DDR400/333/266/200 ungepufferter DDR SDRAM
Erweiter-ungsmöglichkeiten	• 1 x AGP 8X/4X Steckplatz • 5 x PCI Steckplätze
Speicher	• Unterstützt durch einen VIA8237 - 4 x Ultra DMA133/100/66 Geräte - 2 x SATA Geräte - RAID 0 und RAID 1 Konfiguration • Unterstützt durch einen SiS180 - 2 x Ultra DMA133/100/66 Geräte - 2 x SATA Geräte - RAID 0, RAID 1, RAID 0+1 Konfiguration

IEEE 1394a	• VIA VT6307 IEEE1394a Controller • Unterstützt 2 x IEEE1394a Anschlüsse
Audio	• Realtek ALC655 6-Kanal Audio CODEC • Entspricht AC'97 2.3 Spezifikation
Dual LAN	• Marvel 88E8001 Gigabit LAN Controller • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Rear panel I/O	• 1 x PS/2 Tastatur • 1 x PS/2 Mausanschluss • 4 x USB Ports • 2 x RJ45 LAN Anschlüsse • 1 x Parallelanschluss (LPT1) • 1 x Seriellanschluss (COM1) • 2 x Digital SPDIF (optischer & Koaxial)-Ausgang • 1 x Audio Anschluss (Line-in, Line-out, Mic-in)
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 20-Pin ATX Netzteilanschluss & 4-Pin 12 V Anschluss • 1 x Floppylaufwerkanschluss, unterstützt 360K ~ 2.88M Bytes, 3 Modus Festplatten oder LS120 • 3 x IDE Anschlüsse • 4 x Seriell ATA Anschluss • 2 x USB 2.0 Anschluss, unterstützt zusätzlich 4 USB Anschlüsse • 2 x 1394a Anschlüsse • 1 x EZ-Watcher Anschluss (Optional) • 1 x SMBus Anschluss • 1 x Schalter in der Frontabdeckung/LED-Anschluss • 1 x Audioanschluss in der Frontabdeckung • CD-Eingang-/AUX-Eingangsanschluss • CPUFAN/NB_FAN/CASFAN Anschlüsse
Formfaktor	• ATX-Größe • 305mm x 244mm

Indice delle caratteristiche

CPU	• Presa 939 per processore AMD Athlon 64 FX • Interfaccia per CPU HyperTransport ad elevata prestazione • Velocità di trasferimento 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memoria	• Dual-channel DDR memory architecture • 4 x 184-pin DDR DIMM socket che supportano sino a 4 GB • Supporta DDR400/333/266/200 unbuffered DDR SDRAM
Opzioni d'espansione	• 1 x slot AGP 8X/4X • 5 x slot PCI
Deposito	• Supportato da VIA8237 - 4 x dispositivi Ultra DMA133/100/66 - 2 x dispositivi SATA - configurazione RAID 0 e RAID 1 • Supportato da SiS180 - 2 x dispositivi Ultra DMA133/100/66 - 2 x dispositivi SATA - configurazione RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Controller VIA VT6307 IEEE1394a • Supporta 2 xconnettori IEEE1394a
Audio	• Realtek ALC655 6- canale audio CODEC • Conforme alle specifiche AC'97 2.3
Doppia LAN	• Controller LAN Marvel 88E8001 Gigabit • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Pannello posteriore I/O	• 1 x tastiera PS/2 • 1 x connettore mouse PS/2 • 4 x porte USB • 2 x connettori RJ45 LAN • 1 x porta Parallela (LPT1) • 1 x porta Seriale (COM1) • 2 x output SPDIF digitali (ottico e coassiale) • 1 x porta audio (Line-in, Line-out, Mic-in)
Caratteristic-he 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 20-pin ATX e connettore 4-pin da 12 V • 1 x connettore floppy - supporta 360K ~ 2.88M Byte, 3 Mode FDDs o LS120 • 3 x connettori IDE • 4 x connettori seriali ATA • 2 x supporti header USB 2.0 con 4 porte USB supplementari • 2 x headers 1394a • 1 x EZ-Watcher header (opzionale) • 1 x SMBus header • 1 x interruttore del pannello frontale /LED header • 1 x pannello frontale header audio • CD in/AUX in header • Connettori CPUFAN/NB_FAN/CASFAN
Form Factor	• Dimensione -ATX • 305mm x 244mm

Resumen de Características

CPU	• Socket 939 para procesador AMD Athlon 64 FX • Interfaz HyperTransport CPU de Alto Rendimiento • Índice de transferencia de 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memoria	• Arquitectura de memoria DDR Canal Dual • 4 x zócalos 184-pin DDR DIMM soporta hasta 4 GB • Soporta DDR SDRAM de DDR400/333/266/200 sin buffer
Opciones de expansión	• 1 x ranura AGP 8X/4X • 5 x ranuras PCI
Almacenaje	• Soportado por VIA8237 - 4 x dispositivos Ultra DMA133/100/66 - 2 x dispositivos SATA - Configuración RAID 0 y RAID 1 • Soportado por SiS180 - 2 x dispositivos Ultra DMA133/100/66 - 2 x dispositivos SATA - Configuración RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Controlador VIA VT6307 IEEE1394a • Soporta 2 x conectores IEEE1394a
Audio	• Realtek ALC655 6-channel audio CODEC • Conforme con la especificación AC'97 2.3
Dual LAN	• Controlador Marvel 88E8001 Gigabit LAN • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
I/O del panel trasero	• 1 x teclado PS/2 • 1 x conector de ratón PS/2 • 4 x puertos USB • 2 x conectores RJ45 LAN • 1 x puerto Paralelo (LPT1) • 1 x Puerto Serial (COM1) • 2 x salidas de SPDIF Digital (Óptico & Coaxial) • 1 x puerto Audio (Line-in, Line-out, Mic-in)
Característi-cas 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 20-pin ATX & Conector 4-pin 12 V • 1 x conector Floppy - soporta 360K ~ 2.88M Bytes, FDD de 3 Modos o LS120 • 3 x conectores IDE • 4 x conectores Serial ATA • 2 x cabezales USB 2.0 soporta 4 puertos USB adicionales • 2 x cabezales 1394a • 1 x cabezal EZ-Watcher (optativo) • 1 x cabezal SMBus • 1 x interruptor del panel frontal/cabezal LED • 1 x cabezal de audio del panel frontal • Cabezal CD in/AUX in • Conectores CPUFAN/NB_FAN/CASFAN
Factor de Forma	• Tamaño de ATX • 305mm x 244mm

Sumário de Características

CPU	• Tomada de parede 939 para processador AMD Athlon 64 FX • Interface CPU HyperTransport de alta performance • Taxa de transferência de 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memória	• Arquitectura de memória DDR bicanal • 4 x Tomada de parede 184 pinos DDR DIMM suporta até 4 GB • Suporta DDR400/333/266/200 sem buffers DDR SDRAM
Opções de expansão	• 1 x Ranhura AGP 8X/4X • 5 x Ranhuras PCI
Armazenamento	• Suportado por VIA8237 - 4 x Dispositivos ultra DMA133/100/66 - 2 x Dispositivos SATA - Configuração RAID 0 e RAID 1 • Suportado por SiS180 - 2 x Dispositivos ultra DMA133/100/66 - 2 x Dispositivos SATA - Configuração RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Controlador VIA VT6307 IEEE1394a • Suporta 2 x conectores IEEE1394a
Áudio	• CODEC 6 canais áudio Realtek ALC655 • Cumpre com a especificação AC'97 2.3
LAN duplo	• Controlador Marvel 88E8001Gigabit LAN • VIA VT6103L 10/100 Mbps Internet Rápida PHY
Painel traseiro I/O	• 1 x teclado PS/2 • 1 x conector de rato PS/2 • 4 x portas USB • 2 x conectores RJ45 LAN • 1 x porta Paralela (LPT1) • 1 x porta de Série (COM1) • 2 x Saída digital SPDIF (Óptica & Coaxial) • 1 x Porta áudio (Line-in, Line-out, Mic-in)
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 20 pinos ATX & Conector 4 pinos 12 V • 1 x Conector flexível - suporta 360K ~ 2.88M Bytes, FDDs de 3 Modos ou LS120 • 3 x Conectores IDE • 4 x Conectores de série ATA • 2 x Colector USB 2.0 suporta 4 portas USB adicionais • 2 x Colectores 1394a • 1 x Colector EZ-Watcher (opcional) • 1 x Colector SMBus • 1 x Colector com interruptor/LED do painel traseiro • 1 x Colector de áudio do painel traseiro • Entrada para CD/Colector com entrada para AUX • Conectores CPUFAN/NB_FAN/CASFAN
Coeficiente de Forma	• Tamanho ATX • 305mm x 244mm

特徴概要

プロセッサ	• AMD Athlon 64 FXプロセッサ用のSocket 939 • 高性能HyperTransport CPU インターフェース • 転送率が2000/1600/1200/800/400 MT/s
チップセット	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
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184ピンDDR DIMMソケットで最大4 GBまでサポート • DDR400/333/266/200 非バッファーDDR SDRAMをサポート
拡張スロット	• 1つのAGP 8X/4X スロット • 5つのPCI スロット
保存装置	• VIA8237チップセットがサポートするのは - 4つのUltra DMA133/100/66 デバイス - 2つのSATA デバイス - RAID 0とRAID 1 構成 • SiS180がサポートするのは - 2つのUltra DMA133/100/66 デバイス - 2つのSATA 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 コネクタをサポート
オーディオ	• Realtek ALC655の6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 88E8001 ギガバイトLAN コントローラ • VIA VT6103L 10/100 Mbps 高速イーサーネットPHY
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 • 2 つのRJ45 LAN コネクタ • 1 つのパラレルポート(LPT1) • 1 つのシリアルポート(COM1) • 2 つのデジタルSPDIF (光ケーブルと同軸ケーブル) 出力 • 1つのオーディオポート(ラインイン、ラインアウト、マイクイン)
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20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 • 3つのIDEコネクタ • 4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 • 2つの1394a ヘッダー • 1つEZ-Watcher ヘッダー(オプション) • 1 つのSMBus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 • CD入力/AUX 入力ヘッダー • CPUFAN/NB_FAN/CASFAN コネクタ
寸法	• ATXサイズ • 305mm x 244mm

특성 요약

CPU	• AMD 애슬론 64 FX 프로세서를 위한 소켓 939 • 고성능의 HyperTransport CPU 인터페이스 • 전송 속도 2000/1600/1200/800/400 MT/s
칩셋	• VIA K8T800 PRO & 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
메모리	• 듀얼 채널 DDR 메모리 아키텍처 • 4 x 184 핀 DDR DIMM 소켓, 최대 4 GB 지원 • DDR400/333/266/200 unbuffered DDR SDRAM 지원
확장 옵션	• 1 x AGP 8X/4X 슬롯 • 5 x PCI 슬롯
저장	• VIA8237 지원 - 4 x Ultra DMA133/100/66 장치 - 2 x SATA 장치 - RAID 0 및 RAID 1 구성 • SiS180 지원 - 2 x Ultra DMA133/100/66 장치 - 2 x SATA 장치 - RAID 0, RAID 1, RAID 0+1 구성

IEEE 1394a	• VIA VT6307 IEEE1394a 컨트롤러 • 2 x IEEE1394a 커넥터 지원
오디오	• Realtek ALC655 6 채널 오디오 코덱 • AC'97 2.3 사양 부합
듀얼 랜	• Marvel 88E8001 기가바이트 랜 컨트롤러 • VIA VT6103L 10/100 Mbps 패스트 이더넷 PHY
뒷 패널 I/O	• 1 x PS/2 키보드 • 1 x PS/2 마우스 커넥터 • 4 x USB 포트 • 2 x RJ45 LAN 커넥터 • 1 x 패러럴 포트 (LPT1) • 1 x 시리얼 포트 (COM1) • 2 x 디지털 SPDIF (선택 및 동축) 출력 • 1 x 오디오 포트 (라인 입력, 라인 출력, 마이크 입력)
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 20 핀 ATX 파워 써플라이 커넥터 및 4 핀 12 V 커넥터 • 1 x 플로피 커넥터- 360K ~ 2.88M Bytes, 3 모드 FDD 또는 LS120 지원 • 3 x IDE 커넥터 • 4 x 시리얼 ATA 커넥터 • 2 x USB 2.0 헤더, 추가적으로 4 개의 USB 포트 지원s • 2 x 1394a 헤더 • 1 x EZ-Watcher 헤더 (선택) • 1 x SMBus 헤더 • 1 x 앞 패널 스위치/LED 헤더 • 1 x 앞 패널 오디오 헤더 • CD 입력/AUX 입력 헤더 • CPUFAN/NB_FAN/CASFAN 커넥터
규격	• ATX 사이즈 • 305mm x 244mm

功能摘要

中央處理器	• AMD Athlon 64 FX 處理器用Socket 939 • 高效能HyperTransport CPU介面 • 傳輸速率2000/1600/1200/800/400 MT/s
晶片組	• VIA K8T800 PRO & 8237 • 北橋晶片: VIA K8T800 PRO • 南橋晶片: VIA 8237
記憶體	• 雙通道DDR 記憶體架構 • 4個184針DDR DIMM 插槽支援至4 GB • 支援DDR400/333/266/200 無緩衝DDR SDRAM
擴充槽	• 1個AGP 8X/4X 槽 • 5個PCI槽
儲存裝置	• 以VIA8237晶片支援 – 4個Ultra DMA133/100/66 裝置 – 2個SATA 裝置 – 支援RAID 0及RAID 1 設定 • 以 SiS180支援 – 2個Ultra DMA133/100/66 裝置 – 2個 SATA 裝置 – 支援RAID 0、RAID 1、及 RAID 0+1 設定

IEEE 1394a	• VIA VT6307 IEEE1394a 控制器 • 支援2個IEEE1394a 連接器
音訊	• 採Realtek ALC655 6-聲道音訊CODEC • 相容於 AC'97 2.3 規格
雙LAN	• Marvel 88E8001 Gigabit LAN 控制器 • VIA VT6103L 10/100 Mbps 高速乙太網路PHY
背面板 輸出入介面	• 1個PS/2 鍵盤連接埠 • 1個PS/2 滑鼠連接埠 • 4個USB埠 • 2個RJ45 LAN 插孔 • 1個平行埠 (LPT1) • 1個序列埠(COM1) • 2個數位SPDIF (光纖及同軸電纜)輸出端子 • 1個音訊埠(線級輸入、線級輸出、夾克風插孔)
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20針ATX 電源供應器連接器及1個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 • 3個IDE連接器 • 4個序列ATA 連接器 • 2個USB 2.0接頭，可支援4個額外的USB埠 • 2個1394a接頭 • 1個EZ-Watcher接頭(可選) • 1個SMBus接頭 • 1個前面板開關及1個LED 接頭 • 1個前面板音訊接頭 • CD音源輸入/AUX音源輸入接頭 • 處理器冷卻風扇/北橋晶片風扇/機殼風扇連接器
主機板尺寸	• ATX 尺寸 • 305mm x 244mm

功能摘要

CPU	• 用于AMD Athlon 64 FX 处理器的 Socket 939 插座 • 高性能超级传输(HyperTransport)CPU 接口 • 传输速率 2000/1600/1200/800/400 MT/s
芯片组	• VIA K8T800 PRO & 8237 • 北桥：VIA K8T800 PRO • 南桥：VIA 8237
内存	• 双通道 DDR 内存架构 • 4 个 184 线 DDR DIMM 插槽，内存最大可支持 4 GB • 持 DDR400/333/266/200非缓冲DDR SDRAM
扩展选项	• 1 个 AGP 8X/4X 插槽 • 5 个 PCI 插槽
存储	• 支持 VIA8237 - 4 个 Ultra DMA133/100/66 设备 - 2 个 SATA 设备 - RAID 0 和 RAID 1 配置 • 支持 SiS180 - 2 个 Ultra DMA133/100/66 设备 - 2 个 SATA 设备 - RAID 0, RAID 1, RAID 0+1 配置

IEEE 1394a	• VIA VT6307 IEEE1394a 控制器 • 支持 2 个 IEEE1394a 接口
音频	• Realtek ALC655 6 声道音频编解码器 • 符合 AC’97 2.3 规格
双 LAN	• Marvel 88E8001 千兆 LAN 控制器 • VIA VT6103L 10/100 Mbps 高速以太网 PHY
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 • 2 个 RJ45 LAN 接口 • 1 个并口 (LPT1) • 1 个串口 (COM1) • 2 个数字量 SPDIF（光纤和同轴）输出 • 1 个音频端口（线入、线出、麦克风入）
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 20 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 • 3 个 IDE 接口 • 4 个串行 ATA 接口 • 2 个 USB 2.0 接头，支持另外 4 个 USB 端口 • 2 个 1394a 接头 • 1 个 EZ-Watcher 接头（可选） • 1 个 SMBus 接头 • 1 个前面板开关/LED 接头 • 1 个前面板音频接头 • CD 输入/AUX 输入接头 • CPUFAN/NB_FAN/CASFAN 接口
外形	• ATX 尺寸 • 305mm x 244mm

Характеристики

CPU	• Разъем 939 для процессоров AMD Athlon 64 FX • Интерфейс HyperTransport CPU с высокой пропускной способностью • Скорость передачи данных 2000/1600/1200/800/400 МТ/сек
Чипсет	• VIA K8T800 PRO и 8237 • Северный мост: VIA K8T800 PRO • Южный мост: VIA 8237
Память	• Архитектура памяти Dual-channel DDR • 4 184-штырьковых разъема DDR DIMM с поддержкой до 4 ГБ памяти • Поддержка DDR400/333/266/200 и небуферизуемой памяти DDR SDRAM
Возможности расширения	• 1 разъем AGP 8X/4X • 5 разъемов PCI
Массовая память	• Поддерживаемая VIA8237 - 4 устройства Ultra DMA133/100/66 - 2 устройства SATA - Конфигураци RAID 0 и RAID 1 • Поддерживаемая SiS180 - 2 устройства Ultra DMA133/100/66 - 2 устройства SATA - Конфигураци RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Контроллер VIA VT6307 IEEE1394a • Поддержка 2 разъемов IEEE1394a
Аудио	• 6-канальный аудио CODEC Realtek ALC655 • Совместимость с технологией AC'97 2.3
Dual LAN	• Контроллер Marvel 88E8001 Gigabit LAN • Карта VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Гнезда входа/ выхода на тыльной панели	• 1 гнездо клавиатуры PS/2 • 1 гнездо мыши PS/2 • 4 порта USB • 2 гнезда RJ45 LAN • 1 параллельный порт (LPT1) • 1 серийный порт (COM1) • 2 гнезда выхода Digital SPDIF (оптическое и коаксиальное) • 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 20-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 • 3 гнезда IDE • 4 гнезд Serial ATA • 2 гнезда USB 2.0 с поддержкой 4 дополнительных портов USB • 2 гнездо 1394a • 1 гнездо EZ-Watcher (опционально) • 1 гнездо SMBus • 1 гнездо выключателя/индикатора передней панели • 1 аудио гнездо передней панели • Гнездо CD in/AUX in • Разъемы вентиляторов CPU, северного моста и CASFAN
Габариты	• Стандарт ATX • 305мм x 244мм

Cechy

CPU	• Gniazdo 939 dla procesorów AMD Athlon 64 FX • Złącze szybkiego transpotu danych HyperTransport CPU Interface • Szybkość przesyłania danych 2000/1600/1200/800/400 MT/s
Chipset	• VIA K8T800 PRO & 8237 • Mostek północny: VIA K8T800 PRO • Mostek południowy: VIA 8237
Pamięć	• Architektura pamięci dwukanałowej DDR • Cztery 184 nóżkowe złącza DDR DIMM obsługujące do 4 GB pamięci • Obsługa pamięci typu DDR400/333/266/200 i niebuforowanej pamięci DDR SDRAM
Możliwości rozbudowy	• 1 złącze AGP 8X/4X • 5 złącz PCI
Urządzenia pamięc masowej	• Obsługiwane przez VIA8237 - 4 urządzenia Ultra DMA133/100/66 - 2 urządzenia SATA - Konfiguracje RAID 0 i RAID 1 • Obsługiwane przez SiS180 - 2 urządzenia Ultra DMA133/100/66 - 2 urządzenia SATA - Konfiguracje RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Kontroler VT6307 IEEE1394a firmy VIA • Obsługa 2 złącz IEEE1394a
Audio	• 6-kanałowy audio CODEC Realtek ALC655 • Zgodne z AC'97 2.3
Dual LAN	• Kontroller Marvel 88E8001 Gigabit LAN • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Gniazda We/ Wy na tylnym panelu	• 1 gniazdo klawiatury PS/2 • 1 gniazdo myszy PS/2 • 4 gniazda USB • 2 złącza RJ45 LAN • 1 port równoległy (LPT1) • 1 port szeregowy (COM1) • 2 gniazda Digital SPDIF (wyjście optyczne i koaksialne) • 1 gniazdo wejściowe i 1 wyjściowe audio, 1 gniazdo wejściowe mikrofonowe
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 20-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 • 3 złącza IDE • 4 złącz Serial ATA • 2 złącza USB 2.0 obsługujące 4 dodatkowe porty USB • 2 złącze 1394a • 1 gniazdo EZ-Watcher (opcjonalnie) • 1 złącze SMBus • 1 złącze włącznika / wskaźnika LED na panelu przednim • 1 gniazdo audio na panelu przednim • Wejściowe złącza CD/AUX • Gniazda wiatraków CPU, mostka północnego i gniazdo CASFAN
Wymiary	• Standard ATX • 305mm x 244mm

Souhrn vlastností

CPU	• Patice 939 pro procesory AMD Athlon 64 FX • Vysoce výkonné rozhraní HyperTransport CPU • Přenosové rychlosti 2000/1600/1200/800/400 MT/s
Čipová sada	• VIA K8T800 PRO a 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA8237
Paměť	• Dvojkanálová paměťová architektura DDR • 4 x 184kolíková patice DDR DIMM, podporující paměť do kapacity až 4 GB • Podpora pamětí typu DDR SDRAM 400/333/266/200, bez vyrovnávací paměti
Rozšiřující sloty	• 1 x slot AGP 8X/4X • 5 x slot PCI
Disková zařízení	• Podporovaná VIA8237 - 4 x zařízení Ultra DMA133/100/66 - 2 x zařízení SATA - Konfigurace RAID 0 a RAID 1 • Podporovaná SiS180 - 2 x zařízení Ultra DMA133/100/66 - 2 x zařízení SATA - Konfigurace RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Řadič VIA VT6307 IEEE1394a • Podpora 2 portů IEEE 1394a
Zvuk	• 6kanálový zvukový kodek Realtek ALC655 • Splňuje požadavky standardu AC'97 2.3
Duální LAN	• Řadič gigabitový sítě LAN Marvel 88E8001 • Řadič sítě 10/100 Mbps Fast Ethernet, VIA VT6103L PHY
Vstupy/ výstupy na zadním panelu	• 1x konektor klávesnice PS/2 • 1x konektor myši PS/2 • 4x port USB • 2x konektor LAN RJ45 • 1x paralelní port (LPT1) • 1x sériový port (COM1) • 2x digitální výstup SPRIT (optický a koaxiální) • 1x zvukový konektor (linkový vstup/linkový výstup/mikrofon)
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 20kolíkový 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 • 3x konektor IDE • 4x konektor Serial ATA • 2x rozhraní USB 2.0 s podporou dalších 4 USB portů • 2x rozhraní 1394a • 1x rozhraní EZ-Watcher (volitelně) • 1x rozhraní SMBus • 1x rozhraní pro spínač na předním panelu/LED • 1x rozhraní pro zvukový vstup/výstup na předním panelu • Rozhraní vstup CD/vstup AUX • Konektory CPUFAN/NB_FAN/CASFAN
Velikost	• Rozměry standardu ATX • 305mm x 244mm

Sumarul caracteristicilor

Unitatea centrală (CPU)	• Soclu 939 pentru procesoare AMD Athlon 64 FX • Interfaţă CPU HyperTransport de înaltă performanţă • Viteză de transfer de 2000/1600/1200/800/400 MT/s
Set de chipuri	• VIA K8T800 PRO şi 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memorie	• Architectură cu module de memorie DDR cu canal dual • Patru socluri DDR DIMM de 184 ace, cu o capacitate de până la 4 GB • Suport pentru module DDR SDRAM DDR400/333/266/200 fără zonă tampon
Sloturi de extindere	• Un slot AGP 8X/4X • 5 sloturi PCI
Stocare	• Compatibilă cu VIA8237 - Patru unităţi Ultra DMA133/100/66 - Două unităţi SATA - Configuraţie RAID 0 şi RAID 1 • Compatibilă cu SiS180 - Două unităţi Ultra DMA133/100/66 - Două unităţi SATA devices - Configuraţie RAID 0, RAID 1 şi RAID 0+1

IEEE 1394a	• Controler VIA VT6307 IEEE1394a • suportă două conectoare IEEE1394a
Audio	• CODEC audio Realtek ALC655 cu 6 canale • Compatibil cu specificaţia AC'97 2.3
LAN dual	• Controler LAN Marvel 88E8001 Gigabit • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
I/O de pe panoul din spate	• O tastatură PS/2 • Un conector de mouse PS/2 • Patru porturi USB • Două conectoare LAN RJ45 • Un port paralel (LPT1) • Un port serial (COM1) • Două ieşiri SPDIF digitale (optică şi coaxială) • Un port audio (intrare, ieşire, microfon)
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 20 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 • Trei sloturi IDE • Patru conectoare ATA seriale • Două conectoare USB 2.0, cu posibilitate pentru alte 4 porturi USB • Două conectoare 1394a • Un conector EZ-Watcher (opţional) • Un conector SMBus • Un comutator/conector LED pe panoul frontal • Un conector audio pe panoul frontal • Conector CD intrare/AUX conector • Conectoare CPUFAN/NB_FAN/CASFAN
Caracteristici externe	• Dimensiuni ATX • 305mm x 244mm

Параметри

Процесор	• сокет 939 за процесор AMD Athlon 64 FX • високопроизводителен интерфейс HyperTransport • скорост на обмен на данни 2000/1600/1200/800/400 MT/s
Чипсет	• VIA K8T800 PRO & 8237 • Северен мост: VIA K8T800 PRO • Южен мост: VIA 8237
Памет	• двуканална архитектура на паметта DDR • 4 слота 184-pin DDR DIMM с поддръжка на общ капацитет до 4 GB • поддръжка на модули DDR400/333/266/200 небуферирана DDR SDRAM
Слотове за разширяване	• 1 слот AGP 8X/4X • 5 слота PCI
Възможности за съхраняване на данни	• поддържани от VIA8237 - 4 устройства Ultra DMA133/100/66 - 2 устройства SATA - RAID 0 и RAID 1 • поддържани от SiS180 - 2 устройства Ultra DMA133/100/66 - 2 устройства SATA - RAID 0, RAID 1, RAID 0+1

IEEE 1394a	• Контролер VIA VT6307 IEEE1394a • Поддръжка на 2 порта IEEE1394a
Аудио	• 6-канален аудио CODEC Realtek ALC655 • съвместимост със спецификацията AC'97 2.3
Dual LAN	• Мрежов контролер Marvel 88E8001 Gigabit • Fast Ethernet PHY контролер VIA VT6103L 10/100 Mbps
Портове Вход/Изход на задния панел	• 1 порт PS/2 за клавиатура • 1 порт PS/2 за мишка • 4 порта USB • 2 конектора RJ45 LAN • 1 паралелен порт (LPT1) • 1 сериен порт (COM1) • 2 цифрови изхода SPDIF (оптичен и коаксиален) • 1 аудио порт (линеен вход/линеен изход/вход за микрофон)
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 20-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 или LS120 • 3 конектора IDE • 4 конектора Serial ATA • 2 колектора USB 2.0 с поддръжка на 4 допълнителни USB порта • 2 колектор 1394a • 1 колектор EZ-Watcher (опция) • 1 колектор SMBus • 1 колектор за бутоните и LED-индикацията на предния панел • 1 колектор за аудио вход/изход на предния панел • колектор CD-вход/AUX-вход • конектори CPUFAN/NB_FAN/CASFAN
Размери	• ATX • 305mm x 244mm

Jellemzők összefoglalása

Központi egység(CPU)	• 939 foglalat AMD Athlon 64 FX processzornak • Nagy teljesítményű HyperTransport technologiás központi egység interfész • 2000/1600/1200/800/400 MT/s átviteli sebesség
Lapkakészlet	• VIA K8T800 PRO és 8237 • North Bridge: VIA K8T800 PRO • South Bridge: VIA 8237
Memória	• Duál csatornás DDR memória kiépítés • Négy 184 tűs DDR DIMM foglalat, maximum 4 GB kapacitással • Puffermentes DDR400/333/266/200 DDR SDRAM memóriaegységek támogatása
Bővítési foglalatok	• Egy 8-szoros/4-szeres AGP foglalat • Öt PCI foglalat
Tárolás	• Az VIA8237 által támogatott - Négy Ultra DMA 133/100/66 eszköz - Két SATA eszköz - RAID 1 és RAID 0 konfiguráció • A SiS180 által támogatot - Két Ultra DMA 133/100/66 eszköz - Két SATA eszköz - RAID 0 RAID 1 és RAID 0+1 konfiguráció

IEEE 1394a	• VIA VT6307 IEEE1394a vezérlő • Két IEEE1394a csatlakozót támogat
Audio	• Realtek ALC655 6 csatornás audio CODEC • Megfelel az AC'97 2,3as specifikációnak
Duál LAN	• Marvel 88E8001 Gigabit LAN vezérlő • VIA VT6103L 10/100 Mbps Fast Ethernet PHY
Hátsó panelen levő I/O	• Egy PS/2 billentyűzet • Egy PS/2 egércsatlakozó • Négy USB port • Két RJ45 LAN csatlakozó • Egy párhuzamos port (LPT1) • Egy soros port (COM1) • Két digitalis SPDIF (optikai és koaxiális) kimenet • Egy Audio port (bemenet, kimenet, mikrofon)
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 20 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 • Három IDE foglalat • Négy soros ATA csatlakozó • Két USB 2.0 csatlakozó, és további 4 USB porttal tud működni • Két 1394a csatlakozó • Egy EZ-Watcher csatlakozó (opcionális) • Egy SMBus csatlakozó • Egy elülső panelen levő kapcsoló/LED csatlakozó • Az elülső panelen levő audio csatlakozó • CD bemenet/AUX bemenet csatlakozó • CPUFAN/NB_FAN/CASFAN csatlakozók
Alaki jellemzők	• ATX méret • 305mm x 244mm

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Federal Communications Commision (FCC)

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

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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.