

Contents

- Chapter 1 Specification 8**
 - 1-1 B9D-FGR Mainboard Layout9
 - 1-2 Mainboard Specification Table 10
 - 1-3 Chipset System Block Diagram 11
 - 1-4 Mainboard Specifications and Features 12
 - 1-4.1 CPU Socket 12
 - 1-4.2 System Chipsets 12
 - 1-4.3 Memory 12
 - 1-4.4 BIOS 12
 - 1-4.5 Accelerated Graphics Port (AGP) Interface 13
 - 1-4.6 AC'97 Audio Codec on board 13
 - 1-4.7 Advanced System Power Management 13
 - 1-4.8 IEEE 1394 Interface 13
 - 1-4.9 Multi-I/O Functions 14
 - 1-4.10 SATA / SATA RAID Interface 14
 - 1-4.11 Hardware Monitor on board 14
 - 1-4.12 Gigabit Ethernet on board 14
 - 1-4.13 Form Factor 14
- Chapter 2 Hardware Setup 15**
 - 2-1 CPU/CPU cooling Fan Installation on Socket 939 16
 - 2-2 Memory Installation 18
 - 2-2.1 To Install DDR SDRAM Module 18
 - 2-2.2 Dual Channel Memory Features 18
 - 2-2.3 DIMM Powered on 19
 - 2-3 AGP Slot Installation 19
 - 2-4 IDE Connector Installation 20
 - 2-5 SATA / RAID Connectors 21
 - 2-6 Floppy Drive Installation 22
 - 2-7 ATX Power Supply Installation 23
 - 2-8 Jumper Setting 24
 - 2-8.1 How to tackle the Jumpers: 24
 - 2-8.2 JKB1: Keyboard/Mouse Wake-up 25
 - 2-8.3 JBAT1: Clear CMOS 25
 - 2-9 Other Connectors Configuration 26

- 2-9.1 On-board FAN Connectors 26
- 2-9.2 USB Ports and USB Pin-headers 27
- 2-9.3 Back Panel Connectors 28
- 2-9.4 PS/2 Mouse , PS/2 Keyboard 28
- 2-9.5 RJ45 Connector 29
- 2-9.6 CD-ROM Audio Connectors (CD_In1)..... 29
- 2-9.7 Thermal Detector 30
- 2-9.8 JAUDI1: External Audio Connector 30
- 2-9.9 Complex Pin-header (Front Panel Connectors) 31
- 2-9.10 IEEE 1394a Port/Pin-header 32
- 2-9.11 Printer Port: LPT1 33
- Chapter 3 Software Setup 34**
 - 3-1 To Open Up Support CD: 35
 - 3-2 VIA 4-IN-1 Drivers Installation 36
 - 3-3 DirectX 9 Installation 38
 - 3-4 AC'97 Audio Driver Installation 40
 - 3-4.1 Installing AC'97 8-channel Audio Driver 40
 - 3-4.2 Verifying 8-channel Audio 41
 - 3-5 To Install RTL8110S Gigabit Ethernet Drivers 43
 - 3-6 USB 2.0 Driver installation 44
 - 3-7 Install Hardware Monitor Utility 46
 - 3-7.1 Installation 46
 - 3-7.2 Verification 47
 - 3-8 RAID Driver Installation 47
 - 3-9 Install AMD 64 CPU Quiet Driver 48
- Chapter 4 BIOS Setup 50**
 - 4-1 About BIOS Setup 51
 - 4-2 To Run BIOS Setup 51
 - 4-3 About CMOS 51
 - 4-4 The POST (Power On Self Test) 51
 - 4-5 To Upgrade BIOS 52
 - 4-5.1 Before Upgrading BIOS 52
 - 4-5.2 Upgrade Process..... 52
 - 4-6 BIOS SETUP --- CMOS Setup Utility 56
 - 4-6.1 CMOS Setup Utility 56
 - 4-6.2 Standard CMOS Setup 58
 - 4-6.3 Advanced BIOS Features 61
 - 4-6.4 Advanced Chipset Features 64

- 4-6.5 Integrated Peripherals 67
 - 4-6.5.1. VIA OnChip IDE Device 67
 - 4-6.5.2. VIA OnChip PCI Device: 69
 - 4-6.5.3. Super IO Device: 69
- 4-6.6 Power Management Setup 71
- 4-6.7 PnP / PCI Configuration 74
- 4-6.8 SmartDoc Anti-Burn Shield 76
- 4-6.9 Frequency/Voltage Control 77
- 4-6.10 Load Optimized Defaults 78
- 4-6.11 SET SUPERVISOR / USER PASSWORD 78
- 4-6.12 SAVE & EXIT SETUP 79
- 4-6.13 EXIT WITHOUT SAVING 79

Chapter 5 VT8237 SATA RAID 80

- 5-0 About Disk Array 81
 - 5-0-1 Disk Array Interpretation 81
 - 5-0-2 Disk Array Member 81
 - 5-0-3 Disk Array Types Supported by VT8237 81
- 5-1 First Step to Set Up SATA RAID System 82
- 5-2 Enable SATA-RAID Interface with System BIOS 83
- 5-3 To Enter VIA Tech. RAID BIOS Setup 84
- 5-4 Using VIA RAID BIOS Setup to Create Disk Array 85
- 5-5 Using VIA RAID BIOS Setup to change Array mode 89
- 5-6 To Install SATA RAID Driver 91
 - 5-6-1 To Install SATA RAID Driver on Windows 2000/XP 91
 - 5-6-2 To Install SATA RAID Driver on Windows 98SE/ME 92

Memo

Chapter 1 Specification

Introduction

This mainboard features an integration of the powerful AMD Athlon 64 939 processors and the North Bridge VIA K8T800Pro plus South Bridge VT8237, with which the whole system performance supports HyperTransport Bus up to 1GHz.

VIA K8T800Pro plus VT8237 supports on-board AMD processors to implement HyperTransport link, running at up to 8GB/s, the AGP 8X/4X interface, the LPC Super I/O, Dual Channel DDR 400/333/266 SDRAM, the 8-channel AC'97 Audio interface, the USB 2.0 interface, ATA 133/100/66 data transfer rate, and Serial ATA RAID interface. This chapter is to introduce to users every advanced function of this high performance integration.

Topics included in this chapter are:

1-1 Mainboard Layout

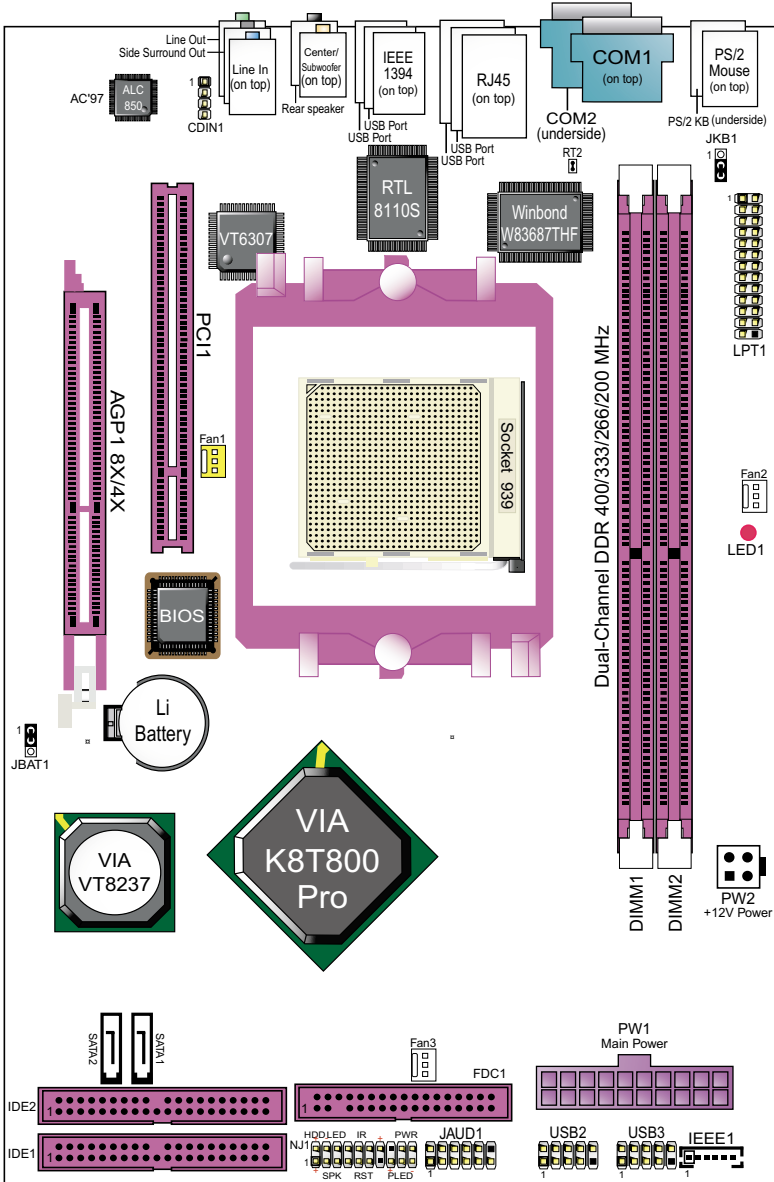
1-2 Specification Table

1-3 Chipset System Block Diagram

1-4 Mainboard Specifications and Features

**** If any difference is found between this manual and the Mainboard you are using, please look up the ERRATA/UPDATE Slip enclosed inside for the correction or updated information, or else contact the Mainboard Dealer or visit our Web Site for the latest manual update.**

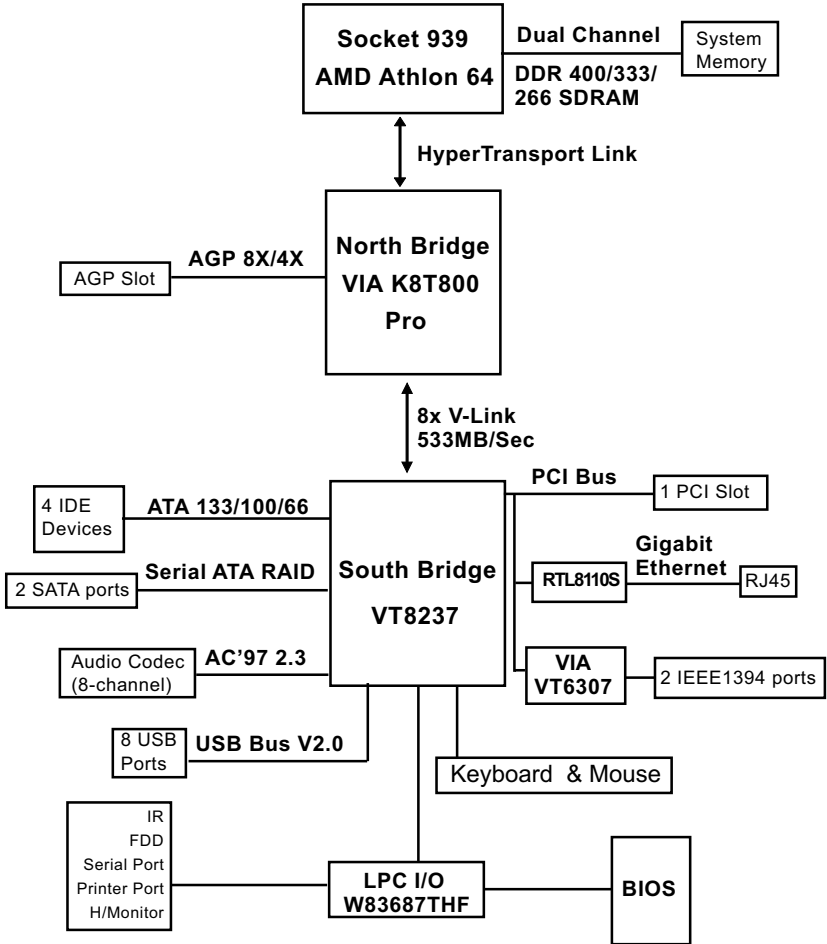
1-1 B9D-FGR Mainboard Layout



1-2 Mainboard Specification Table

B9D-FGR Specifications and Features	
CPU	Socket 939 for AMD Athlon 64 939-pin CPUs
North Bridge	VIA K8T800Pro, supporting up to 1GHz Hyper Transport
South Bridge	VIA VT8237
Memory	Supporting Dual Channel DDR 400/333/266 SDRAM, up to 2GB in 2 DDR SDIMM slots
I/O Chip	Chip W83687THF with Hardware Monitor
AGP interface	AGP 8X/4X mode only
Audio	AC'97 Audio 2.3 compliant, 8 channel audio
IDE Interface	2 ATA 133/100/66 IDE Connector
Serial ATA RAID Interface	2 Serial ATA connectors supported by VT8237
VGA	Not integrated on board
Network	RTL8110S Gigabit Ethernet Controller, supporting 1 RJ45 port on board
IEEE 1394 Interface	VIA VT6307 IEEE1394 Controller on board supporting 2 IEEE1394 ports.
PCI Slots	1 PCI Master slot on board
I/O Connectors	8 USB V2.0, 1 FDD port, 2 serial COM ports, 1 LPT, 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse, 5 Audio In/Out ports
Other Common Feature	Keyboard/ Mouse Wake up;

1-3 Chipset System Block Diagram



Socket 939 + VIA K8T800 Pro + VIA VT8237 Diagram

1-4 Mainboard Specifications and Features

1-4.1 CPU Socket

CPU Socket 939 on board, supporting AMD Athlon 64 processors, implementing up to 1GHz Hyper Transport Speed (System Bus) designed to be capable of operating up to 2000MT/s with a resulting bandwidth of up to 8 Gbytes/s and direct Memory Controller

1-4.2 System Chipsets

North Bridge K8T800Pro:

- 8-bit / 200 MHz operation with speed up to 16-bit, 1GHz operation (8 GB/s total bandwidth)
- AGP V3.0 compliant with 8x transfer mode

South Bridge VIA VT8237

- Working with North Bridge, VIA VT8237 supporting the 8X V-Link, LPC Super I/O, PCI interface, ATA133 interface, USB V2.0 interface, Audio interface as well as Serial ATA RAID interface

1-4.3 Memory

2 DDR DIMM 184-pin slots on board for non-ECC Dual Channel DDR 400/333/266 SDRAMs:

- DIMMs to be populated in identical pairs for Dual Channel operation
- Installation of mixed volumes yet same type of DDR SDRAM modules supported .

1-4.4 BIOS

Flash Memory for easy upgrade, and supporting various hardware configuration during booting system (See Chapter 4 BIOS Setup):

- Standard CMOS Features (Times, Date, Hard Disk Type etc.)
- Advanced BIOS Features (Virus Protection, Boot Sequence etc.)
- Advanced Chipset Features (AT Clock, DRAM Timing etc.)
- Power Management Features (Sleep timer, Suspend Timer etc.)
- PNP/PCI Configurations (IRQ Settings, Latency Timers etc.)
- Integrated Peripherals (Onboard IO,IRQ, DMA Assign. etc.)
- SmartDoc Anti-Burn Shield (CPU/System Temp.,Fan speed etc.)
- Frequency/Voltage (CPU clock, Voltage of CPU, DIMM, AGP etc.)

1-4.5 Accelerated Graphics Port (AGP) Interface

AGP Controller embedded on board, supporting:

- 1.5V(8X/4X) power mode only, 1 AGP Slot supported
- 8X 66MHz AD and SBA signaling; AGP pipelined split-transaction longburst transfers up to 2GB/sec.
- AGP 8X/4X supported, AGP V3.0 compliant

1-4.6 AC'97 Audio Codec on board

AC'97 Audio Codec Realtek ALC850 on board

- Supporting 8-channel display of PCM audio output
- 8 channel audio consists of Front-Out, Side Surround-Out, Center-Out, Surround-Back-Out, MIC-In, Line-In, and Front-MIC-In for complete surround sound effect
- SPDIF Out connector integrated in Front Panel supported by ALC850 for digital interface format output
- AC'97 Audio Driver enclosed in Support CD for user's installation

1-4.7 Advanced System Power Management

Advanced Configuration and Power Interface incorporated in BIOS for reducing power consumption :

- ACPI 1.0 compliant (Advanced Configuration and Power Interface)
- APM V1.2 compliant (Legacy Power Management)
- ACPI Suspend function supported
- PS/2 Keyboard & Mouse Wake-up
- Real Time Clock (RTC) with date alarm, month alarm, and century field

1-4.8 IEEE 1394 Interface

The IEEE 1394 Controller, VIA VT6307 chipset on board, providing enhanced PC connectivity for a wide range of devices, including consumer audio/video components, storage peripherals, and other portable devices.

- PCI-bus based open host controller, compliant with IEEE 1394A-2000 standard for high performance serial bus
- Supporting two fully compliant ports with Plug and Play-compatible expansion interface. The IEEE 1394 controller provides up to 400MB/sec transfer rate to fulfill various requirements of any multimedia devices.

1-4.9 Multi-I/O Functions

- PCI EIDE Controller, supporting:
 - 2 ATA 133 / 100 / 66 IDE connectors supporting up to 4 IDE devices
- Dedicated IR Functions:
 - 1x5 IR connector dedicated to IR function with Infrared-IrDA (HPSIR) and ASK (Amplitude Shift Keyed) IR
- Multi-mode parallel data transfer:
 - Standard mode, high speed mode ECP and enhanced mode EPP
- Floppy Drive Connector:
 - 1 FDD connector supporting 1 floppy drive for barebone system
- Universal Serial Bus Transfer Mode:
 - USB V2.0 compliant, 480 Mb/s USB Bus, supporting Windows 98 and later operating systems; USB drivers provided in Support CD for installation
 - 4 built-in USB connectors and 2 more USB pin-headers which require 2 optional USB cables to provide 4 more USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
 - 2 complete serial ports (COM1 & COM2) on board.

1-4.10 SATA / SATA RAID Interface

Serial ATA / RAID Interface supported by VT8237:

- Supporting 2 Serial ATA / SATA RAID connectors for 2 SATA Hard Disks with 150Mb/s transfer rate
- Serial ATA RAID Drivers enclosed in Support CD/Floppy Diskette for user's installation

1-4.11 Hardware Monitor on board

- Hardware Monitor integrated in LPC I/O W83687THF, providing monitoring functions on hardware voltage, temperatures and fan speeds.
- Utility Software Soltek Hardware Monitor for displaying monitor status is enclosed in Support CD for user's installation.

1-4.12 Gigabit Ethernet on board

PCI local bus single-chip Gigabit Ethernet Controller RTL8110S on board:

- Supporting 10/100/1000Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45 LAN Connector

1-4.13 Form Factor

- ATX Power Supply
- Mainboard size: 180mm x 270mm

Chapter 2 Hardware Setup

To Get Things Ready for Hardware Setup !

1. We recommend to install your CPU before any other components. For detailed installation instructions of processor, you can also refer to the pamphlet enclosed in your CPU package.
2. Installing a cooling fan with a good heatsink is a must for proper heat dissipation for your CPU. Get ready an appropriate fan with heatsink for proper installation. Improper fan and installation will damage your CPU.
3. In case CPU Vcore, CPU clock or Frequency Ratio is adjustable on board, please follow the instructions described in the User Manual for proper setup. Incorrect setting will cause damage to your CPU.

The following topics are included in this chapter:

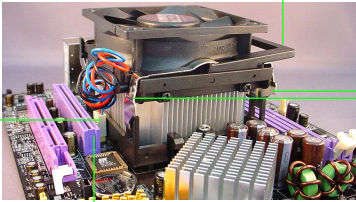
2-1 CPU/CPU cooling Fan Installation on Socket 939	16
2-2 Memory Installation	18
2-3 AGP Slot Installation	19
2-4 IDE Connector Installation	20
2-5 SATA / RAID Connectors	21
2-6 Floppy Drive Installation	22
2-7 ATX Power Supply Installation	23
2-8 Jumper Setting	24
2-9 Other Connectors Configuration	26

2-1 CPU/CPU cooling Fan Installation on Socket 939

This mainboard is designed typically for barebone system in which a CPU cooling fan may also be enclosed along. If you are going to set up the 939-pin CPU into this new barebone system, you have to remove the enclosed cooling fan first.

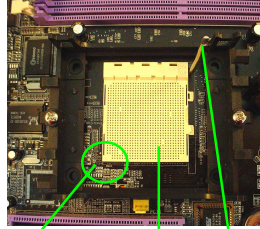
- 1. Remove an onboard Socket 939 cooling fan.

Unplug fan power. Pull up the latch to release buckles.



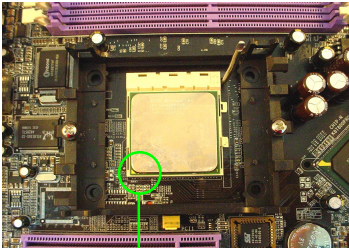
CPU Fan power cable must be set at PCI slot side. Release 4 buckles from Socket.

- 2. Socket 939 being exposed, pull up the lever to release socket lock and insert CPU.



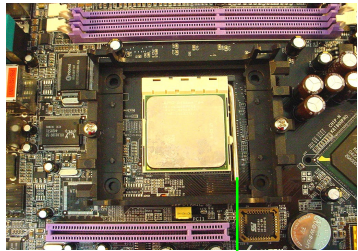
Socket 939 Pin 1 position Socket 939 Lever

- 3. CPU inserted, CPU Pin 1 must be set to Socket 939 Pin 1.



CPU Pin 1 to Socket Pin 1.

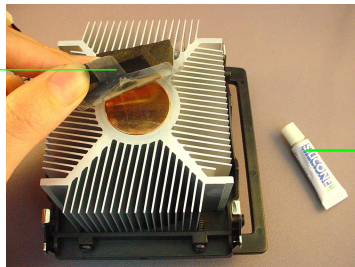
- 4. Now, pull down the Lever to fix down CPU to Socket 939.



Pull down Lever to fix CPU.

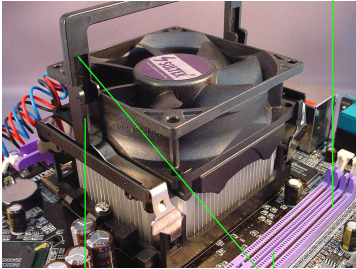
- 5. Install cooling fan into Fan Base now.

First pull away both the pad and the plastic plate on the heat sink.



Second, apply some heat glue either to heat sink or to CPU back.

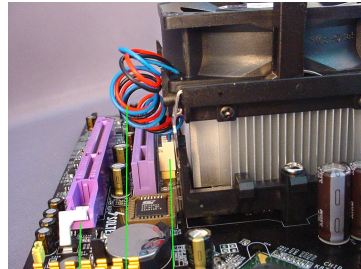
6. Place down the cooling fan into Fan Base.



Support Groove must be facing the DIMM slot side so as to turn down without PCI/AGP card barrier.

The Latch should only be able to turn down this direction.

7. Now connect the Power connector to the onboard CPU Fan connector.



AGP slot

CPU Fan Power connector

Fan Power Cable must be set facing the AGP/PCI side.

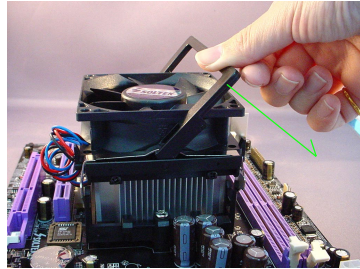
8. Now push 4 buckles into position.



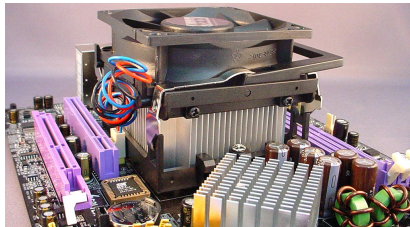
Buckle

Buckle

9. Now press down Latch to a horizontal position



10. The cooling fan is now set up. Check that the Latch, the 4 buckles, and the Power Connector are all in proper position.



2-2 Memory Installation

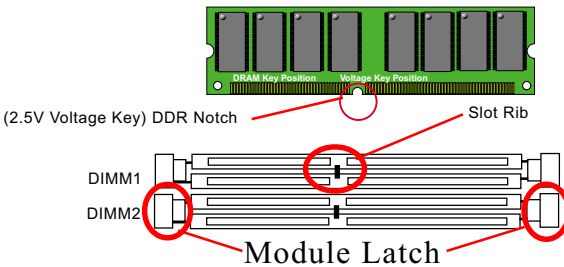
2-2.1 To Install DDR SDRAM Module

- Make sure to unplug your Power Supply before adding or removing memory module. Failure to do so may cause severe damage to both your mainboard and the memory module.
- Pay attention to the orientation of the DIMM slots. Forcing a DIMM in a socket improperly will damage the memory module and slot.
- Make sure you have the right type of memory module for your mainboard.

2-2.2 Dual Channel Memory Features

- Dual Channel Memory Configuration is formed by couple of identical DDR SDRAMs.
- Matched DIMMs need to have identical density, DRAM technology, DRAM bus width, and equal number of memory banks.
- This Mainboard supports up to 2GB unbuffered Dual Channel DDR 400/333/266 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- The dual memory controller can double the DDR memory bandwidth up to 6.4GB/s with DDR400, 5.4GB/s with DDR333 and 4.2GB/s with DDR266.

184-Pin DIMM Notch Key Definition



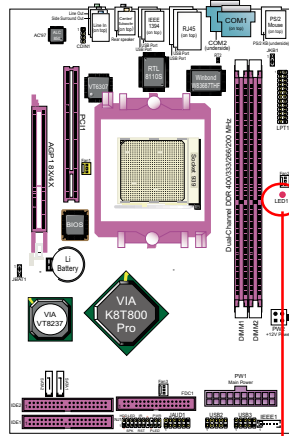
To Boot PC with Dual Channel Memory Configuration
Populate both DIMM1 and DIMM 2 with identical DIMMs

To Boot PC with Single Channel Memory Configuration
Populate DIMM1 with DDR DIMM *to boot system

***Attention: To populate only DIMM2 cannot boot system.**

2-2.3 DIMM Powered on

- LED1 is designed on board to light up as soon as DIMM slots are powered on
- Whenever LED1 lights up, it indicates that DIMMs are powered on and no memory module should be removed from or inserted into the DIMM slot.
- To remove or insert a memory module, LED1 should be off.

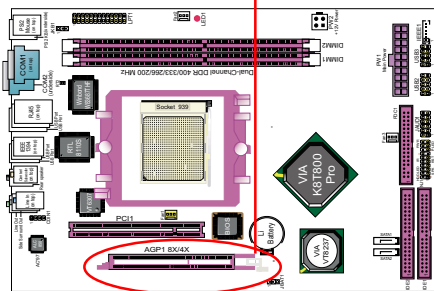
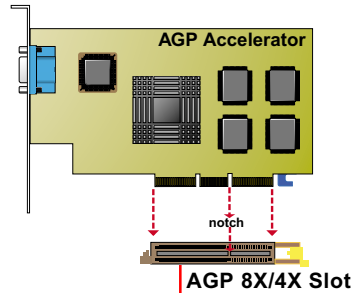


LED1 on to indicate that DIMM slots onboard are powered on.

2-3 AGP Slot Installation

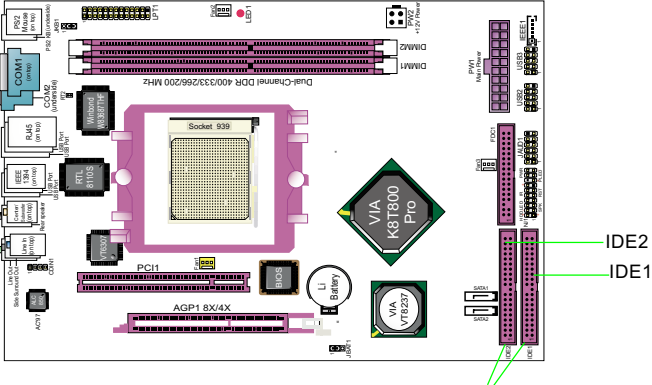
The AGP slot on board supports 1.5V AGP 8X/4X card only. A Rib is specifically added to the 8X/4X slot so as to match the AGP 8X/4X card. To insert a 3.3V AGP 2X card into the AGP 4X slot will damage the system chip and burn the 1.5V circuitry.

An AGP 8X card will support a data transfer rate up to 2GB/sec., while an AGP 4X card will provide 1GB/sec transfer rate.



2-4 IDE Connector Installation

IDE1 and IDE2 are 2 IDE connectors supporting 4 IDE devices for up to 133MB/s data transfer.



Pin 1 (to Red Line of IDE cable)

IDE1/2: ATA IDE connectors
 Orient the red line on the IDE Flat Cable to Pin1.

80-conductor IDE Cable (for 2 IDE devices)

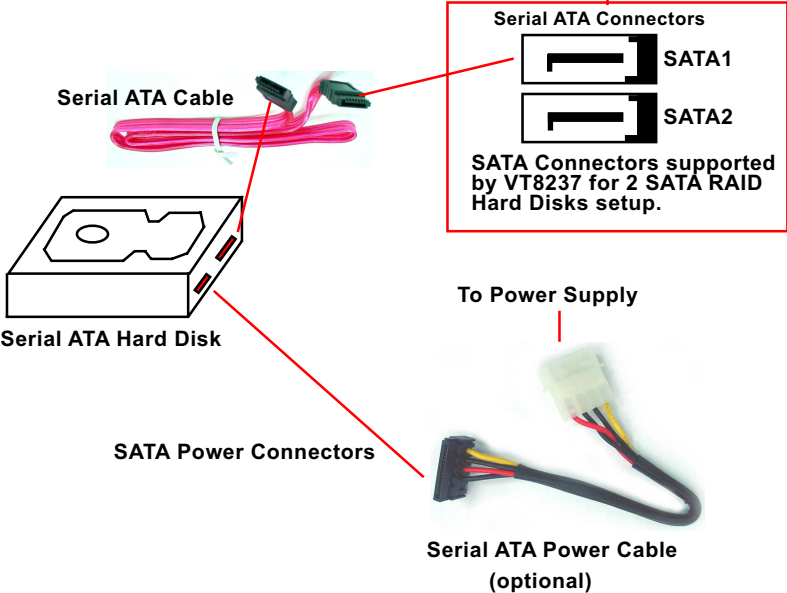
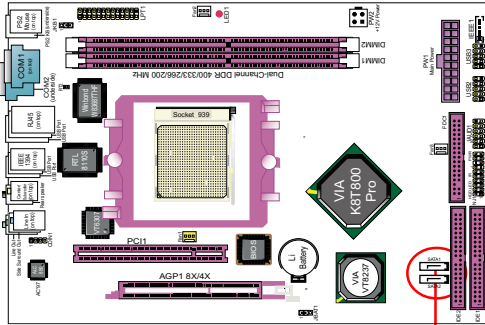
This kind of cable is dedicated for Mini-barebone system because the ribbon is bundled up and will not block the air flow in the barebone cabinet.

80-conductor IDE Cable (dedicated for 1 IDE device)

This kind of cable is dedicated for Mini-barebone system because the ribbon is bundled up and will not block the air flow in the barebone cabinet.

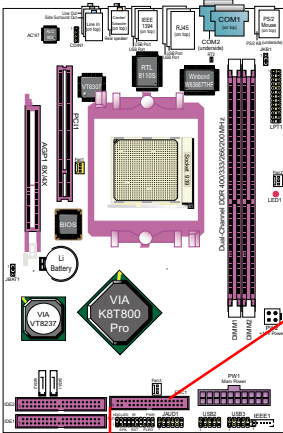
2-5 SATA / RAID Connectors

2 Serial ATA connectors for 2 SATA Hard Disks with RAID mode are supported by the South Bridge VIA VT8237. Please see Chapter 5 Disk Array Installation for detail RAID installaion.



2-6 Floppy Drive Installation

To install FDC on barebone system, you should connect the end with Signal Swap of the floppy drive cable to floppy drive, and connect the other end to the floppy drive connector (FDC) on Mainboard.

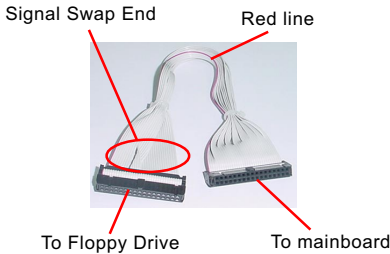


Floppy Drive Connector:
Orient the red line of the Floppy Flat Cable to Pin1.

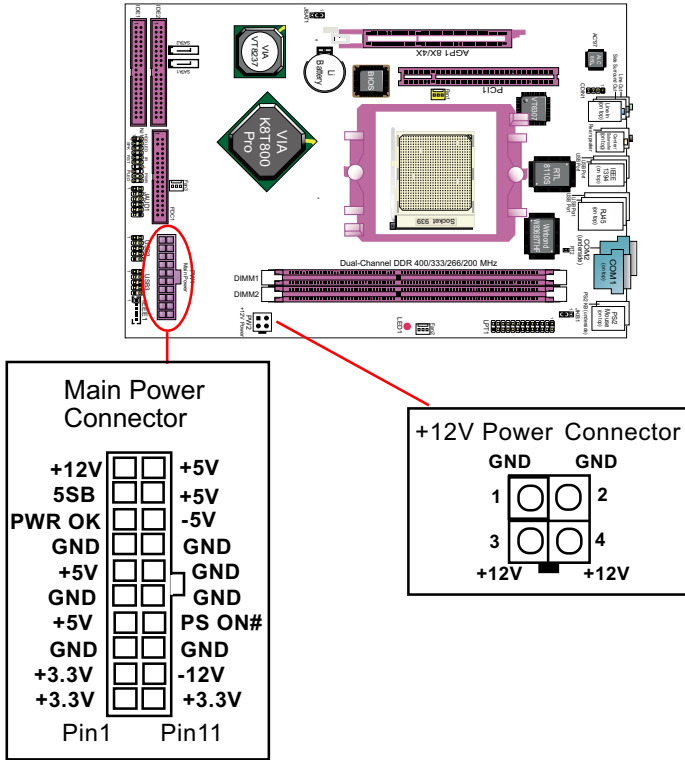
Pin 1 (to Red Line)

34-pin FDC cable (Dedicated for Barebone)

This kind of cable is dedicated for Mini-barebone system because the ribbon can be bundled up and will not block the air flow in the barebone cabinet. A dedicated cable supporting only one floppy drive is dedicated for the Mini-barebone System.



2-7 ATX Power Supply Installation



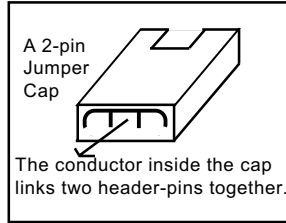
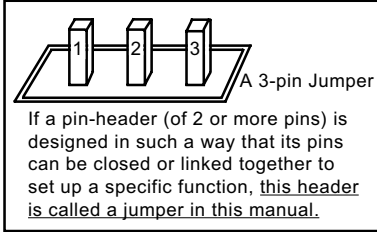
ATX V2.03 Power Supply is strongly recommended for mainboard running with this mainboard.

To set up Power Supply on this mainboard:

1. Connect the on-board Main Power Connector (20-pin) to the Main Power Connector (20-pin) of an ATX Power Supply which can be of the latest version 2.03 model, and then connect the square-shaped +12V Power Connector on board to the square-shaped +12V Power Connector of the Power Supply.
Warning: Both the Main Power Connector and the +12V Power Connector should be connected to Power Supply; otherwise, the system may either not start or be damaged.
2. This ATX Power Supply should be able to provide at least 720mA/ +5V standby power for Wake On Lan function.

2-8 Jumper Setting

2-8.1 How to tackle the Jumpers:



- A Jumper is usually but not necessarily given a “JpX” legend.
- In the Jumper setting diagram, all jumper pins covered with black marks stand for closed pins with jumper cap.





- Do not remove any jumper cap when power is on. Always make sure the power is off before changing any jumper settings. Otherwise, mainboard could be damaged.

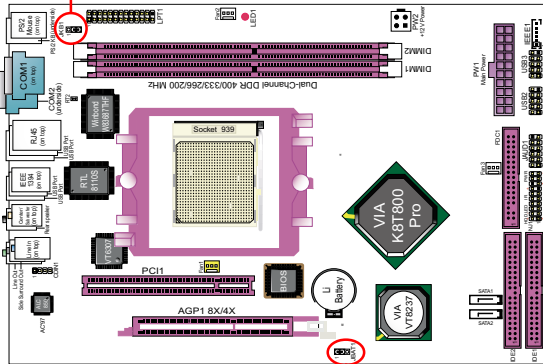
The following diagrams show the locations and settings of jumpers on the mainboard.

2-8.2 JKB1: Keyboard/Mouse Wake-up

JKB1 is designed to enable / disable the PS/2 Keyboard or PS/2 Mouse Wake-up (from suspend mode). Setting JKB1 to 1-2 closed will disable this function while setting JKB1 to 2-3 closed will enable this function.

Yet users still have to choose the KB/ Mouse Wake-up mode in BIOS setup. USB KB/Mouse Wake-up is optionally supported on this mainboard.



JKB1 Keyboard/Mouse Wake-up	
1 	2-3 closed Enabled (default)
1 	1-2 closed Disabled



2-8.3 JBAT1: Clear CMOS

When you have problem with rebooting your system, you can clear CMOS data and restore it to default value. To clear CMOS with Jumper JBAT1, please follow the steps below:

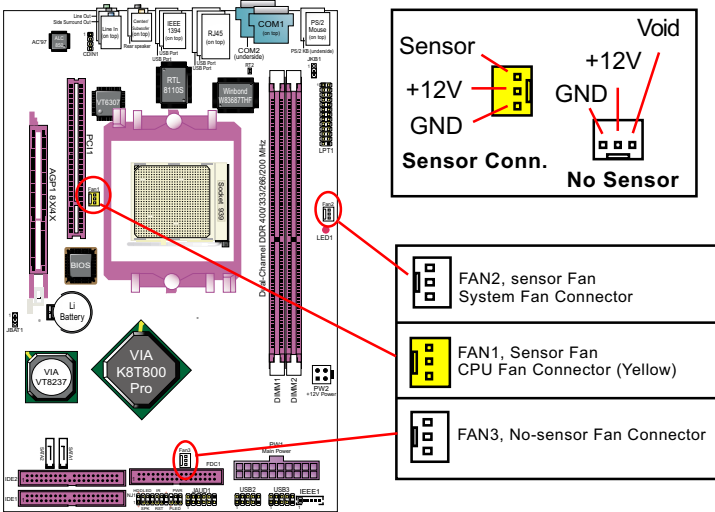
1. Power off system.
2. Set JBAT1 to Pin 2-3 closed.
3. After 2 or 3 seconds, return the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default. Remember never clear CMOS when system power is on.

JBAT1 Clear CMOS	
1 	1-2 closed (default) To hold data
1 	2-3 closed To clear CMOS

2-9 Other Connectors Configuration

This section lists out all connectors configurations for users' reference.

2-9.1 On-board FAN Connectors



- FAN1: Sensor Fan Power connector for CPU cooling Fan
- FAN2: Sensor Fan Power connector for System cooling Fan
- FAN3: No-sensor Fan Power connector for other onboard device

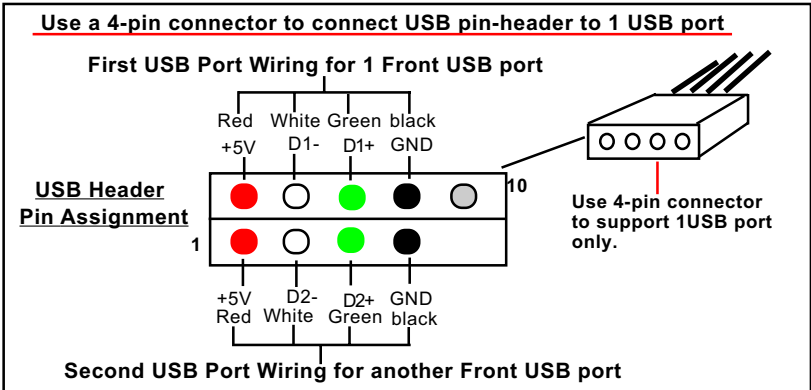
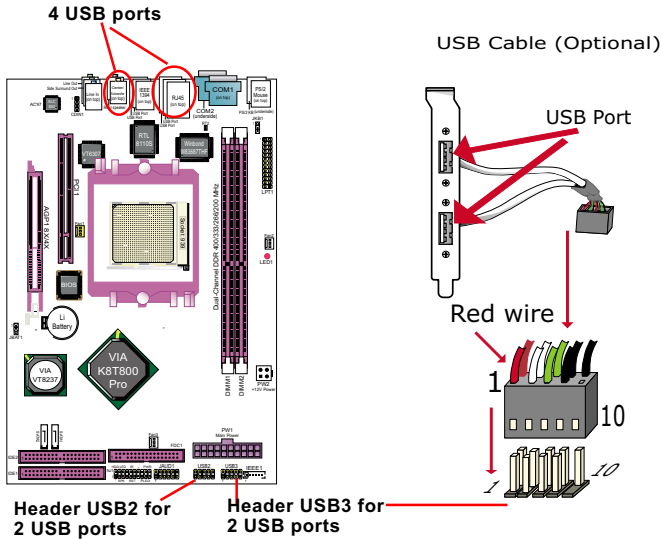
A running Fan will send out 2 electric pulses per rotation of its fan blade. A Sensor Fan Connector will count the electric pulses and send the information to the System Hardware Monitor which in turn will work out the fan rotation speed and display it on screen.

2-9.2 USB Ports and USB Pin-headers

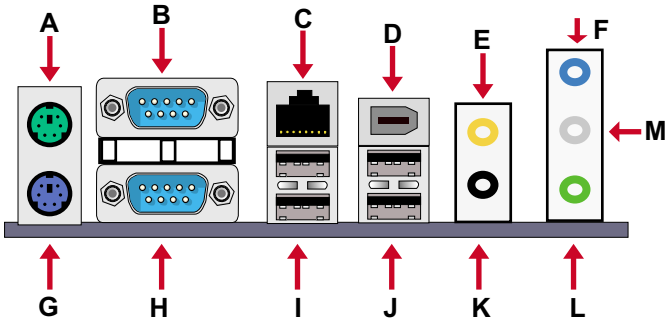
This series provides 4 USB ports on board supporting various USB devices. In addition, 2 USB pin-headers are added on board to provide expansion of 4 more optional USB ports by using 2 additional USB Cables. User can order the optional USB cables from your mainboard dealer or vender.

When plugging the USB cable to USB Header, users must make sure the red wire is connected to Pin 1.

All 8 USB ports are compliant with 1.0 / 2.0 USB Bus. USB 2.0 supports Windows 98 and above. USB 1.0 / 2.0 drivers are provided in Support CD for user's installation.

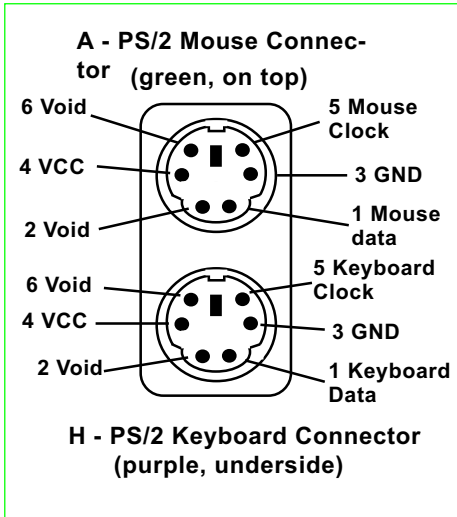


2-9.3 Back Panel Connectors



- | | |
|------------------------|--------------------------------|
| A : PS/2 Mouse | G : PS/2 Keyboard |
| B : COM1 | H : COM2 |
| C : RJ45 | I : 2 USB ports |
| D : IEEE 1394A | J : 2 USB ports |
| E : Center / Subwoofer | K : Rear Speaker-out |
| F : Line In | L : Line Out/Front Speaker Out |
| | M : Side Surround Speaker Out |

2-9.4 PS/2 Mouse , PS/2 Keyboard



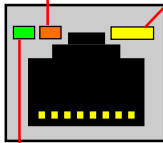
2-9.5 RJ45 Connector

One RJ45 connector is on board for LAN connection, supporting 10/100/1000Mb data transfer.

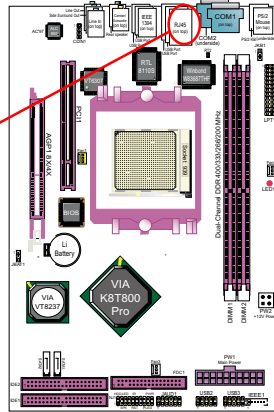
Orange LED blinks to indicate that data transmission is undergoing in 1000 Base T mode.

Yellow LED "On" to indicate Network hub is in connection with the system.

F (in Back Panel):

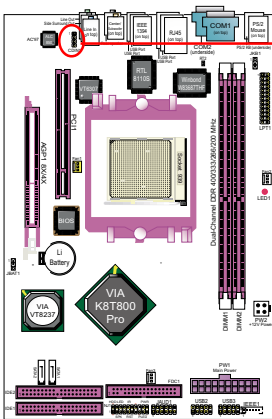


Green LED blinks to indicate that data transmission is undergoing in 10/100 Base T mode.



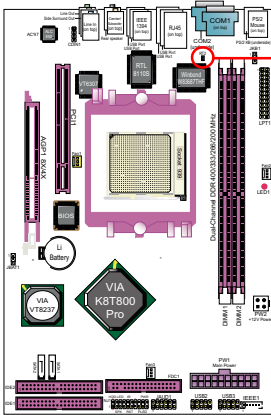
2-9.6 CD-ROM Audio Connectors (CD_In1)


CD-In1 is an audio connector connecting CD-ROM audio to mainboard.



CD-ROM Audio Connector	
1	CD-In1
	Pin Signal
Pin 1	Left Channel
Pin 2	GND
Pin 3	GND
Pin 4	Right Channel

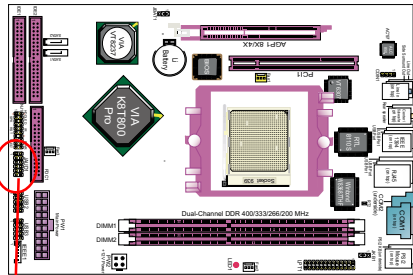
2-9.7 Thermal Detector



 RT2
RT2 is mounted with Thermal Detector by default for detecting system temperature.

2-9.8 JAUD1: External Audio Connector

External Audio Out Connector supports Front Panel S/PDIF Output, Front Panel Mic-In and Front Panel Line-out. This External Audio-out Connector requires an S/PDIF Audio Cable to connect itself to Front Panel Audio Connectors.



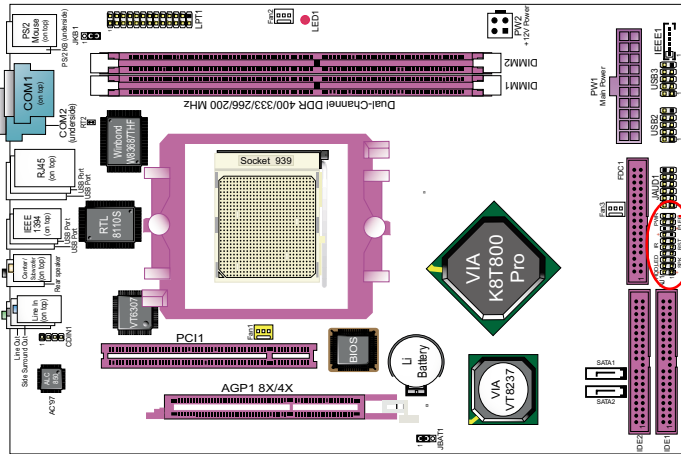
Audio-out Pin Assignment

1	●	2
	●	
	●	
	●	
	●	
	●	
11	●	12

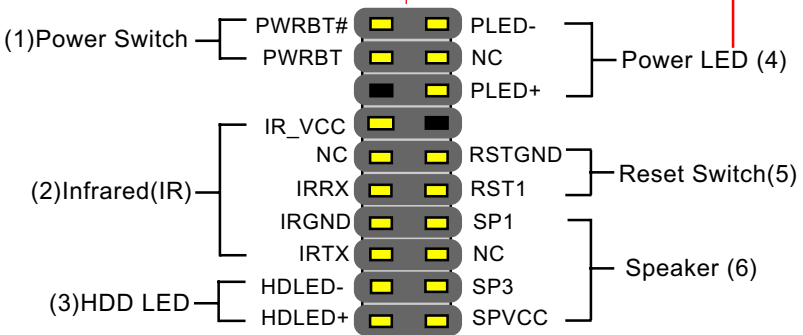
Pin 1 Reserved	Pin 2 GND
Pin 3 GND	Pin 4 +5V
Pin 5 +5V	Pin 6 SPDIF OUT
Pin 7 MIC IN	Pin 8 +5VA
Pin 9 LINE IN R	Pin10 GNDA
Pin11 LINE IN L	

2-9.9 Complex Pin-header (Front Panel Connectors)

This complex Pin-header consists of the following connectors for various front panel supports. When you have fixed the mainboard to the case, join the connectors of this Complex Pin-header to the case Front Panel.



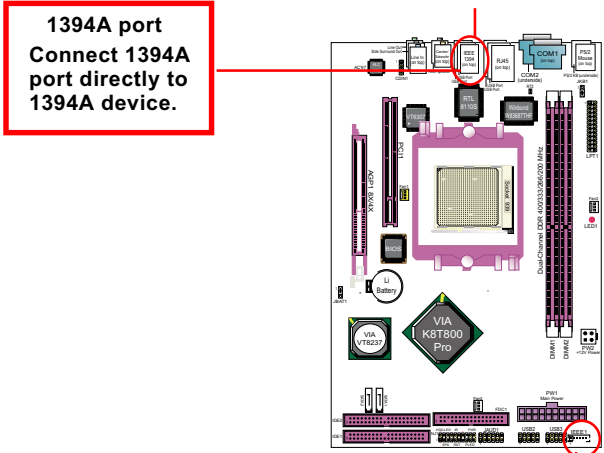
Connect these connectors to PC Front Panel.



2-9.10 IEEE 1394a Port/Pin-header

1394A Interface, with VT6307 Open Host Controller on board, supporting 2 x 1394A serial ports:

- Each 1394A port supporting 400/200/100 Mbits transfer rate.



IEEE1 : 1394A connector

Pin Assignment

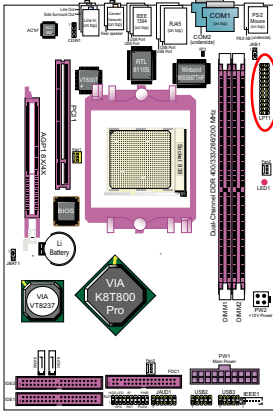
Pin	Assignment
1	BPWR(+12V)
2	GND
3	TPB(0/1/2)-
4	TPB(0/1/2)+
5	TPA (0/1/2)-
6	TPA (0/1/2)+



IEEE1394 Cable (optional)

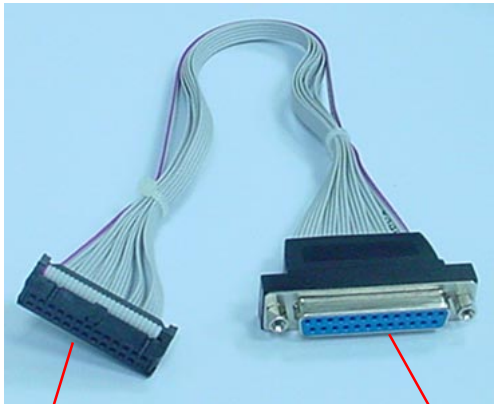
2-9.11 Printer Port: LPT1

LPT1 is a parallel printer port.



**LPT1: Printer Port
Pin Assignment**

Pin 1	STROBE#	1	14	Pin 14	AUTOFD#
Pin 2	LPTDD0	●	●	Pin 15	ERROR#
Pin 3	LPTDD1	●	●	Pin 16	INITA#
Pin 4	LPTDD2	●	●	Pin 17	SLCTIN#
Pin 5	LPTDD3	●	●	Pin 18	GND
Pin 6	LPTDD4	●	●	Pin 19	GND
Pin 7	LPTDD5	●	●	Pin 20	GND
Pin 8	LPTDD6	●	●	Pin 21	GND
Pin 9	LPTDD7	●	●	Pin 22	GND
Pin 10	ACK#	●	●	Pin 23	GND
Pin 11	BUSY	●	●	Pin 24	GND
Pin 12	PE	●	●	Pin 25	GND
Pin 13	SLCT	13	26	Pin 26	Key



To Printer Connector
on board

To Printer

Printer Cable (optional)

Chapter 3 Software Setup

Drivers, Utilities and Software Installation

Support CD:

This mainboard will be shipped with a Support CD which contains those necessary driver files, Application Softwares and some helpful utilities. It is a user-friendly, auto-run CD which will open itself up in a CD-ROM automatically.

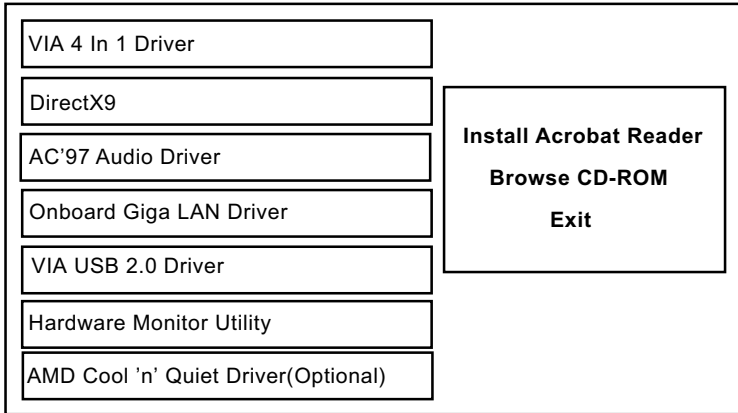
This chapter is devoted to describing the installations of all these essential drivers and utilities on Windows 98SE, Windows ME, Windows 2000 and Windows XP. The installation procedures for all these operating systems are programed into an auto-run mode. What users have to do is read and follow the pop-up instructions. We therefore take the installation on Windows XP as the general illustration hereby.

The priority of driver installation should also be noted. Users are recommended to take the following installation order:

- 3-1 To Open Up Support CD: 35**
- 3-2 VIA 4-IN-1 Drivers Installation 36**
- 3-3 DirectX 9 Installation 38**
- 3-4 AC'97 Audio Driver Installation 40**
 - 3-4.1 Installing AC'97 8-channel Audio Driver 40
 - 3-4.2 Verifying 8-channel Audio 41
- 3-5 To Install RTL8110S Gigabit Ethernet Drivers 43**
- 3-6 USB 2.0 Driver installation 44**
- 3-7 Install Hardware Monitor Utility 46**
 - 3-7.1 Installation 46
 - 3-7.2 Verification 47
- 3-8 RAID Driver Installation 47**
- 3-9 Install AMD 64 CPU Quiet Driver 48**

3-1 To Open Up Support CD:

1. Please put the Support CD enclosed in your mainboard package into the CD-ROM drive. In a few seconds, the Main Menu will automatically appear, displaying the contents to be installed for this series:

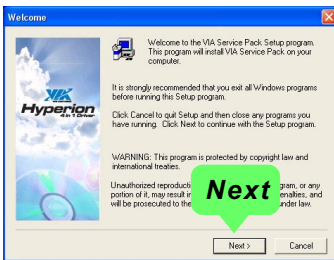


2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:
D:\Autorun.exe (assuming that your CD-ROM Drive is Drive D)
3. We recommend that drivers installation should be started from top to bottom of main menu.
4. Drivers may be updated from time to time in our web site. If you are installing a newer driver than the one illustrated in this chapter, please be aware that the illustration pictures might be different.

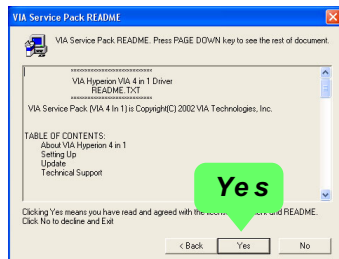
3-2 VIA 4-IN-1 Drivers Installation

1. Following the procedures of opening the Support CD, click to “VIA 4-in-1 Drivers” to proceed.

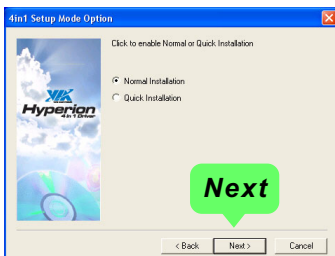
2. The VIA Service Pack InstallShield Wizard will pop up to guide you to the VIA Service pack installation. Click “Next” button to continue.



3. “VIA Service Pack README” screen will appear, please click the “Yes” button to agree with the Licence Agreement and continue.

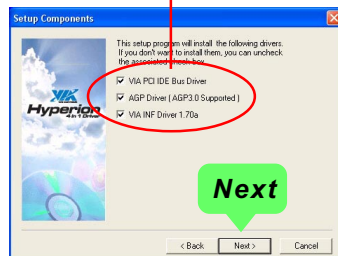


4. On the screen below, check “Normally Install” and click “Next” to continue. (If you check “Quick Install”, you will skip the detailed procedures of the VIA 4-in-1 Setup.)

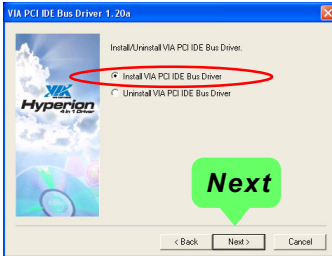


5. Select the checkbox as below and click “Next” to continue:

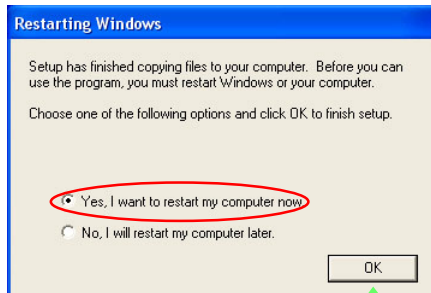
- VIA PCI IDE Bus Driver
- AGP Driver (AGP 3.0 Supported)
- VIA INF Driver 1.90b



6. Select “Install VIA PCI IDE Driver” checkbox, then click the “Next” button to continue.
7. Select “Install VIA AGP Driver” checkbox, then click the “Next” button to continue.



8. After all these setup procedures have finished, you should restart your computer by clicking on “OK” so as to put VIA 4-in-1 drivers into effect and proceed to next driver installation.

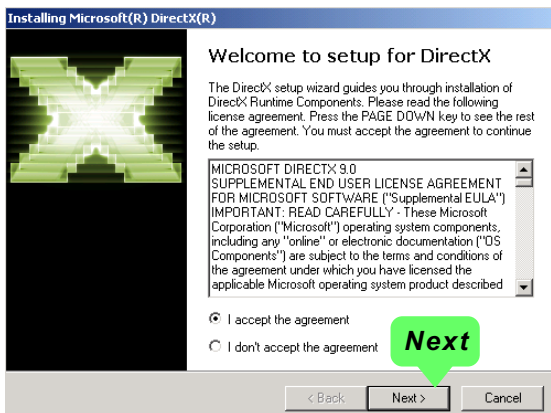


OK

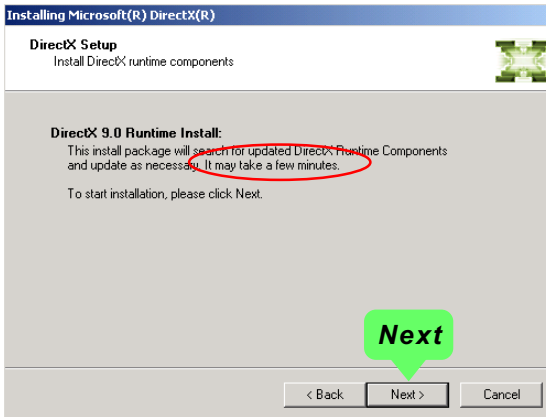
3-3 DirectX 9 Installation

DirectX 9 supports operating systems Windows 98SE/ME/2000/XP for a better 3D display. Whenever the OS is not integrated with DirectX 9, DirectX 9 installation is recommended.

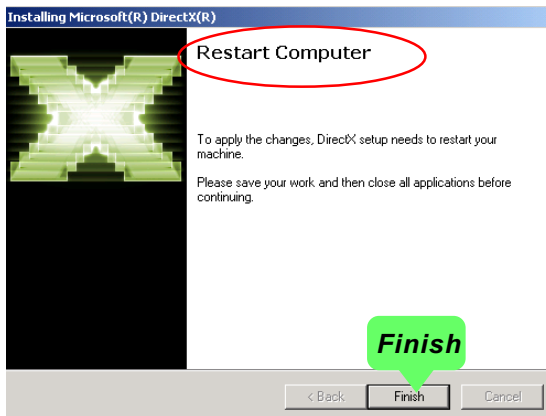
1. Following the procedures of opening the Support CD, click on the Main Menu “DirectX9” bar to proceed.
2. Instantly the “Installing Microsoft DirectX” screen will pop up on screen. Click “Next” to continue.



3. Instantly, next screen DirectX 9.0 Runtime Install screen will pop up to prompt you to continue. Click “Next” button to continue.



4. The Setup Program will then guide you through the whole driver setup until the “Restart Computer” screen appears to prompt you to restart your system. Please click “Finish” button to restart system to put the new driver into effect.



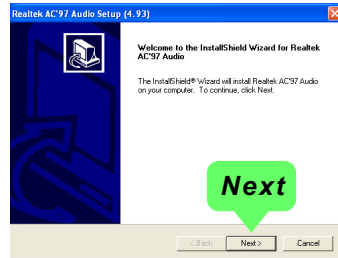
3-4 AC'97 Audio Driver Installation

RTL ALC850 8-channel AC97 Audio Codec on board, AC'97 2.3 compatible stereo audio code for PC multimedia systems. AC'97 Audio Codec Driver is provided in Support CD for user's installation.

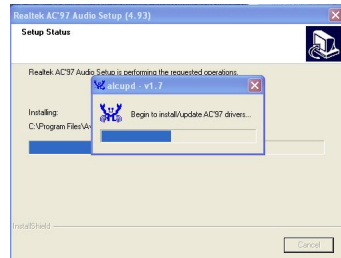
3-4.1 Installing AC'97 8-channel Audio Driver

1. Following the procedures of opening the Support CD, click to "AC'97 Audio Driver" to proceed.

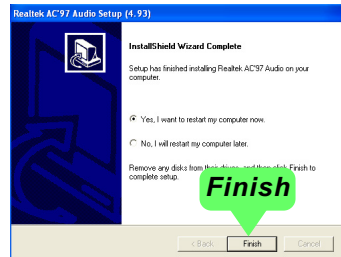
2. Instantly, the "installShield Wizard" screen appears to guide you through the "AC'97 Audio Setup".



3. instantly, the Setup program proceeds to install the softwares. (If you want to stop setup, click the "Cancel" button.)



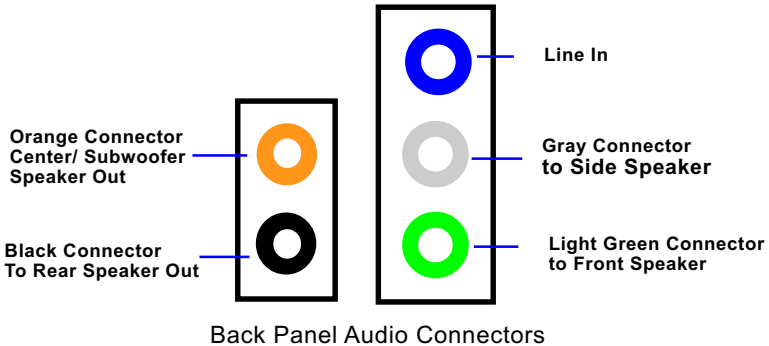
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finish" to restart your system.



3-4.2 Verifying 8-channel Audio

After installation of AC'97 8-channel Codec, you must configure the 7.1 Speaker connection to enable the 8-channel audio.

1. Connect your on-board Audio Connector to your 8-channel speakers as depicted in the figure below:

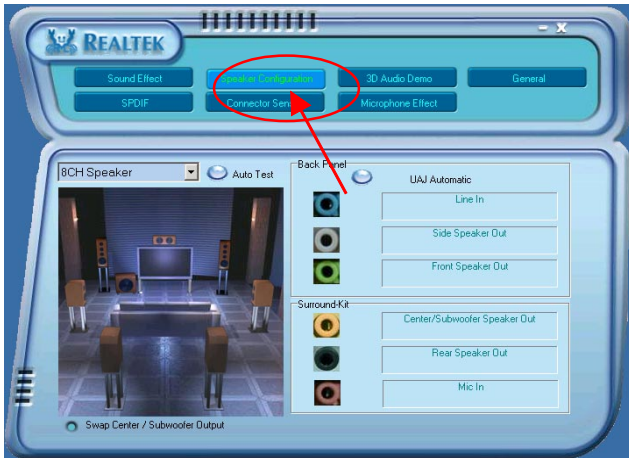


2. After Connection is done, start your Windows system and double click the Sound manager icon to enter 8-channel configuration:



Sound Effect
Manager icon on
Windows XP

3. The "AC'97 Audio Configuration" screen will pop out. Click the "Speaker Configuration" bar with your mouse.



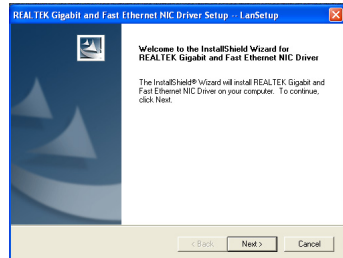
4. Instantly, the "Speaker Configuration" screen will pop out. Pick the items "8-channelSpeaker" and then click on the Auto Test button. Instantly, the Speaker Auto-test starts until all speakers installed are tested.



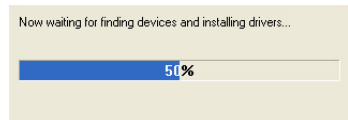
3-5 To Install RTL8110S Gigabit Ethernet Drivers

RTL8110S Gigabit LAN driver for Windows 98/ME / 2000 / XP. After restarting system, click on the Onboard Giga LAN Driver to start setup.

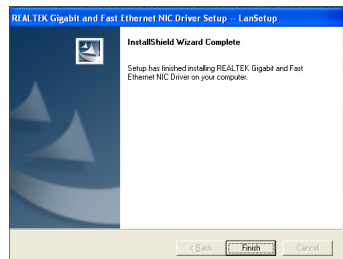
1. Instantly, the InstallShield Wizard pop out. Click Next to continue.



2. Next, the program starts to copy files.



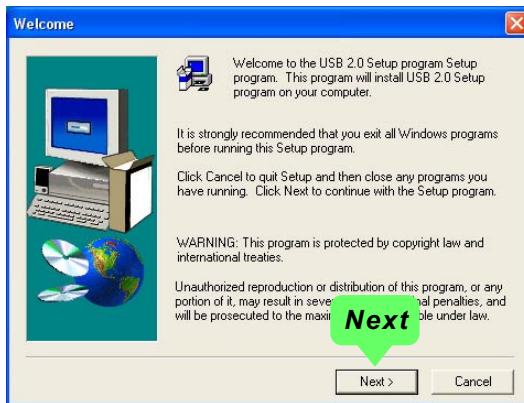
3. In a few seconds, setup completes. Restart system and complete setup.



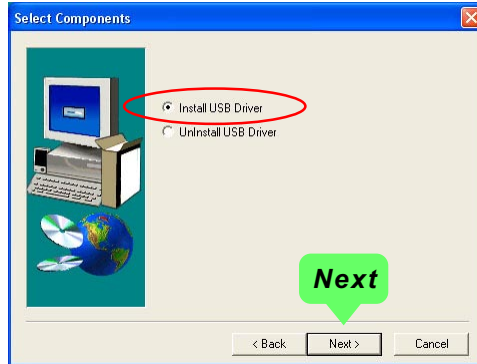
3-6 USB 2.0 Driver installation

VIA USB V2.0 is already integrated on board. Its 480Mb/s transfer rate supports operating systems Windows 98SE/ME/2000/XP. USB2.0 Driver is typically for Windows 98SE/ME. For Windows 2000/XP, users can install their latest Service Pack instead of the USB2.0 driver to gain the USB2.0 support. For the Windows system which is not installed with its latest Service Pack, users must install the USB2.0 driver to activate the USB2.0 support:

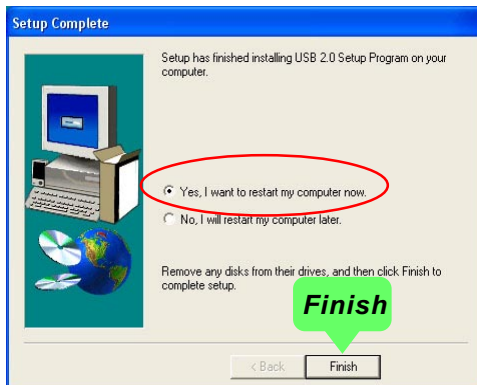
1. Following the procedures of opening the Support CD, click to choose “VIA USB 2.0 Driver” to proceed. Please notice that the USB card driver is different from the USB 2.0 driver typically for the on-board USB. Do not use the USB card driver here.
2. Instantly the “USB 2.0 Setup Program” will pop up on screen. Click “Next” to continue.



3. Instantly, next screen will pop up to prompt you to select component. Select "Install USB Driver" and click "Next" button to continue.



4. The USB 2.0 Setup Program will then guide you through the whole driver setup until the "Finish" screen appears to prompt you to restart your system. Please click "Finish" button to restart system to put the new driver into effect.



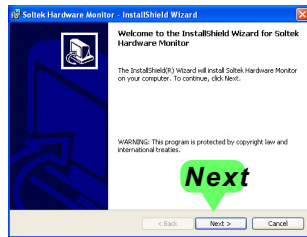
3-7 Install Hardware Monitor Utility

3-7.1 Installation

Hardware Monitor is built on this mainboard. Its installation is programmed to a fully automated mode on Windows 9X/Me/NT4/2000/XP. Users can follow the model installation below for its installation on various Windows System.

1. Following the procedures of opening the Support CD, click to “Hardware Monitor Utility” to proceed.

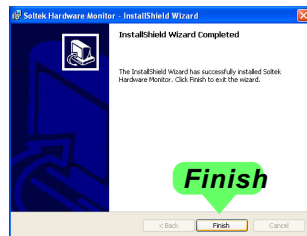
2. The Soltek Hardware Monitor InstallShield Wizard will pop up to guide you to the Intel Service pack installation. Press “Next” button to continue.



3. The **InstallShield Wizard** screen will show the current setting, please click the “Install” button to continue.



4. After all the setup process is finished, click “Finish” to exit the wizard.



3-7.2 Verification

1. After installing Soltek Hardware Monitor, double click "SoltekHM" icon on the desktop to open the main window of the Soltek Hardware Doctor.



2. Then the pop-up screen will show all information about CPU Temperature, Fan Speed and various Voltages.

 The screenshot shows the Soltek Hardware Monitor software interface, which is designed to look like a futuristic car dashboard. The interface is divided into several sections:

- TEMPERATURE:** Displays CPU Die (34), RT1 (42), and RT2 (35).
- FAN TACHOMETER:** Shows Fan 1 speed at 1418.
- VOLTAGE:** Lists CPU Voltage (1.076), AGP Voltage (1.504), DIMM Voltage (2.592), 3.3V (2.264), and 5V (5.022).
- Other:** Shows VSB (4.241) and Battery (7.022).

 A central 'SOLTEK' button is highlighted with a callout box that says 'Click on "Soltek" button to display the function menu.' Below the button is a 'Status Warning LED' indicator. A context menu is open over the button with options: 'About SoltekHM', 'Hide', and 'Exit'.

Showing the temperature(s), the function of which is supported by the mainboard.

Showing the Fan Speed(s) that is supported by the mainboard.

Click on "Soltek" button to display the function menu.

Showing the Voltage(s) that is supported by the mainboard.

Status Warning LED

*Note: Not all items or functions showing in the above picture will show up. Only those items or functions that are supported by the mainboard will reveal themselves in the above screen.

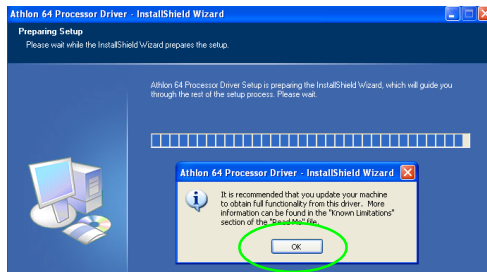
3-8 RAID Driver Installation

For SATA RAID Driver Setup, please refer to Chapter 5 for further detailed installation guide.

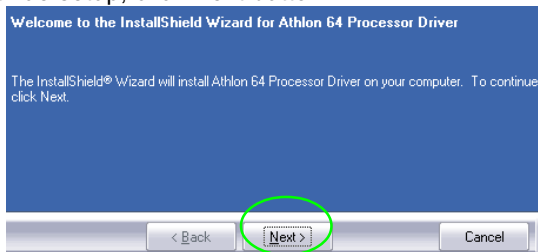
3-9 Install AMD 64 CPU Quiet Driver

AMD 64 CPU Cool and Quiet Driver is provided in Support CD for improving AMD 64 CPU performance in Windows XP system.

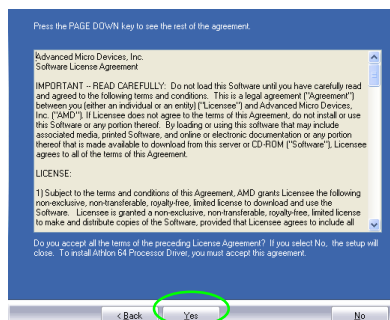
1. Click on the Main Menu of the Support CD “AMD Cool ‘N’ Quiet Driver” to start installing the AMD 64 CPU driver.
2. Instantly, the InstallShield Wizard screen appears, prompting you to read the “Known Limitations” and “Read Me” during Setup. Click OK button to continue.



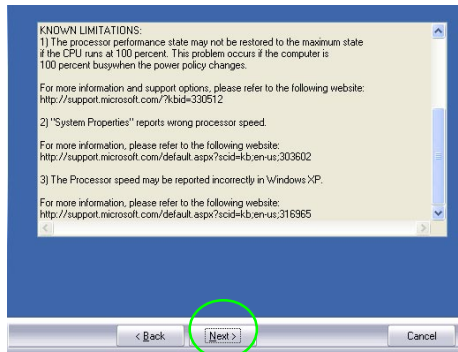
3. To continue setup, click Next button.



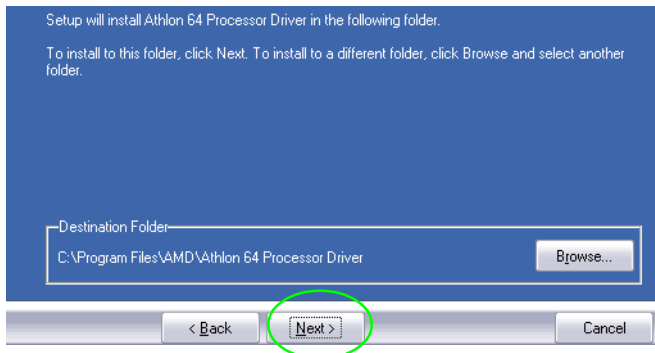
4. Next, click on Yes to agree to the License Agreement and continue.



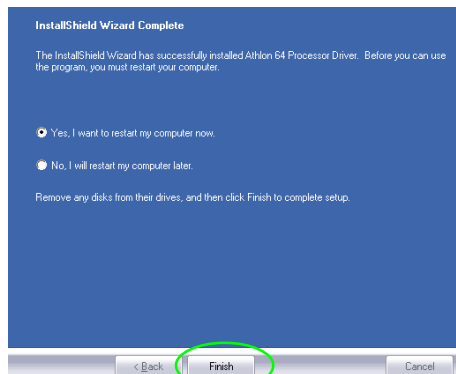
5. Read the Known Limitations information and click Next button to continue.



6. Click Next button to continue.



7. In a few seconds, setup completes. Select Restart system now and click Finish button to restart system and complete setup.



Chapter 4 BIOS Setup

THE BIOS

BIOS stands for Basic Input and Output System. It was once called ROM BIOS when it was stored in a Read-Only Memory(ROM) chip. Now manufacturers would like to store BIOS in EEPROM which means Electrically Erasable Programmable Memory. BIOS used in this series of mainboard is stored in EEPROM, and is the first program to run when you turn on your computer.

BIOS performs the following functions:

1. Initializing and testing hardware in your computer (a process called "POST", for Power On Self Test).
2. Loading and running your operating system.
3. Helping your operating system and application programs manage your PC hardware by means of a set of routines called BIOS Run-Time Service.

This Chapter includes the following topics :

4-1 About BIOS Setup

4-2 To run BIOS Setup

4-3 About CMOS

4-4 The POST (Power On Self Test)

4-5 To upgrade BIOS

4-6 BIOS Setup

Attention: The BIOS Setup is subject to constant update without further notice to users. It is necessary for users themselves to update onboard BIOS with the latest BIOS version provided in our web site:
<http://www.soltek.com.tw>

4-1 About BIOS Setup

BIOS setup is an interactive BIOS program that you need to run when:

1. Changing the hardware of your system. (For example: installing a new Hard Disk etc.)
2. Modifying the behavior of your computer. (For example: changing the system time or date, or turning special features on or off etc.)
3. Enhancing your computer's behavior. (For example: speeding up performance by turning on shadowing or cache)

4-2 To Run BIOS Setup

First access BIOS setup menu by pressing < DEL > key after "POST" is complete (before OS is loaded). BIOS will then display the following message:

```
Press "DEL" to enter "SETUP"
```

4-3 About CMOS

CMOS is the memory maintained by a battery. CMOS is used to store the BIOS settings you have selected in BIOS Setup. CMOS also maintains the internal clock. Every time you turn on your computer, the BIOS Looks into CMOS for the settings you have selected and configures your computer accordingly. If the battery runs out of power, the CMOS data will be lost and POST will issue a "CMOS invalid" or "CMOS checksum invalid" message. If this happens, you have to replace the battery and do some proper settings in BIOS Setup.

4-4 The POST (PowerOn SelfTest)

POST is an acronym for Power On Self Test. This program will test all things the BIOS does before the operating system is started. Each of POST routines is assigned a POST code, a unique number which is sent to I/O port 080h before the routine is executed.

4-5 To Upgrade BIOS

- System BIOS is incorporated into a Flash memory component. Flash BIOS allows user to upgrade BIOS without the need to replace an EPROM component.
- The Upgrade Utility can be loaded on a floppy diskette to execute saving, verifying, and updating the system BIOS. The Upgrade Utility can also be run from a hard disk drive or a network drive.

4-5.1 Before Upgrading BIOS

- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (AWDFLASH.EXE) to a bootable floppy disk so that you can reinstall the BIOS when needed.

4-5.2 Upgrade Process

- Normally, to upgrade BIOS is unnecessary if the system is working fine. Users should only upgrade the BIOS when you experience incompatible problems or need to create new features.
- “AWDFLASH.EXE” is a Flash EPROM Programming utility that updates the BIOS by uploading a new BIOS file to the programmable flash ROM on the mainboard. This program only works in **DOS environment, the utility can not be executed in Windows 95/98, ME, NT, WINDOWS 2000 or Windows XP environment.**
- Please follow the steps below for upgrading the system BIOS:

Step 1. Please visit the board maker’s website, download the zip file which contains the latest BIOS file and Award Flash Utility “AWDFLASH.EXE”. After unzipping, the BIOS file format will be *.bin, of which “*” stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and Award Flash Utility “AWDFLASH.EXE” into the diskette.

Step 3. Insert the diskette into drive A, reboot your system and boot from the diskette.

Step 4. Type `awdf flash *.bin /sn/py/cc` and then press <Enter> to run BIOS upgrade program. (*.bin depends on your mainboard model and version code. Instead of typing "*", you should type specific file name for your specific mainboard).

Step 5. Please press <F1> or <F10> to exit or reset your system.

Warning! If the message "**Write Fail**" appears while AWARD "FLASH MEMORY WRITER" is verifying Flash memory, please retry the process. Please DO NOT turn off the system before updating the BIOS successfully.

Step 6. At rebooting system, press to run CMOS setup utility, then reload "LOAD SETUP DEFAULTS" or "**Load Optimized Defaults**" and save this change.

The parameters of AWDFLASH.EXE

/sn: No original BIOS backup

/py: Program flash memory

/cc: Clear CMOS data (and update data automatically) after programming

NOTE: Users can type AWDFLASH /? to get further details about the parameters. Incorrect usage of the parameter will damage the BIOS information, so we strongly recommend users to leave parameters alone unless you fully understand their function.

BIOS Update Illustration: ([Taking K8AV2008.bin as a BIOS file example](#))

- (1) Executing the “awdf flash.exe k8AV2008.bin” in DOS system, Award Flash Memory Writer Start Screen appears: To input BIOS file name.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 File Name to Program : K8AV2008.BIN
Message: Input the (BIOS) file name

- (2) Press Y if you want to back up your old BIOS,. Otherwise, press N to go on without saving.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 File Name to Program : K8AV2008.BIN
Message: Do You Want To Save BIOS (Y/N)

- (3) Press Y to write the latest BIOS into system.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 File Name to Program : K8AV2008.BIN
Message: Press “Y” to Program or “N” to Exit

(4) Updating is in progress. Do not turn off power at this moment.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 Flash Type - SST 39SF020 /5V File Name to Program : k8av2008.bin Writing Flash Memory - 0FE00 OK ████████████████████████████████████████ Write OK No Update Write Fail
Warning: Don't Turn Off Power Or Reset System !

(5) When the process is complete, remove the Floppy Diskette and press F1 to restart the system to put the new BIOS into effect.

AwardBIOS Flash Utility V8.24F (C)Phoenix Technologies Ltd. All Rights Reserved
For K8T800-8237-6A7L0SAAC-00 Date: 09/18/2003 Flash Type - SST 39SF020 /5V File Name to Program : k8av2008.bin Flashing Complete Remove Floppy Diskette & Hit <F1> to Continue ████████████████████████████████████████ ████████████████████████████████████████ Write OK No Update Write Fail
F1 Reset

4-6 BIOS SETUP --- CMOS Setup Utility

Warning and Tips: If changing CMOS Configuration causes difficulty in rebooting system, you can take the following measures:

1. At pressing the power button to reboot, press the “Insert” key at the same time. As soon as the screen displays the booting message, release the “Insert” key and press “Delete” key to enter CMOS Setup Utility . Then choose the “Load Optimized (Optimal) Defaults” menu to restore the default values for a new start. Or,
2. Open your machine cabinet and clear CMOS with jumper setting. Please refer to the Jumper Setting Section of this User manual.

4-6.1 CMOS Setup Utility

This mainboard comes with the AWARD BIOS from AWARD Software Inc. Enter the CMOS Setup Utility Main Menu by:

1. Turn on or reboot your system. After a series of diagnostic checks, the following message will appear:

PRESS TO ENTER SETUP

2. Press key and the main program screen will appear as follows.

Phoenix - AwardBIOS CMOS Setup Utility

<ul style="list-style-type: none">▶ Standard CMOS Features▶ Advanced BIOS Features▶ Advanced Chipset Features▶ Integrated Peripherals▶ Power Management Setup▶ PnP/PCI Configurations▶ SmartDoc Anti-Burn Shield	<ul style="list-style-type: none">▶ Frequency/Voltage ControlLoad Optimized DefaultsSet Supervisor PasswordSet User PasswordSave & Exit SetupExit Without Saving
Esc: Quit F10: Save & Exit Setup	↑↓←→ : Select Item
Time, Date, Hard Disk Type...	

3. When one main item of the Main Menu is chosen and clicked on, its submenu will appear to display the related items and options. On the other hand, a list of operation guide will appear at the end of the submenu as below:

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

- (1) Use the arrow keys on your keyboard to select an option, and press <Enter>. Modify the system parameters to reflect the options installed in your system.
 - (2) Press <Enter> to select item or option.
 - (3) +/- /PU/PD: To adjust or select value.
 - (4) F10: Save configuration.
 - (5) Esc: Press <Esc> key to get out of the menu on screen.
 - (6) F1: Press F1 to display General Help List.
 - (7) F5: Press F5 to restore the Previous Value.
 - (8) F6: Press F6 to load the Fail-Safe default values.
 - (9) F7: Press F7 to load the Optimized Default Values.
4. You may return to the Main Menu anytime by pressing <ESC>.
 5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

Attention: The BIOS Setup is subject to constant update without further notice to users. It is necessary for users themselves to update onboard BIOS with the latest BIOS version provided in our web site:
<http://www.soltek.com.tw>

4-6.2 Standard CMOS Setup

Standard CMOS Setup records some basic system hardware configuration and sets the system clock and error handling. You only need to modify the configuration values of this option if you want to change your system hardware configuration or when the data stored in the CMOS memory gets lost or damaged.

Run the Standard CMOS Setup as follows:
Choose "Standard CMOS Setup" from the Main Menu. A screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Fri, Sep 5 2003	Item Help
Time (hh:mm:ss)	9 : 41 : 11	Menu Level ▶
IDE Channel 0 Master	WDC WD400BB-00DEA0	Change the day, month, year and century
IDE Channel 0 Slave	None	
IDE Channel 1 Master	None	
IDE Channel 1 Slave	None	
Drive A	1.44M, 3.5 in.	
Video	EGA/VGA	
Halt On	All Errors	
Base Memory	640K	
Extended Memory	252928K	
Total Memory	253952K	

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

Date (mm:dd:yy) The BIOS determines the day of the week from the other date information. This field is for information only.

Press the left or right arrow key to move to the desired field (date, month, year). Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

Time (hh:mm:ss) The time format is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Press the left or right arrow key to move to desired field. Press the PgUp or PgDn key to increment the setting, or type the desired value into the field.

IDE Channel 0 / IDE Channel 1 Master / Slave This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drives.

**Phoenix - AwardBIOS CMOS Setup Utility
IDE Primary Master**

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Channel 0 Master Access Mode	Auto Auto	Menu Level ►
Capacity	40022MB	To auto-detect the HDD's size, head... on this channel
Cylinder	19158	
Head	16	
Precomp	0	
Landing Zone	19157	
Sector	255	

Drive A Select this field to the type(s) of floppy disk drive(s) installed in your system. The choices are:
360KB, 5.25 in.
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
None

Video Select the type of primary video subsystem in your computer. The BIOS usually detects the correct video type automatically. The BIOS supports a secondary video subsystem, but you do not select it in setup.

Halt On During the power-on self-test (POST), the computer stops if the BIOS detects a hardware error. You can tell the BIOS to ignore certain errors during POST and continue the boot-up process.

Base Memory Typically 640KB. Also called conventional memory. The DOS operating system and conventional applications use this area.

Extended Memory Above the 1MB boundary. Early IBM personal computers could not use memory above 1MB, but current PCs and their software can use extended memory.

Total Memory This option shows system memory capacity.

4-6.3 Advanced BIOS Features

Advanced BIOS Features improves your system performance or sets up system features according to your preference.

Run the Advanced BIOS Features as follows:

Choose “Advanced BIOS Features” from the Main Menu and a screen with a list of options will appear:

**Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features**

<ul style="list-style-type: none"> ▶ Hard Disk Boot Priority Virus Warning CPU Internal Cache External Cache CPU L2 Cache ECC Checking Quick Power On Self Test First Boot Device Second Boot Device Third Boot Device Boot Other Device Boot Up Floppy Seek Boot Up NumLock Status Typematic Rate Setting x Typematic Rate (Chars/Sec) x Typematic Delay (Msec) Security Option APIC Mode OS Select For DRAM > 64MB Video BIOS Shadow 	<p>Press Enter</p> <p>Disabled</p> <p>Enabled</p> <p>Enabled</p> <p>Enabled</p> <p>Enabled</p> <p>Floppy</p> <p>HDD-0</p> <p>CDROM</p> <p>Enabled</p> <p>Disabled</p> <p>On</p> <p>Disabled</p> <p>6</p> <p>250</p> <p>Setup</p> <p>Enabled</p> <p>Non-OS2</p> <p>Enabled</p>	<p>Item Help</p> <hr/> <p>Menu Level ▶</p>
----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------

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

Hard Disk Boot Priority This item allows you to decide the priority of Bootable Hard Disks. Press enter to get into the submenu to choose the prior bootable Hard Disk.

Virus Warning When enabled, you receive a warning message if a program (specifically, a virus) attempts to write to the boot sector or the partition table of the hard disk drive.

You should then run an antivirus program. Keep in mind that this feature protects only the boot sector, not the entire hard drive.

NOTE: Many disk diagnostic programs that access the boot sector table can trigger the virus warning message. If you plan to run such a program, we recommend that you disable the virus warning.

CPU Internal / External Cache Cache memory is additional memory that is much faster than conventional DRAM (system memory). CPUs from 486-type up contain internal cache memory (L1), and most, but not all, modern PCs have additional (external) cache memory (L2). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for faster access by the CPU.

CPU L2 Cache ECC Checking To enable/disable the CPU L2 Cache ECC Checking function.

Quick Power On Self Test Select Enabled to reduce the amount of time required to run the power-on self-test (POST). A quick POST skips certain steps. We recommend that you normally enable quick POST.

First/Second/Third/Boot Other Device The BIOS attempts to load the operating system from the devices in the sequence selected in these items. Choices: Floppy; LS/ZIP; HDD; SCSI; CDROM; USB; LAN; Disabled

- Boot Up Floppy Seek** When enabled, the BIOS tests (seeks) floppy drives to determine whether they have 40 or 80 tracks. Only 360-KB floppy drives have 40 tracks; drives with 270KB, 1.2MB, and 1.44MB capacity all have 80 tracks. Because very few modern PCs have 40-track floppy drives, we recommend that you set this field to disabled to save time.
- Boot Up NumLock Status** Toggle between On or Off to control the state of the NumLock key when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.
- Typematic Rate Setting** When *Disabled*, the following two items (Typematic Rate and Typematic Delay) are irrelevant. Keystroke repeats at a rate determined by the keyboard controller in your system.
When *Enabled*, you can select a typematic rate and typematic delay.
- Typematic Rate (Chars / Sec)** When the typematic rate setting is enabled, you can select a typematic rate (the rate at which character repeats when you hold down a key) of 6, 8, 10, 12, 15, 20, 24, or 30 characters per second.
- Typematic Delay (Msec)** Choices: 250; 500; 750; 1000. This option sets the time interval for displaying the first and the second characters. If enabled, the time interval is optional.
- Security Option** If you have set a password, select whether the password is required every time the System boots, or only when you enter setup.
Choices: System; Setup
- APIC Mode** Allows you to enable/disable APIC mode.
- OS Select For DRAM > 64MB** Select OS2 only if you are running OS/2 operating system with greater than 64MB of RAM on your system.
- Video BIOS Shadow** To enable / disable copies video BIOS to shadow RAM and improve performance.

4-6.4 Advanced Chipset Features

Advanced Chipset Features is used to modify the values of chipset buffers. These buffers control the system options.

Run the Advanced Chipset Features as follows:

Choose "Advanced Chipset Features" from the Main Menu and a list of option will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

▶ AGP & P2P Bridge Control	Press Enter	Item Help
▶ DRAM Configuration	Press Enter	Menu Level ▶
▶ LDT & PCI Bus Control	Press Enter	DRAM timing and control
Memory Hole	Disabled	
VLink DATA Rate	8X	
Init Display First	AGP	
System BIOS Cacheable	Disabled	

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

► AGP & P2P Bridge Control:

To press < Enter > on AGP & P2P Bridge will reveal the following item.

AGP Aperture Size Options: 32; 64; 128; 256M; 512M; 1G. Memory mapped and graphics data structures can reside in a Graphics Aperture. This area is like a linear buffer. BIOS will automatically report the starting address of this buffer to the O.S.

AGP 3.0 mode To show the AGP onboard mode.

AGP Driving Control To automatically/manually set AGP Driving Control.

x AGP Driving Value To input AGP Driving Value if you have set "Manual" in above item.
Choices: 00~FF in 01 stepping

AGP Fast Write This item will enable the AGP mode into fast write mode. If your graphics card does not support this function, please do not enable this function.

AGP Master 1 WS Write To enable / disable the support of AGP Master 1 Waite State Write.

AGP Master 1 WS Read To enable / disable the support of AGP Master 1 Waite State Read.

AGP3.0 Calibration To enable / disable of support

DBI Output for AGP Trans To auto-detect / disable the DBI Output for AGP transfer.

► DRAM Configuration:

To press < Enter > on DRAM Configuration will reveal the following item(s).

Current FSB Frequency BIOS shows the actual Front Side Bus frequency.

Current DRAM Frequency BIOS shows the actual DRAM frequency.

Max Memclock (Mhz) To manually set the memory clock if you have set "by manual" in above option.
Choice: Auto; 100; 133; 166; 200

1T/2T Memory Timing To manually/ automatically set the DDR Timing.

CAS# LATENCY(Tcl) Automatically set CAS# latency.

RAS# to CAS# delay (Trcd) Choose the RAS to CAS delay time.
Choices: Auto; 2; 3; 4; 5; 6; 7

► **LDT & PCI Bus Control:**

To press < Enter > on LDT & PCI Bus Control will reveal the following item(s).

Upstream LDT Bus Width To set Upstream LDT BUS Width.
Choices: 8 bit; 16 bit

Downstream LDT Bus Width To set Downstream LDT BUS Width.
Choices: 8 bit; 16 bit

LDT Bus Frequency To set LDT Bus Frequency.
Choices: 200MHz; 400MHz; 600MHz; 800MHz; 1G Auto

PCI1 Master 0 WS Write To enable (default) / disable the support of PCI1 Master 0 Wait State Write.

PCI1 Post Write To enable (default) / disable the support of PCI1 Post Write.

Memory Hole To enabled / disabled (default) the support of Memory Hole which is reserved for ISA card.
Choices: Disabled; 15MB-16MB

VLink Data Rate To set VLink Data Rate.
Choices: 8X; 4X

Init Display First Initialize the AGP video display before initializing any other display device on the system. Thus the AGP display becomes the primary display.

System BIOS Cacheable Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFFh, resulting in better system performance.

4-6.5 Integrated Peripherals

Integrated Peripherals option allows you to get some information inside your system when it is working.

Run the Integrated Peripherals as follows:

Choose “Integrated peripherals” from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

<ul style="list-style-type: none"> ▶ VIA onChip IDE Device Press Enter ▶ VIA onChip PCI Device Press Enter ▶ Super IO Device Press Enter GigaLAN Enabled 1394 Enabled 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="padding: 2px 5px;">Item Help</th> </tr> <tr> <td style="height: 100px;"> </td> </tr> </table>	Item Help	
Item Help			

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

4-6.5.1. VIA OnChip IDE Device

To press< Enter > on VIA OnChip IDE Device will reveal the following item(s).

<ul style="list-style-type: none"> OnChip SATA Enabled SATA Mode IDE OnChip IDE Channel10 Enabled OnChip IDE Channel11 Enabled IDE Prefetch Mode Enabled Primary Master PIO Auto Primary Slave PIO Auto Secondary Master PIO Auto Secondary Slave PIO Auto Primary Master UDMA Auto Primary Slave UDMA Auto Secondary Master UDMA Auto Secondary Slave UDMA Auto IDE HDD Block Mode Enabled 	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="padding: 2px 5px;">Item Help</th> </tr> <tr> <td style="height: 100px;"> </td> </tr> </table>	Item Help	
Item Help			

VIA OnChip IDE Device:

To press < Enter > on VIA OnChip IDE Device will reveal the following item(s).

- OnChip SATA** To enable/disable the onchip SATA controller.
- SATA Mode** To select the IDE or RAID mode for the SATA connectors on board.
Choices: IDE; RAID
- On Chip IDE Channel 10/11** The chipset contains a PCI IDE interface with support from two IDE channels. Select Enabled to activate the first and/or the second IDE interface.
Choices: Enabled; Disabled
- IDE Prefetch Mode** The on-board IDE drive supports IDE prefetching for faster drive accesses.
The choices: Enabled; Disabled
- Primary Master / Slave PIO** Choose Auto or Mode 0~4. The BIOS will detect the HDD mode type automatically when you choose
- Secondary Master / Slave PIO** Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
Choices: Auto(default); Mode 0; Mode 1; Mode 2; Mode 3; Mode 4
- Primary Master / Slave UDMA** Ultra DMA33/66/100/133 implementation is possible only if your IDE hard drive supports it, if the operating environment includes a DMA drive, and if your system software supports Ultra DMA33/66/100/133.
- Secondary Master / Slave UDMA** Select "Auto" to enable BIOS support.
Choices: Auto(default); Disabled
- IDE HDD Block Mode** Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/write per sector the drive can support.

4-6.5.2. VIA OnChip PCI Device:

To press< Enter > on VIA OnChip PCI Device will reveal the following item(s).

		Item Help
VIA-3058 AC97 Audio	Enabled	
OnChip USB Controller	All Enabled	
OnChip EHCI Controller	Enabled	
USB Emulation	Off	
x USB Keyboard Support	Disabled	
x USB Mouse Support	Disabled	

VIA-3058 AC97 Audio Select “Auto” to use the on-chip audio of your system. If user wants to use add-on sound card, this item must be disabled.

OnChip USB Controller To enable/disable the onchip USB controller.
 Choices: All Enabled; All Disabled

OnChip EHCI Controller To enable/disable the onchip EHCI (USB2.0) controller.

USB Emulation To enable/disable the USB emulation on DOS.
 Choices: off; K/B/Ms; On

x USB Keyboard/ Mouse Support If USB Emulation is set at K/B / Mouse, this item allows you to enable/disable the USB keyboard support.

4-6.5.3. Super IO Device:

To press< Enter > on Super IO Device will reveal the following items.

		Item Help
Onboard FDC Controller	Enabled	
Onboard Serial Port 1	Auto	
Onboard Serial Port 2	Auto	
UART Mode Select	Normal	
x Rx/D , Tx/D Active	Hi,Lo	
x IR Transmission Delay	Enabled	
x UR2 Duplex Mode	Half	
x Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	378/IRQ7	
Parallel Port Mode	SPP	
x EPP Mode Select	EPP 1.9	
x ECP Mode Use DMA	3	

Onboard FDC Controller To enable/disable the onboard Floppy Disk Drive Controller.

- Onboard Serial Port 1 / Port 2** Select an address and corresponding interrupt for the first/second serial port.
 Choices: Disabled; Auto;
 3F8/IRQ4; 2F8/IRQ3;
 3E8/IRQ4; 2E8/IRQ3
- UART Mode Select** The serial port on your system may offer a variety of infrared port modes. Click here for a description of various modes.
 The choices: Normal; IrDA; ASKIR
- x RxD , TxD Active** The option controls the speed between receiving and transmitting of IrDA or ASKIR when using.
 Choices: Hi,Hi; Hi,Lo; Lo,Hi; Lo,Lo
- x IR Transmission Delay** When UART Mode is selected in IrDA or ASKIR mode, it allows you to enable / disable IR Transmission Delay.
- x UR2 Duplex Mode** This options controls the operating mode between receiving and transmitting of IrDA or ASKIR or SCR.
 Choices: Half (asynchronous); Full (synchronous)
- x Use IR Pins** When UART Mode is selected in IrDA or ASKIR mode, this item letss you select IR Pins signal.
 Choices: IR-Rx2Tx2; Rx2D2, Tx2D2
- Onboard Parallel Port** This item allows you to determine onboard parallel port controller I/O address setting.
 Choices: 378H/IRQ7; 278H/IRQ5; 3BC/IRQ7; Disabled
- Parallel Port Mode** Select an operating mode for the on-board parallel (printer) port.
 Choices: SPP; EPP; ECP; ECP+EPP
- x EPP Mode Select** Select a EPP Mode for EPP or ECP+EPP mode in the Parallel Port Mode.
 Choices: EPP1.7; EPP1.9
- x ECP mode Use DMA** Select a DMA channel for the port for ECP or ECP+EPP mode of the Parallel Port Mode.
 Choices: 1; 3
-
- GigaLAN** To enable/disable the onboard GigaLAN (10/100/1000) interface.
- 1394** To enable/disable the onboard 1394 interface.

4-6.6 Power Management Setup

Power Management Setup allows you to set the system's power saving functions.

Run the Power Management Setup as follows:

Choose "Power Management Setup" from the Main Menu and a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

		Item Help
ACPI function	Enabled	
ACPI Suspend Type	S1(POS)	
Power Management Option	User Define	
HDD Power Down	Disabled	
Suspend Mode	Disabled	
Video Off Option	Suspend -> Off	
Video Off Method	V/H SYNC+Blank	
MODEM Use IRQ	3	
Soft-off by PWRBTN	Instant-off	
Run VGABIOS if S3 Resume	Auto	
AC Loss Auto Restart	Off	
AMD K8 Cool'n'Quiet control	Auto	
▶ IRQ/Event Activity Detect	Press Enter	

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

ACPI Function Select Enabled(default) only if your computer's operating system supports the Advanced Configuration and Power Interface (ACPI) specification. Currently, Windows 98SE/ME, Windows 2000 and Windows XP supports ACPI.

ACPI Suspend Type This item allows you to select the ACPI Suspend type. You can select S3(STR) for Suspending To RAM if your system supports this mode. Or you can select S1(POS) for Power On Suspend under ACPI mode.
Choices: S1(POS)(default);S3(STR); S1&S3

Power Management Option To select the type (or degree) of power saving for Doze, Standby, and Suspend modes.
Choices: User Define:- Time length defined by user;
Min Saving:- Minimum power saving mode;
Max Saving: Maximum power saving mode;

- HDD Power Down** When enabled after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
- Suspend Mode** When enabled after the set time of system inactivity, the whole system will be suspended.
- Video Off Option** To set Video Off mode of the system.
Choices: Always On; Suspend -> Off
- Video Off Method** This determines the manner by which the monitor is blanked.
Choices:
Blank Screen:- Blank signal to the Video buffer;
V/H sync+Blank:- Blank signal to Video buffer, with Vertical and Horizontal ports off;
DPMS Support:- To select video power management values with Display Power management Signaling support;
- MODEM Use IRQ** To set IRQ Modem should use. If users do not have a modem, please set NA.
- Soft-Off by PWRBTN** To turn off the system instantly or after 4 seconds by power button.
- Run VGABIOS if S3 Resume** To enable/disable to run VGABIOS if S3 Resume.
Choices: Auto; Yes; No
- AC Loss Auto restart** To enable/disable to run VGABIOS if S3 Resume.
Choices: Auto; Yes; No
- AMD K8 Cool 'n' Quiet Control** To disable /Autorun the AMD K8 CPU cool and quiet control.

IRQ/Event Activity Detect:

To press < Enter > on IRQ/Event Activity Detect will reveal following items.

- PS2KB Wakeup Select** To select the PS/2 KB Wake-up mode.
Choices: Hot key; Password
- PS2KB/Ms Wakeup from S3/S4/S5** To set the hot key to wake up the system by PS/2 KB/Ms from S3/S4/S5.
Choices: Disabled; Power; Wake; Any Key; Ctrl-F1~12
- x Power Button Lock** If the above item is not "Disabled", this item can be set enabled/disabled.
- PS2Ms Wakeup from S3/S4/S5** This item allows you to enable / disable the PS/2 Mouse Wake-up from S3/S4/S5.
- USB Resume from S3** To enable/disable USB Resume from S3
- VGA** To enable/disable VGA Wakeup function.
- LPT & COM** To enable/disable LPT & COM Wakeup function.
- HDD & FDD** To enable/disable HDD & FDD Wakeup function.
- PCI Master** To enable/disable PCI Master Wakeup function.
- Power On by PCI Card** To enable / disable(default) the Power On by PCI Card.
- Wake Up On LAN/Ring** To enable / disable the wake on ring signal function. An input signal on the serial Ring Indicator (RI) Line (in other words, an incoming call on the modem) awakens the system from a soft off state.
- RTC Alarm Resume** To enable / disable the RTC Alarm Resume function.
- x Date (of Month)** If RTC Alarm Resume is enabled, this field allows
- x Resume Time (Hour / Minute / Second)** you to set the Alarm Date, Hour, Minute and Second.
Date Choices: 01 ~ 31; Hour : 00 ~ 23
Minute Choices: 00 ~ 59; Second: 00 ~ 59

IRQs Activity Monitoring:

To press < Enter > on IRQs Activity Monitoring will reveal following items.

- Primary Intr.** To turn on/off the Interrupt configuration.
- IRQ3,4,5,7,9,10,11,12, 13,14,15** To enable/disable IRQ Assignment.

4-6.7 PnP / PCI Configuration

PnP/PCI Configuration allows you to modify the system's power saving functions.

Run the PnP/PCI Configuration as follows:

Choose "PnP/PCI Configuration" from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
PnP PCI Configurations

		Item Help
PNP OS Installed	No	
Reset Configuration Data	Disabled	
Resources Controlled by	Auto(ESCD)	
x IRQ Resources	Press Enter	
PCI/VGA Palette Snoop	Disabled	
Assign IRQ For VGA	Enabled	
Assign IRQ For USB	Enabled	

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

PNP OS Installed Allows you to configure the PNP devices by BIOS or O/S.
 Choices: No(by BIOS); Yes(by O/S)

Reset Configuration Data Normally, you leave this Disabled(default). 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 operating system cannot boot.

Resource Controlled By The Plug and Play Award BIOS can automatically configure all the boot and Plug and Play compatible devices. If you select *Auto*, all the interrupt request (IRQ) and DMA assignment fields will not appear, as the BIOS automatically assigns them. If you select *Manual*, the IRQ Resources item will appear for your configuration (see below).

x IRQ Resources Press Enter. Please refer to the list below:

Phoenix - AwardBIOS CMOS Setup Utility
IRQ Resources

IRQ-3 assigned to	PCI Device	Item Help
IRQ-4 assigned to	PCI Device	
IRQ-5 assigned to	PCI Device	
IRQ-7 assigned to	PCI Device	
IRQ-9 assigned to	PCI Device	
IRQ-10 assigned to	PCI Device	
IRQ-11 assigned to	PCI Device	
IRQ-12 assigned to	PCI Device	
IRQ-14 assigned to	PCI Device	
IRQ-15 assigned to	PCI Device	

↑↓←→ : Move Enter: Select +/-/PU/PD: Value F10: Save Esc: Exit F1: General Help
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PCI/VGA Palette Snoop This option allows the BIOS to preview VGA status, and to modify the information delivered from the feature Connector of the VGA card to MPEG card. This option can solve the display inversion to black after you have used a MPEG card.

Assign IRQ For VGA To enable/disable to assign IRQ for VGA.

Assign IRQ For USB To enable/disable to assign IRQ for USB.

4-6.8 SmartDoc Anti-Burn Shield

This section helps you to get more information about your system including CPU temperature, FAN speed and voltage.

Choose “SmartDoc Anti-Burn Shield” from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
SmartDoc Anti-Burn Shield

		Item Help
Shutdown Temperature	Disabled	
CPU Internal Temp.	69°C/156°F	
CPU External Temp.	64°C/147°F	
System Temp.	43°C/109°F	
Fan1 Speed	1130 RPM	
Fan2 Speed	0 RPM	
Vcore	1.45V	
+1.5V	1.48V	
+3.3V	3.26V	
VDIMM	2.57V	
+5V	15.07V	
VBAT	2.84V	
5VSB	5.10V	
Smart Fan1 Temperature	60°C/140°F	
Fan1 Tolerance Value	5	
Smart Fan2 Temperature	40°C/104°F	
Fan2 Tolerance Value	5	

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

Shutdown Temperature To enable/disable the CPU Shutdown temperature

CPU Internal/External/System Temperature Showing the CPU internal/external/System temperature.

FAN1/2 Speed These fields display the current speed of the onboard Fan1/2.

Vcore/+1.5V/+3.3V/VDIMM/ +5V/VBAT/5VSB Shows actual voltage value of all these default voltage value on board.

Smart Fan1 Temperature To select the Smart Fan1 temperature.
 Choices: Disabled;60°C/140°F; 65°C/149°F; 70°C/158°F

Smart Fan2 Temperature To select the Smart Fan2 temperature.
 Choices: Disabled35°C/95°F; 40°C/104°F; 45°C/113°F

Fan1/2 Tolerance Value To select the Fan1/2 Tolerance Value.
 Choices: Min=1; Max=5; (Key in a Dec. number)

4-6.9 Frequency/Voltage Control

Choose “Frequency/Voltage Control” from the Main Menu and a screen with a list of options will appear:

Phoenix - AwardBIOS CMOS Setup Utility
Frequency/Voltage Control

		Item Help
CPU Ratio	StartUp	
Auto Detect PCI Clk	Enabled	
Spread Spectrum	Disabled	
Async AGP/PCI clock	Enabled	
CPU Clock	200MHz	
CPU Vcore Select	Default	
AGP Voltage Select	Default	
DIMM Voltage Select	Default	

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

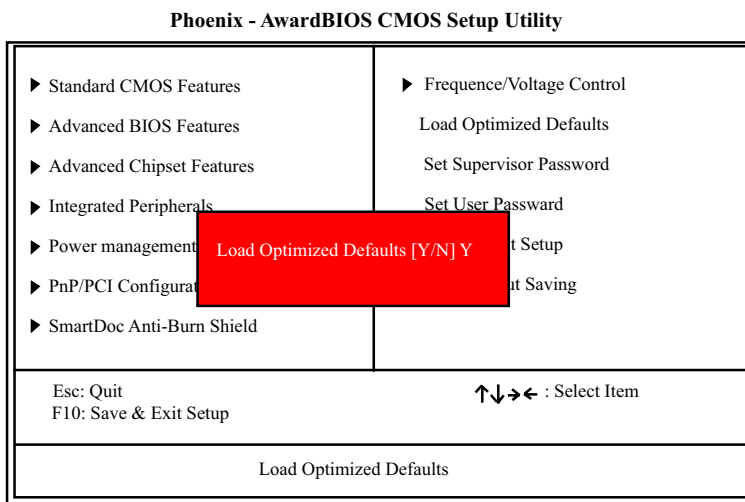


- CPU Ratio** To select the CPU clock ratio.
 Choices: Startup; 200MHz x4~25;
- Auto Detect PCI Clock** To enable / disable this auto detection function on PCI clock.
- Spread Spectrum** This function will reduce the EMI (Electromagnetic Interference) in your system. If you do not have an EMI problem, leave this item disabled.
- Async AGP/PCI clock** To enable / disable this Asynchronous AGP/PCI clock.
- CPU Clock** This item allows you to set CPU Clock.
 Choices: 200MHz ~250MHz in 1MHz stepping.
 (Key in a decimal number to select CPU clock.)
- CPU Vcore Select** To configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU.
 Choices: Default;
 0.800V ~1.700V in 0.25V stepping
- AGP Voltage Select** To configure the AGP Voltage.
 Choices: 1.5V; 1.6V; 1.7V; 1.8V
- DIMM Voltage Select** To configure the DIMM Voltage.
 Choices: 2.6V; 2.7V; 2.8V; 2.9V

4-6.10 Load Optimized Defaults

When you press <Enter> on this item, you will get a confirmation dialog box with a message similar to:

“ Load Optimized Defaults (Y / N) ? N ”



“Y” is for “Yes”, and “N” is for “No”.

Pressing “Y” loads the BIOS Optimized default values to restore the BIOS to its original status.

4-6.11 SET SUPERVISOR / USER PASSWORD

These two options allow you to set your system passwords. Normally, the supervisor has a higher priority to change the CMOS setup option than the users. The way to set up the passwords for both Supervisor and Users are as follows:

1. Choose “Change Password” in the Main Menu and press <Enter>. Then following message appears:

“Enter Password : ”

2. The first time you run this option, enter your password up to 8 characters and press <Enter>. (The screen does not display the entered characters.)
3. After you enter the password, the following message appears prompting you to confirm the password:

`"Confirm Password : "`

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you have entered before.
7. Move the cursor to Save & Exit Setup to save the option you have just configured; otherwise the old password will still be there the next time you turn your system on.
8. Press <Enter> to exit to the Main Menu.

4-6.12 SAVE & EXIT SETUP

SAVE & EXIT SETUP allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

`"SAVE to CMOS and EXIT (Y/N) ? Y "`

"Y" is for "Yes", and "N" is for "No".

Press <Enter> key to save the configuration changes.

4-6.13 EXIT WITHOUT SAVING

EXIT WITHOUT SAVING option allows you to exit the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

`"Quit Without Saving (Y/N) ? N "`

"Y" is for "Yes", and "N" is for "No".

You may change the prompt to "Y" and press <Enter> key to leave this option .

Chapter 5 VT8237 SATA RAID

THE VIA SATA RAID Controller VT8237 & RAID Driver

VIA RAID (Redundant Array of Independent Disks) Controller is built in the South Bridge VT8237. With this RAID Controller, the VIA SATA RAID BIOS is built into the system to help configure the Redundant Disk Array. VT8237 supports RAID 0 and RAID 1 configuration.

This Chapter is to introduce the VT8237 SATA RAID Configurations :

- 5-0 About Disk Array 81**
 - 5-0-1 Disk Array Interpretation..... 81**
 - 5-0-2 Disk Array Member 81**
 - 5-0-3 Disk Array Types Supported by VT8237 81**
- 5-1 First Step to Set Up SATA RAID System 82**
- 5-2 Enable SATA-RAID Interface with System BIOS 83**
- 5-3 To Enter VIA Tech. RAID BIOS Setup 84**
- 5-4 Using VIA RAID BIOS Setup to Create Disk Array 85**
- 5-5 Using VIA RAID BIOS Setup to change Array mode 89**
- 5-6 To Install SATA RAID Driver 91**
 - 5-6-1 To Install SATA RAID Driver on Windows 2000/XP 91**
 - 5-6-2 To Install SATA RAID Driver on Windows 98SE/ME 92**

5-0 About Disk Array

5-0-1 Disk Array Interpretation

A “Disk Array” is formed from a group of 2 disk drives with the RAID (Redundent Array of Independent Disks) technology. The aim of a Disk Array is to provide better performance and/or data fault tolerance.

5-0-2 Disk Array Member

The individual disk drive in an array is called a “member”. Each member of a specific disk array is coded in their “reserved sector” with configuration information that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the system.

5-0-3 Disk Array Types Supported by VT8237

Different types or modes of Disk Array have different formation models and functions. The South Bridge on this mainboard supports only two types of Disk Arrays: RAID 0 and RAID 1, but not RAID 0+1.

1. RAID 0 (or Striping mode):

RAID 0 is a group of 2 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, it affects the entire array. The disk array size is equal to the number of drive members times the smallest member capacity. For example, one 1GB and three 1.2GB drives will form a 2GB (2x1GB) disk array.

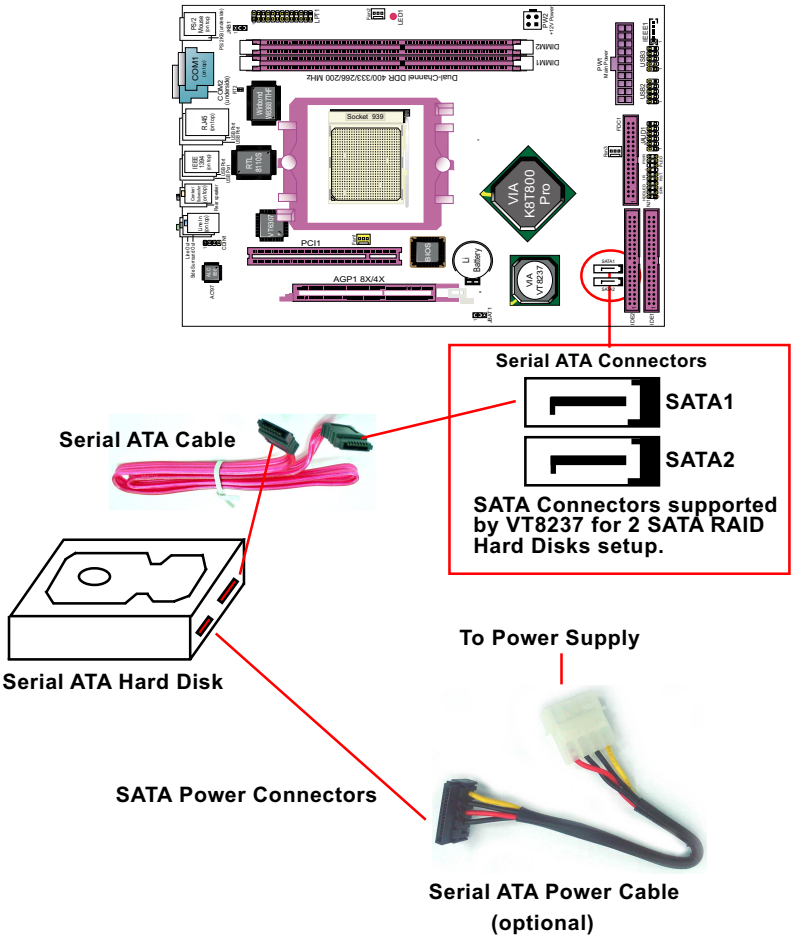
2. RAID 1 (or Mirroring mode):

RAID 1 is a group of 2 Disk Drives configured together with RAID Technology to provide the fault tolerance function. Writes duplicate data on to RAID 1 while reads are performed in parallel. If one of the mirrored drives suffers a mechanical failure (e.g. spindle failure) or does not respond, the remaining drive will continue to function. This is called Fault Tolerance.

The drive capacity of RAID 1 is half the total drive capacity of two equal-size drive.

5-1 First Step to Set Up SATA RAID System

2 Serial ATA connectors for 2 SATA Hard Disks with RAID mode are supported by the South Bridge VIA VT8237.



5-2 Enable SATA-RAID Interface with System BIOS

(1) Boot system and watch for the following initial screen to appear:

VIA Technologies, Inc. VIA VT6420 RAID BIOS Setting Utility v (xxx)
 Copyright (C) VIA Technologies, Inc. All right reserved.

Scan Devices, please wait
 Press < Tab > key into User Windows!
 Channel 0 Master: ST3120023AS
 Channel 1 Master: ST380023AS

(The above message indicates that the SATA hard disks on board are detected by the RAID BIOS.)

(2) As soon as the above screen appears, press < Delete > key (not the <Tab> key) to enter CMOS BIOS Setup. Choose "Integrated Peripheral" and "VIA OnChip IDE Device". As soon as you click on the "VIA OnChip IDE Device", a list of events appears for you to configure their values. Choose "Enabled" for the "OnChip SATA" so as to enable the SATA RAID interface.

VIA OnChip IDE Device

OnChip SATA	Enabled	Item Help
SATA Mode	RAID	
IDE DMA transfer access	Enabled	
OnChip IDE Channel10	Enabled	
OnChip IDE Channel11	Enabled	
IDE Prefetch Mode	Enabled	
Primary Master PIO	Auto	
Primary Slave PIO	Auto	
Secondary Master PIO	Auto	
Secondary Slave PIO	Auto	
Primary Master UDMA	Auto	
Primary Slave UDMA	Auto	
Secondary Master UDMA	Auto	
Secondary Slave UDMA	Auto	
IDE HDD Block Mode	Enabled	

- OnChip SATA** To enable/disable the South Bridge SATA interface.
- SATA Mode** To select RAID so as to set up RAID system.

5-3 To Enter VIA Tech. RAID BIOS Setup

Reboot the system with “OnChip SATA” enabled in system BIOS Setup and watch for the following initial screen to appear:

VIA Technologies, Inc. VIA VT8237 Serial RAID BIOS Setting Utility
V2.10 Copyright (C) VIA Technologies, Inc. All right reserved.

Scan Devices, Please wait
Press < Tab > key into User Window!
Channel 0 Master: ST380023AS
Channel 1 Master: ST380023AS

(The above message indicates that the SATA hard disks on board are detected by the RAID BIOS.)

As soon as the above screen appears, press < Tab > key to enter VIA Tech. RAID BIOS Setup.

In a few seconds, the VIA Tech. RAID BIOS Setup Utility appears as shown below:

Press <Enter> to create Array.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete ▶ Spare ▶ Select Boot Array ▶ Serial Number View 	<p>Create A RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Channel</th> <th style="text-align: left;">Drive Name</th> <th style="text-align: left;">Array Name</th> <th style="text-align: left;">Mode</th> <th style="text-align: left;">Size(GB)</th> <th style="text-align: left;">Status</th> </tr> </thead> <tbody> <tr> <td>Channel0 Master</td> <td>ST380023AS</td> <td></td> <td>ATA 133</td> <td>74.53</td> <td>Hdd</td> </tr> <tr> <td>Channel0 Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Channel1 Master</td> <td>ST380023AS</td> <td></td> <td>ATA 133</td> <td>74.53</td> <td>Hdd</td> </tr> <tr> <td>Channel1 Slave</td> <td>No Drive</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		Channel	Drive Name	Array Name	Mode	Size(GB)	Status	Channel0 Master	ST380023AS		ATA 133	74.53	Hdd	Channel0 Slave	No Drive					Channel1 Master	ST380023AS		ATA 133	74.53	Hdd	Channel1 Slave	No Drive				
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The Hard Disks connected to SATA connectors are detected by RAID BIOS.

5-4 Using VIA RAID BIOS Setup to Create Disk Array

(5-4-1) When you press <Enter> on the “Create Array” bar, the following screen shows up. Press <Enter> on this bar to select the RAID mode.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none">▶ Auto Setup For Data Security▶ Array Mode RAID 1 (Mirroring)▶ Select Disk Drives▶ Start Create Process	<p>Create A RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-4-2) When you press <Enter> on the “Array Mode RAID 1 (Mirroring)” bar, the following screen shows up. Press <Enter> on either RAID0 or RAID1 bar to select the RAID mode.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none">▶ RAID 0 for performance▶ RAID 1 for data protection▶ RAID 0/1▶ RAID SPAM for capacity	<p>Create A RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-4-3) The following screen shows that RAID 0 (Striping) is selected. Now, use the “Arrow” key to mark up the “Auto Setup For Performance” bar.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Auto Setup For Performance ◀ Array Mode RAID 0 (Striping) ▶ Select Disk Drives ▶ Block Size 64K ▶ Start Create Process 	<p>Create A RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-4-4) Press <Enter> on the “Auto Setup for Performance” bar, and the following screen shows up to ask you to confirm the RAID Creation. Press <Y> key to continue.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Auto Setup For Performance ▶ Array Mode RAID 0 (Striping) ▶ Select Disk Drives ▶ Block Size 64K ▶ Start Create Process <p>You will create array automatically, Are you sure? Continue? Press Y/N</p>	<p>Create A RAID array with the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-4-5) Instantly, the RAID 0 Striping mode is set up and shown on the screen. Then press <Escape> key to exit the screen.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none">▶ Create Array▶ Delete Array▶ Create/Delete Spare▶ Select Boot Array▶ Serial Number View	Set/Clear bootable array F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit																														
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(5-4-6) On the next screen, press the “Arrow” key to mark up the “Select Boot Array” bar and press <Enter> key to set up “Boot Disk” for the system.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none">▶ Create Array▶ Delete Array▶ Create/Delete Spare▶ Select Boot Array▶ Serial Number View	Set/Clear bootable array F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit																														
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(5-4-7) Instantly, the Master Hard Disk is marked up. Press <Enter> on the screen to set up the “Boot Disk”.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete ▶ Spare ▶ Select Boot Array ▶ Serial Number View 	Set/Clear bootable array F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit					
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[] Channel1 Master	ST380023AS	ARRAY 0	ATA 133	74.53	Stripe 1	
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(5-4-8) Instantly, the bootable hard disks are marked with an “asterisk (star)”, indicating that those hard disks are bootable. You can exit from this screen by pressing the “Escape” key now.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View 	Set/Clear bootable array F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit					
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Channel1 Slave	No Drive					

5-5 Using VIA RAID BIOS Setup to change Array mode

(5-5-1) If you wants to change the RAID mode, say, from RAID 0 to RAID 1, you must return to the Initial RAID BIOS Setup screen. Then, press the “Arrow” key to mark the “Delete Array” bar and press <Enter>.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View 	<p>Delete a RAID array contain the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-5-2) Instantly, the Bootable Hard Disk(s) is marked up for deletion. Press <Enter> key on this screen to delete the set-up array.

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(5-5-3) When the message “The selected array will be destroyed.....” appears on screen, press <Y> key to continue.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View <p>The selected array will be destroyed. Are you sure? Continue? Press Y/N</p>	<p>Delete a RAID array contain the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-5-4) Instantly, the selected array is deleted. You can see that the “Boot” marking on the Hard Disk is changed to HDD (Hard Disk Drive). Only after you have deleted the selected array, are you able to set up a new array mode.

VIA Tech. VT8237 SATA RAID BIOS Ver 2.10

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View 	<p>Delete a RAID array contain the hard disks attached to VIA RAID controller</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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5-6 To Install SATA RAID Driver

RAID Driver is incorporated in Support CD/Floppy Disk for user's installation. The Driver Floppy Disk is needed for SATA RAID installation on Windows 2K/XP. If you cannot find this Driver Floppy Disk in the mainboard package, you can make one by copying the driver from the Driver CD into a Floppy Disk.

5-6-1 To Install SATA RAID Driver on Windows 2000/XP

- (1) Get ready the Floppy Diskette holding the RAID Driver.
- (2) Check that SATA Hard Disks are connected properly to the SATA Connectors.
- (3) Start your PC system and use RAID BIOS Setup Utility to configure RAID 0 or RAID 1 to the hard disks. (For SATA Interface, skip the RAID configuration.)
- (4) Restart System and format the bootable hard disks.
- (5) Now, apply the Windows 2000/XP CD to CD-ROM for operating system installation.
- (6) On the Windows 2000 Setup screen, press "F6" key to set up RAID driver for Windows 2000/XP.



- (7) On next screen when you are instructed to insert the RAID Driver Diskette into Floppy drive, follow the instruction to continue and complete the installation.

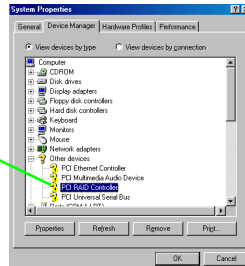
5-6-2 To Install SATA RAID Driver on Windows 98SE/ME

- (1) Get ready the Floppy Diskette holding the SATA RAID Driver.
- (2) Check that SATA Hard Disks are connected properly to the SATA Connectors.
- (3) Start your system and use RAID BIOS Setup Utility to configure RAID 0 or RAID 1 to the hard disks. (For SATA Interface, skip the RAID configuration.)
- (4) Restart System and format the bootable hard disks.
- (5) Now, apply the Windows 98SE/Me CD to CD-ROM for operating system installation.
- (6) Start the Windows 98SE/Me system.
- (7) On the “Start” screen of your system, please click to the following path:

My Computer\properties\Device manager

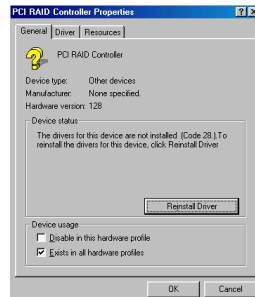
- (8) In the “Device manager” screen, you can see the item “PCI RAID Controller” with a yellow question mark on its left side, which indicates that the RAID controller is already detected by system but the driver is not installed yet. Please point to this item with your mouse and double click on it (or click the “Properties” button).

The question mark here indicates that RAID Controller Driver is not installed yet.



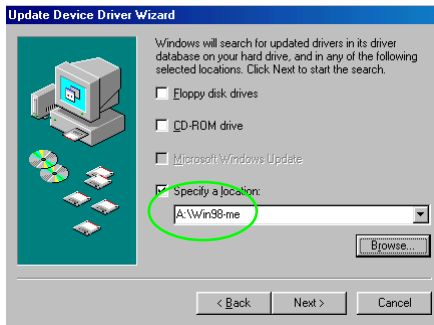
- (9) Instantly, the “PCI RAID Controller Properties” screen shows up. Please click the “General” bar to continue.

- (10) In the “General” screen, click “Reinstall Driver” button to continue. Please note that the status of “Device Usage” should stay at “Exists in all hardware profiles”.



- (11) In the “Update device Driver Wizard” screen, click “Next” to continue until you see a dialog box asking you to “Specify a location” for the driver. You should **now** insert the SATARAID Driver CD/Diskette into CD-ROM/Drive A.
- (12) As illustrated in the picture below, check the item “Specify a location” and click the “Browse” button to find out the correct path for the driver. As the RAID Driver is in Drive A, please type into the blank bar the correct path and click “Next” to continue:

D:\Driver\VIA\VIA_serial\SATA\Win98-me
or
A:\Win98-me



- (13) The Update Device Driver Wizard will then go on installing the driver. In a few seconds, installation completes. Please click the “Finish” button on the screen to complete the installation.

