

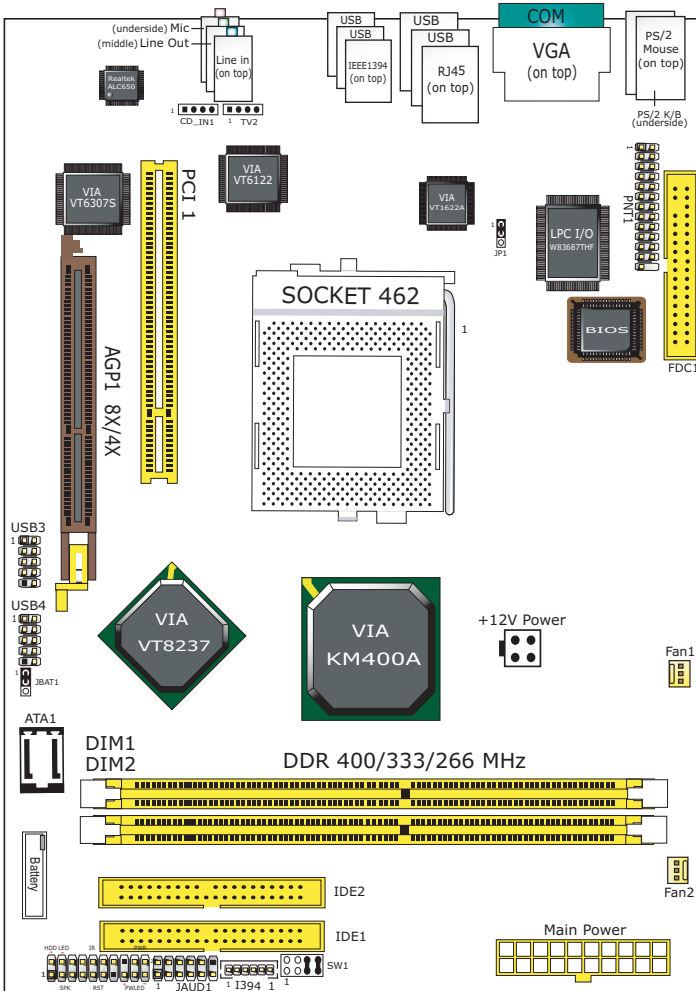
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B7C-FGR Layout



Chapter 1 Specification

Introduction

This mainboard features an integration of the powerful AMD processors Athlon/Athlon XP/Duron processors and the North Bridge VIA KM400A plus South Bridge VIA VT8237, with which the whole system performance supports 400/333/266/200MHz system bus.

VIA KM400A plus VT8237 supports on-board AMD processors to implement the 400/333/266/200MHz Front Side Bus, the integrated UniChrome Graphics engine, the LPC Super I/O, the DDR 400/333/266MHz SDRAM, the 6-channel AC'97 Audio interface, the USB 2.0 interface, SATA RAID interface and ATA 133/100/66 data transfer rate. 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

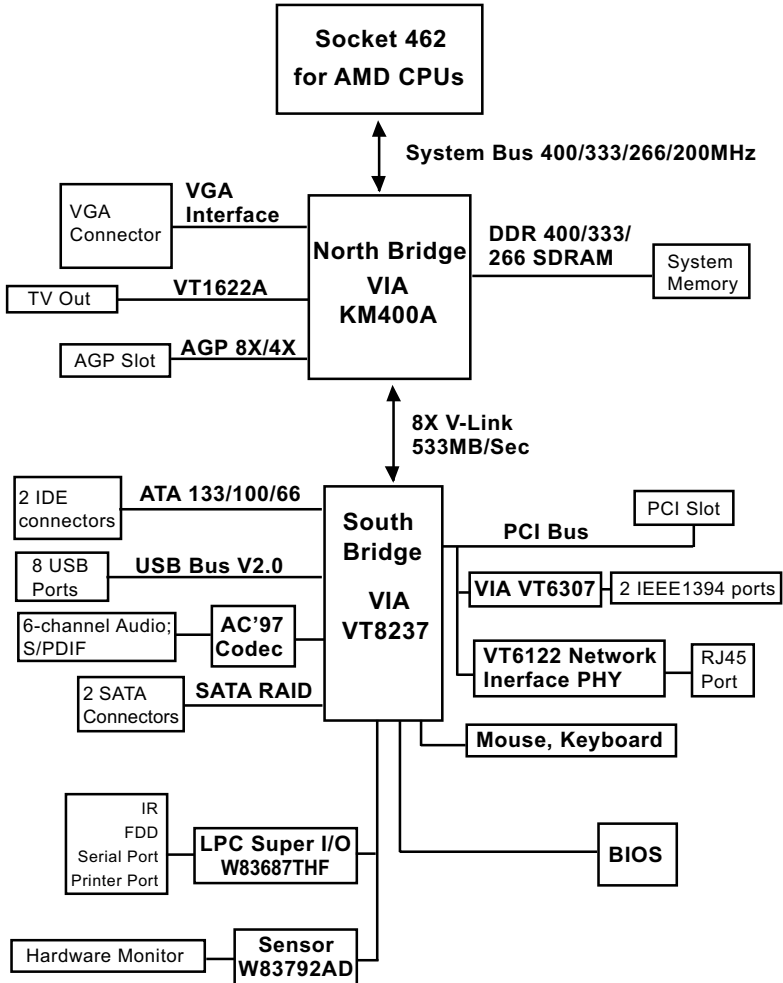
1-2 Mainboard Specifications**

1-3 Mainboard Specification Table

1-4 Chipset System Block Diagram

**** 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 Chipset System Block Diagram



Socket 462 + VIA KM400A + VIA VT8237 Diagram

1-2 Mainboard Specification Table

SL-B7C-FGR Specifications and Features	
CPU	Socket 462 for AMD Athlon, Athlon XP, Duron CPU
North Bridge	VIA KM400A, supporting 400/333/266 MHz FSB
South Bridge	VIA VT8237
BIOS	AMI BIOS
Memory	DDR 400/333/266 SDRAM, up to 2GB in 2 DDR DIMM slots
AGP interface	AGP 8X/4X mode only; 1 AGP Slot on board
I/O Chip	Winbond W83687THF
Integrated VGA	S3 Graphics UniChrome 2D/3D graphics engine
Audio	Realtek ALC650 AC'97 Audio Codec on board supporting 6 channel output and S/PDIF
IDE Interface	2 ATA 133/100/66 IDE Connector
PCI Slots	1 PCI Master slot on board
I/O Connectors	8 USB V2.0, 1 FDD port, 1 COM port, 1 LPT (optional), 1 IrDA, 1 PS/2 K/B, 1 PS/2 Mouse, 2 1394a ports, 1 Video-out
IEEE 1394 Interface	VIA VT6307 IEEE1394 Controller on board supporting 2 IEEE1394 ports.
Networking	VIA Gigabit Ethernet Controller VIA VT6122
SATA RAID Interface	2 Serial ATA connectors by VT8237

1-3 Mainboard Specifications

1-3.1 CPU

CPU Socket 462 (Socket A) on board, supporting AMD Athlon, Athlon XP and Duron processors and implementing 400/333/266/200MHz system bus

1-3.2 System Chipsets

North Bridge VIA KM400A:

- Managing and supporting 400/333/266/200MHz system Bus, AGP 8X/4X interface, integrated UniChrome graphics accelerator and DDR 400/333/266/200MHz Memory Interface

South Bridge VIA VT8237

- Supporting the 8X V-Link, LPC Super I/O, Upstream Hub interface, PCI interface, IDE interface, LAN interface, USB V2.0 interface, SATA RAID interface as well as the AC'97 6 channel Audio interface.

1-3.3 Memory

2 DDR DIMM 184-pin slots on board :

- Supporting unregistered, non-ECC DDR 400/333/266 SDRAM up to 2GB
- Supporting installation of mixed volumes yet same type of DDR SDRAM modules
- SPD (Serial Presence Detect) Scheme for DIMM Detection supported

1-3.4 BIOS

Flash Memory for easy upgrade, Year 2000 compliant, 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 I/O, IRQ, DMA Assign. etc.)
- SmartDoc Anti-Burn Shield (CPU/System Temp., Fan speed etc.)
- CPU Ratio/Voltage Control (Voltage of CPU, DIMM, AGP etc.)

1-3.5 Integrated S3 UniChrome Graphics Accelerator

S3 Graphics UniChrome GPU is embedded on board, supporting:

- 128-bit 3D and 2D graphics engine
- 16 / 32 / 64 MB frame buffer using system memory
- Internal AGP 4X bus
- Motion compensation for full speed DVD playback
- VGA Driver enclosed in Support CD for user's installation

1-3.6 AGP (Accelerated Graphics Port) interface

AGP Controller is embedded on board, supporting:

- 1.5V (8x/4x) power mode
- 8X 66MHz AD and SBA signaling; AGP pipelined split-transaction longburst transfers up to 2GB/sec.
- One AGP Slot on board, AGP v3.0 compliant

1-3.7 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 2 floppy drives with drive swap support
- Universal Serial Bus Transfer Mode:
 - USB V2.0 compliant, 480 MB/s USB Bus, supporting Windows 98SE or later operating systems..
 - 4 built-in USB connectors and 2 more USB pin-headers which require 2 additional USB cables to provide 4 more USB ports
- PS/2 Keyboard and PS/2 Mouse
- UARTs (Universal Asynchronous Receiver / Transmitter):
 - 1 complete serial port (COM1) on board

1-3.8 Advanced System Power Management

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

- ACPI V2.0 compliant (Advanced Configuration and Power Interface), including ACPI Suspend mode support (See Power management of BIOS Setup)
- APM V1.2 compliant (Legacy Power Management)
- Real Time Clock with date alarm, month alarm, and century field

1-3.9 SATA RAID Interface

Serial ATA RAID Interface supported by VT8237:

- Supporting 2 Serial ATA RAID connectors for 2 SATA Hard Disks with 150Mb/s transfer rate
- Supporting RAID 0, 1 configuration
- Serial ATA RAID Drivers enclosed in Support CD/Floppy Diskette for user's installation

1-3.10 AC'97 Audio Codec on board

Realtek AC'97 Audio Codec ALC650 on board:

- Supporting 6-channel display of PCM audio output
- Fully supporting surround sound applications, along with 5 stereo and 2 mono inputs
- AC'97 Audio Codec Driver enclosed in Support CD for user's installation.

1-3.11 Hardware Monitor on board

- Hardware Monitor supported by Sensor Winbond W83792AD, 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.

1-3.12 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.

1-3.13 Gigabit Ethernet Controller on board

Gigabit Ethernet Controller VIA VT6122 on board:

- Supporting 10/100/1000Mb data transfer
- Supporting Wake On LAN function through the on-board RJ45
- LAN Driver enclosed in Support CD for user's installation.

1-3.14 Front Audio Out Connector

- 1 Front Audio Out connector supporting Front Panel S/PDIF Output, Front Panel Mic-In and Front Panel Line Out
- This Front Panel Audio Out requiring an S/PDIF Audio Cable to connect itself to Front Panel Audio Connectors

1-3.15 Form Factor

- Micro-ATX Form Factor, ATX Power Supply
- Mainboard size: 180mm x 260mm

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 Identification and Installation

2-2 Memory Installation

2-3 VGA / AGP Slot Installation

2-4 IDE Connector Installation

2-5 Floppy Drive Connector (FDC) Installation

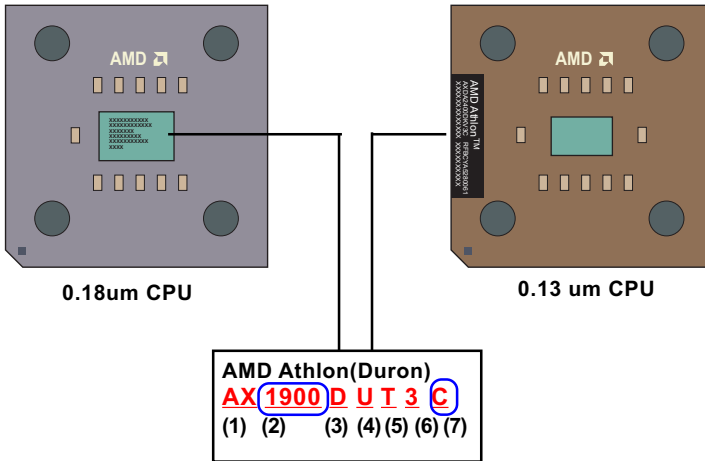
2-6 ATX Power Supply Installation

2-7 Jumper Settings

2-8 Other Connectors Configuration

2-1 CPU Identification and Installation

2-1.1 CPU Identification Legends



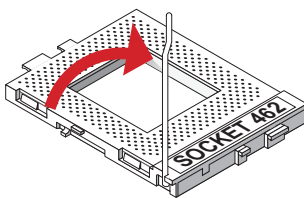
- | | |
|-----|--|
| (1) | Family / Architecture:
A, AX, AXDA=AMD Athlon Processor
D, DHD, DHM, DHL=AMD Duron Processor |
| (2) | Speed: 1000=1000MHz, 1600=1400MHz, 1700=1467MHz,
1800=1533Mhz, 1900=1600MHz, 2000=1667MHz,
2100=1733MHz, 2200=1800MHz, 2400=2000MHz,
2600=2133MHz, 2700=2167MHz, 2500=1833MHz(Barton),
2800=2083MHz(Barton), 3000=2250MHz(Barton),
3200=2332MHz(Barton) |
| (3) | Package Type: A=CPGA, D=OPGA |
| (4) | Voltage: L=1.5V, U=1.6V, K=1.65V, P=1.7V, M=1.75V, N=1.8V |
| (5) | Maximum Temperature: R=70°C, Y=75°C, V=85°C
T=90°C, S=95°C, Q=100°C |
| (6) | Size of L2 Cache: 1=64Kb, 2=128Kb, 3=256Kb, 4=512Kb |
| (7) | Max FSB: A=B=200MHz, C=266MHz, D=333MHz, E=400MHz
Note: Get the Host CPU Clock by dividing FSB by 2. |

2-1.2 CPU Installation with Socket 462

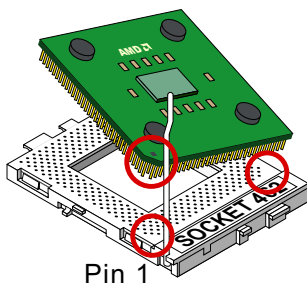
This mainboard is built with CPU Socket 462 supporting the AMD CPUs Athlon, Athlon XP and Duron:

- Follow the steps described in this section to install CPU into the on-board Socket 462.
- After installation of CPU, you must also install a proper cooling fan on top of the CPU and connect the Fan cable to the CPU fan connector.

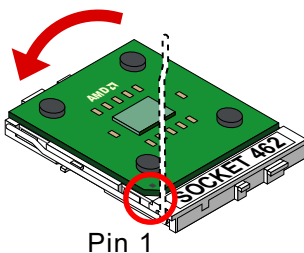
1. First pull sideways the lever of Socket 462, and then turn it up 90° so as to raise the upper layer of the socket from the lower platform.



2. Configure Pin 1 of CPU to Pin 1 of the Socket, just as the way shown in the diagram on the right. Adjust the position of CPU until you can feel all CPU pins get into the pin holes of the socket.



3. Make sure that all CPU pins have completely entered the socket and then lower down the lever to lock up CPU to socket.



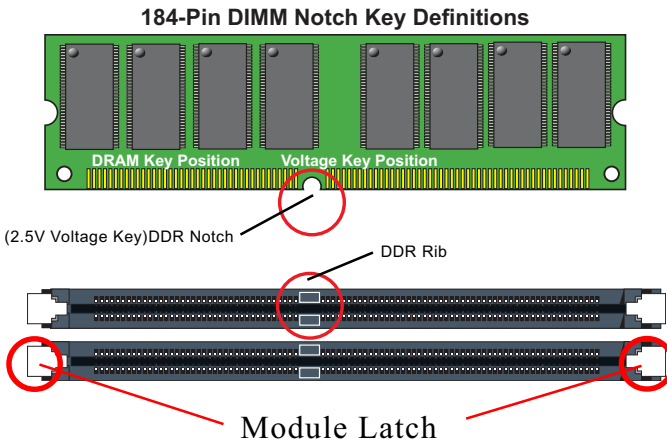
2-2 Memory Installation

How to tackle the memory Modules:

- 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 into a slot improperly will damage the memory module and slot itself.
- Make sure you have the right type of memory module for your mainboard.

2-2.1 To Install DDR SDRAM Module

- This mainboard supports up to 2GB unbuffered DDR 400/333/266/200 SDRAM, with 2 DDR DIMM slots on board. Do not insert other type of modules into these slots.
- DDR DIMM slot has 184-pins and one notch. Insert a DDR SDRAM vertically into the 184-pin slot with the notch-to-rib matching. Press the Module down in a gradual way until it surely reaches the bottom and clicks straight up the two latches on the left and right of the slot. If any one of the latches has not turned up completely, you should unplug the module and press it down a bit more firmly.

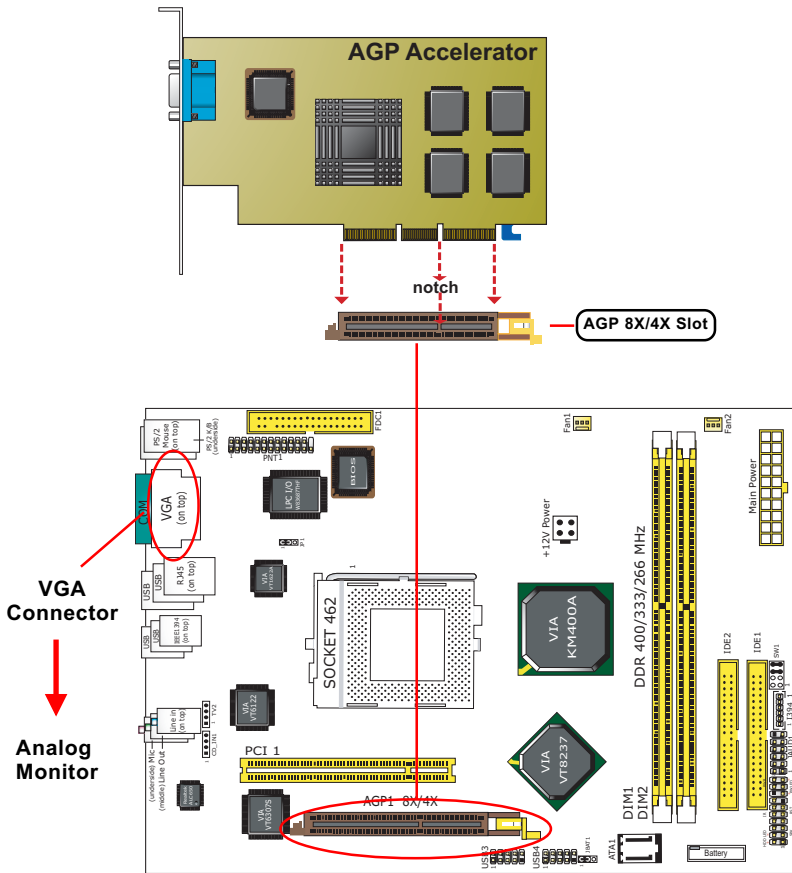


2-2.2 To Remove a DIMM:

- Press down the holding latches on both sides of the DIMM slot and the module will be released from it.

2-3 VGA / AGP Slot Installation

1. To install onboard VGA, please connect your monitor directly to the VGA connector on board.
2. 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 8X/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.

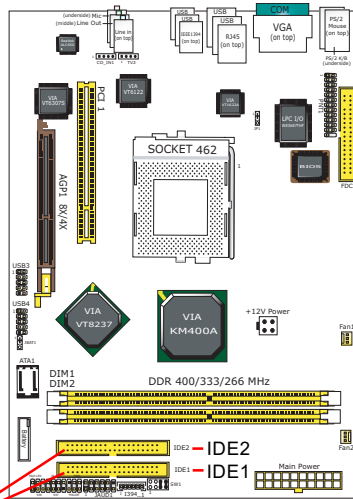


2-4 IDE Connector Installation

To install IDE Connector, you may connect the blue connector of IDE cable to the primary (IDE1) or secondary (IDE2) connector on board, and then connect the gray connector to your slave device and the black connector to your master device. If you install two CD-ROMs/hard disks, you must configure the second drive to Slave mode by setting their jumpers correctly.

Hard Disk Drive Connector

Orient the red line on the IDE Flat Cable to Pin1.



Pin 1 (to Red Line)

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.

Gray connector (To slave device)

Red line

Black connector (To Master Device)

Blue connector (To Mainboard)

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.

Bundle Strap

Red line

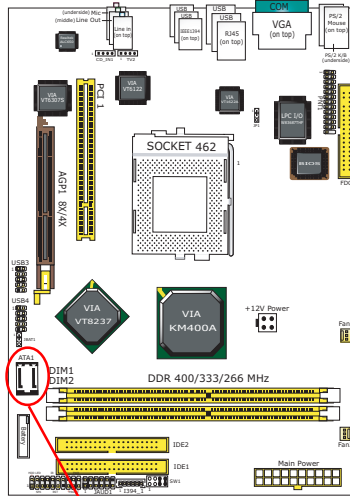
80-conductor IDE cable

Blue connector (To Mainboard)

Black connector (To Master Device)

2-5 SATA RAID Connectors Installation

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.



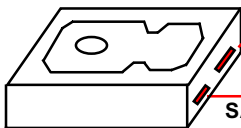
ATA1



SATA RAID Connector

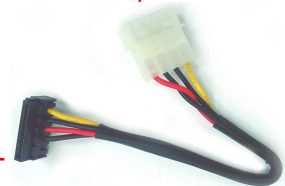


To Power Supply



SATA Power Connector

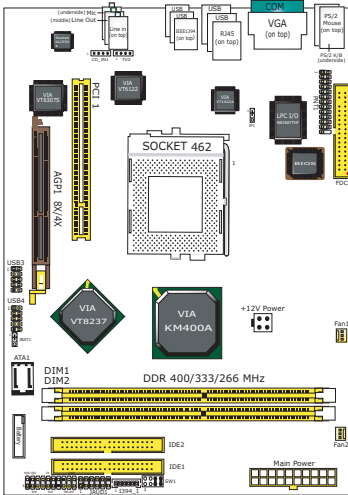
Serial ATA Hard Disk



Serial ATA Power Cable (optional)

2-6 Floppy Drive Connector Installation

To install FDC, you should connect the end of FDC cable with single connector to the board, and connect the other end with two connectors to the floppy drives.



Floppy Drive Connector:

Orient the red line of the Floppy Flat Cable to Pin 1.

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 with 2nd connector for 2nd floppy drive is an optional item in the Mini-barebone System.

Signal Swap End

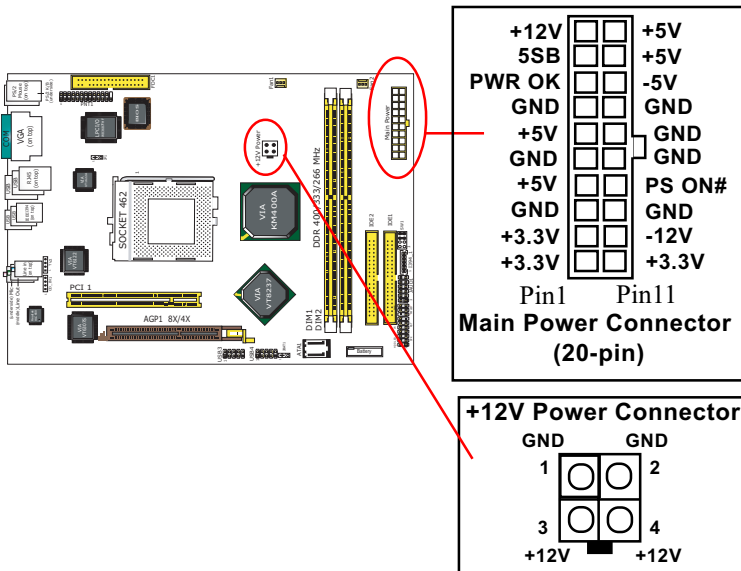
Red line



To 1st Floppy Drive

To mainboard

2-7 ATX Power Supply Installation





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






To set up Power Supply on this mainboard:

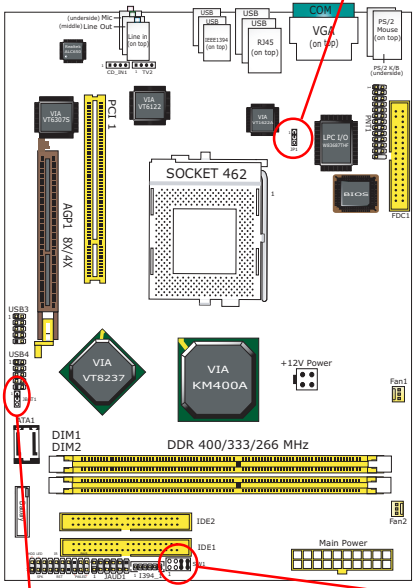
1. Get ready a V2.03 ATX Power Supply which provides a square-shaped +12V Power Connector in addition to the 20-pin Main Power Connector and other peripheral power connectors.
2. Connect the on-board square-shaped +12V Power Connector to the square-shaped +12V Power Connector of the Power Supply.
3. Connect the on-board 20-pin Main Power Connector to the 20-pin Main Power Connector of the Power Supply. Please note that both the +12V Power Connector and the 20-pin Main Power Connector should be connected to Power Supply to power on the system.



2-8 Jumper Setting

The following diagram show the location and setting of jumper block on the mainboard.

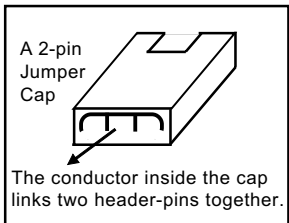
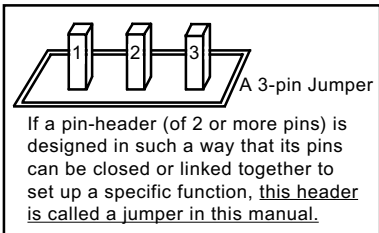
Anti-burn Shield (ABSII)	
JP1: (Overheated CPU Shutdown) (only for Athlon XP/Duron Morgan)	
1	 1-2 closed (default) Enabled
1	 2-3 closed Disabled

SW1:CPU Frequency Select	
SW1	CPU Clock
2 1	 8 7 100MHz
2 1	 8 7 133MHz
1	 8 7 166MHz
2 1	 8 7 200MHz
2 1	 8 7 133/166/200 Auto-detect (default)



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

How to tackle the Jumpers:








- A Jumper is usually but not necessarily given a “JpX” legend.
- In the Jumper setting diagram, the 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, the mainboard will be damaged.

2-8.1 SW1: CPU Clock Select



1. Before setting the CPU clock, read the Identification Legend on the CPU, find the Max FSB and divide it by two. The result is the default CPU clock. (FSB= CPU Clock x 2)
2. Select the CPU clock you want from 100/133/166/200MHz and set SW1 to match your choice.
3. If you select a CPU clock which is higher than your default CPU clock, it may fail to boot system, you should restore the default setting and then clear CMOS to reboot your system. (See Clear CMOS)

SW1:CPU Frequency Select		
SW1	CPU Clock	
2 1 	8 7	100MHz
2 1 	8 7	133MHz
1 	8 7	166MHz
2 1 	8 7	200MHz
2 1 	8 7	133/166/200 Auto-detect (default)



2-8.2 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, restore the JBAT1 setting to Pin1-2 closed.
4. CMOS data are restored to default now. 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

2-8.3 Jp1: Anti-burn Shield (ABSII)

Anti-burn Shield (ABSII) JP1: (Overheated CPU Shutdown) (only for Athlon XP/Duron Morgan)	
1	 1-2 closed (default) Enabled
1	 2-3 closed Disabled

JP1 is designed to enable the overheat safeguard for some CPUs which are incorporated with a protective thermal diode. The latest AMD Athlon XP and Duron Morgan CPUs are incorporated with such thermal diode and can be protected by this function. Setting JP1 1-2 closed (default setting) will get system shutdown when any of the above-mentioned CPUs gets to 85°C (the default protection temperature.) Only when the CPU returns to a cooler state can you restart your system.

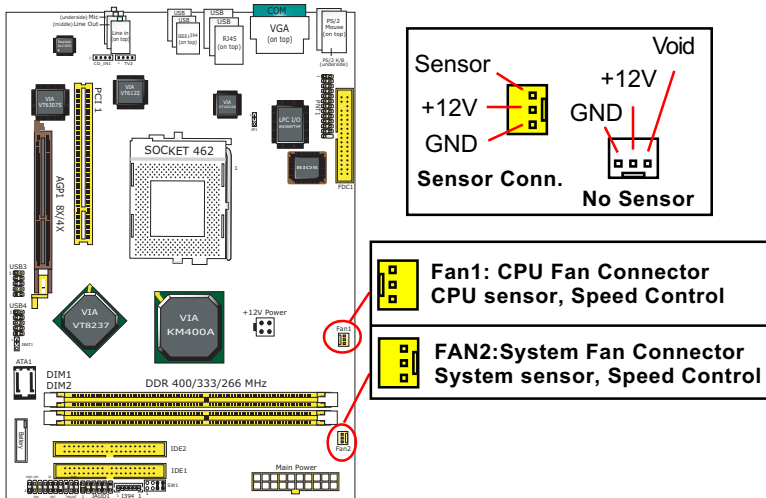
For other CPUs that are not incorporated with a protective thermal diode, please set JP1 to 2-3 closed to disable the function because it is a vain design now.

Reminder: If a sudden shutdown happens to your system which has been running well for a while with an AMD Athlon XP/Duron Morgan CPU, this might be caused by the “Overheated CPU Shutdown” design. Please use a better CPU cooling fan to restart your system.

2-9 Other Connectors Configuration

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

2-9.1 Onboard FAN Connectors



Please populate the cooling fans as illustrated above.

FAN1: FAN1 should be connected to CPU cooling FAN only for CPU temperature detection and CPU Fan speed control.

FAN2: FAN2 should be connected to System cooling Fan for system temperature detection and system Fan speed control.

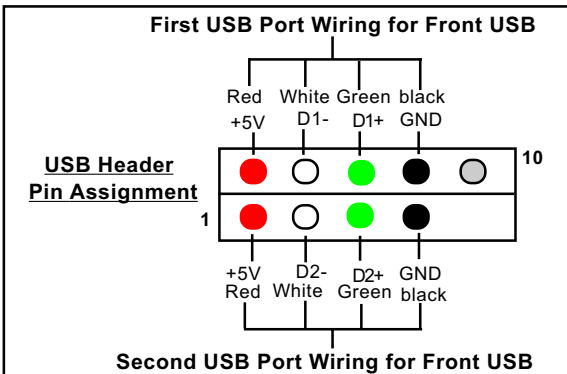
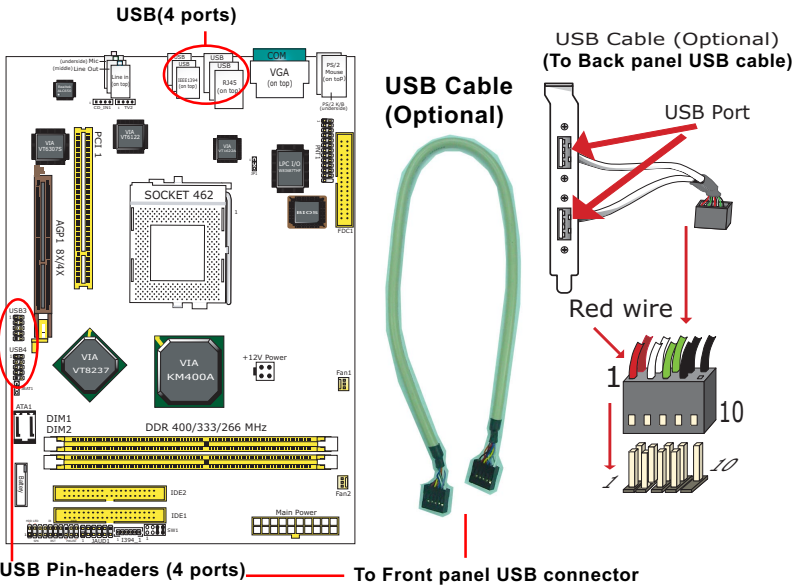
Wrong application will cause mal-functioning of the fan connectors.

2-9.2 USB Ports and USB Pin-headers

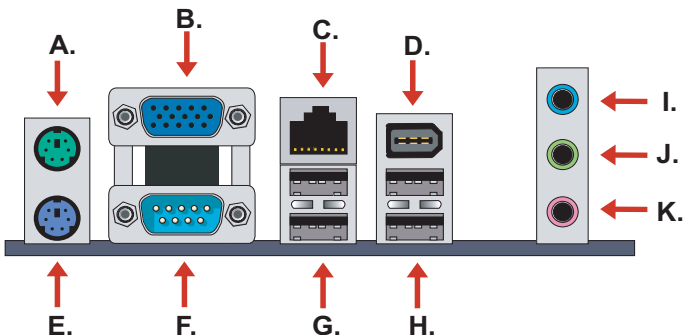
This mainboard provides four USB ports on board supporting various USB devices. In addition, two USB pin-header are added on board to provide expansion of four more optional USB ports by using two additional USB Cables.

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 98SE and above. Please see Chapter 3 for USB2.0 Installation.



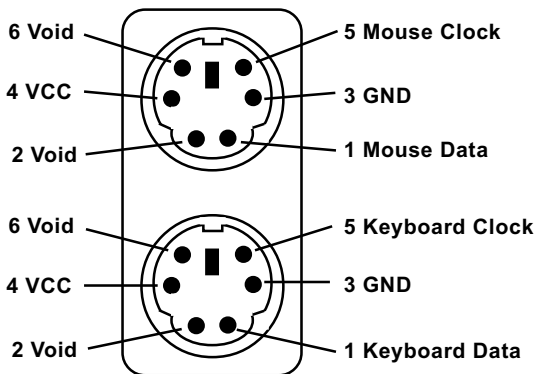
2-9.3 Chassis Panel Connectors



- | | |
|---|--|
| A : PS/2 Mouse | H : USB 2 (middle)
USB 3 (underside) |
| B : VGA Connector | I : Line in/
Rear Speaker Out |
| C : LAN Port RJ45 (Top) | J : Line Out /
Front Speaker Out |
| D : IEEE1394 Connector | K : Microphone Input /
Center Subwoofer Out |
| E : PS/2 Keyboard | |
| F : COM1 Port | |
| G : USB 0 (middle)
USB 1 (underside) | |

2-9.4 PS/2 Mouse And PS/2 Keyboard

PS/2 Mouse Connector (green, on top)



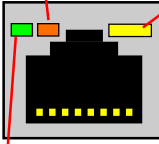
PS/2 Keyboard Connector (purple, underside)

2-9.5 LAN Connector

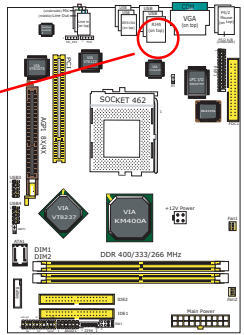
One RJ45 connector is on board for LAN connection, supporting GiGabit Ethernet 10/100/1000Mb data transfer.

Red/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.



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

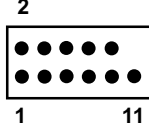


2-9.6 JAUD1: External Audio Out Connector

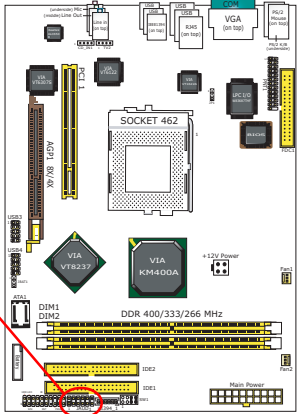
External Audio Out Connector supports Front Panel S/PDIF Output, Front Panel Mic-In and Front Panel Line-out.

This External Audio-out Connector requires an S/PDIF Audio Cable to connect itself to Front Panel Audio Connectors.

Audio-out Pin Assignment

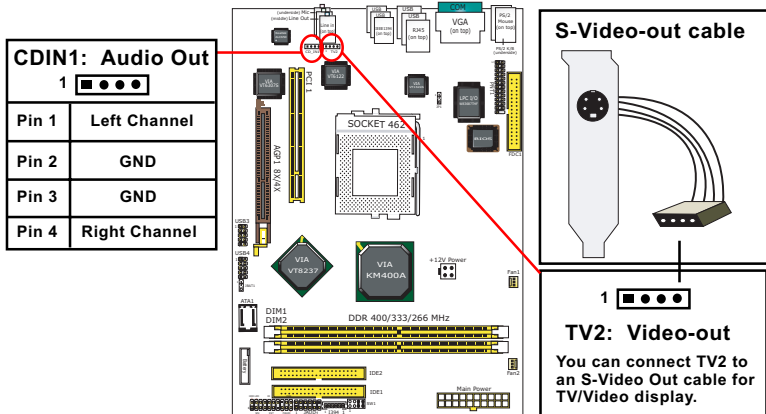


Pin 1 Reserved	Pin 2 GND
Pin 3 GND	Pin 4 +5V
Pin 5 +5V	Pin 6 SPDIF OUT
Pin 7 MIC IN	Pin 8 +5VA
Pin 9 LINE IN R	Pin 10 GNDA
Pin 11 LINE IN L	



2-9.7 Audio Out and Video Out Connectors

CDIN1 is an audio connector connecting CD-ROM audio to mainboard.
 TV2 is a video out connector supporting video display.

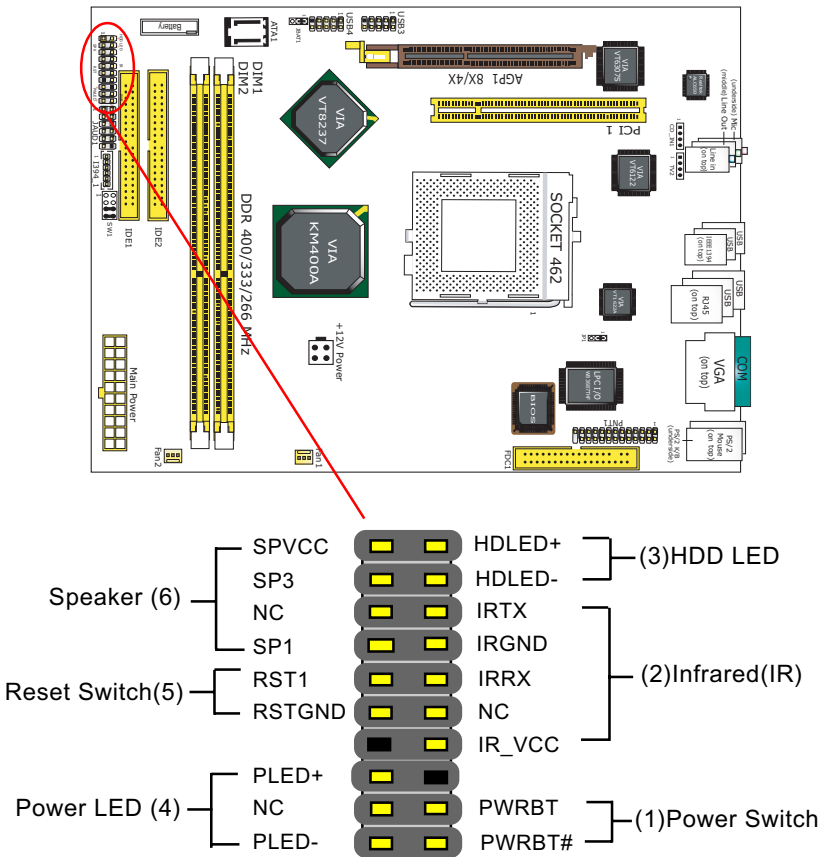


2-9.8 Front Panel Connectors

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

- (1) Power Switch Connector:
 Connection: Connected to a momentary button or switch.
 Function: Manually switching the system between “On” and “Soft Off”. Pressing the momentary button for more than 4 seconds will also turn the system off.
- (2) IR Connector (Infrared Connector):
 Connection: Connected to Connector IR on board.
 Function: Supporting wireless transmitting and receiving module on board.
- (3) HDD LED Connector:
 Connection: Connected to HDD LED.
 Function: To supply power to HDD LED.

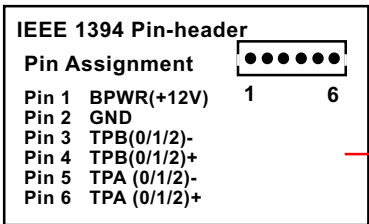
- (4) Power LED Connector:
 Connection: Connected to System Power LED.
 Function: To supply power to “System Power LED”.
- (5) Reset Switch Connector:
 Connection: Connected to case-mounted “Reset Switch”.
 Function: To supply power to “Reset Switch” and support system reboot function.
- (6) Speaker Connector:
 Connection: Connected to the case-mounted Speaker.
 Function: To supply power to the case-mounted Speaker.



2-9.9 IEEE 1394a Port/Pin-header

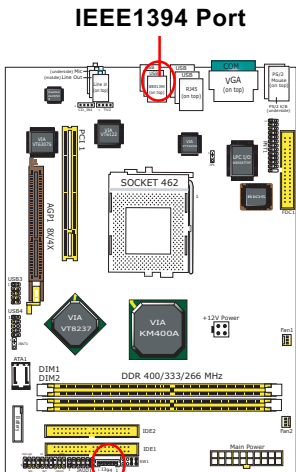
Two IEEE1394a Ports are built on board for Digital Video Cameras and other devices with 1394a interface. Another IEEE 1394a Pin-header is built on board providing one more 1394a channel on the front Panel.

- When plugging the IEEE1394 cable to IEEE1394 Header, users must make sure the red wire is connected to Pin 6.



To IEEE 1394 pin-header on board for one Front Panel 1394a Port

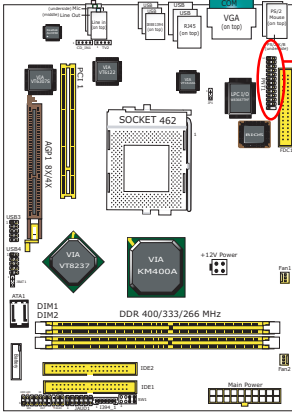
IEEE1394 Cable (optional)



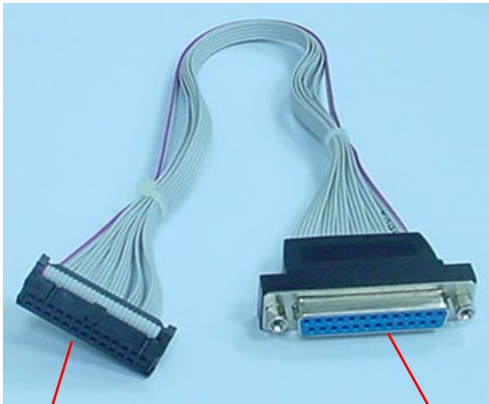
To Barebone-system Front Panel 1394 connector

2-9.10 Printer Port: PNT1 (Optional)

PNT1 is a parallel printer port.



PNT1: Printer Port Pin Assignment	
Pin 1 STROBE#	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	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 Support CD

3-2 VIA 4-in-1 Drivers Installation

3-3 Graphics Driver Installation

3-4 AC'97 Audio Driver Installation

3-5 USB 2.0 Driver Installation

3-6 Hardware Monitor Utility Installation

3-7 Giga LAN Driver Installation

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:



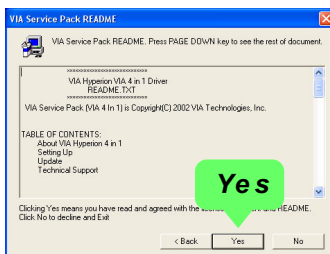
2. In case your system does not open the Support CD automatically, please click to the following path to enter the Main Installation Menu:
D:\Autorun.exe (assuming that your CD-ROM Drive is Drive D)
3. We recommend that drivers installation should be started from top to bottom of main menu.
4. Drivers 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.

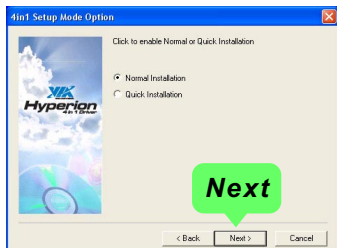
3. “VIA Service Pack README” screen will appear, please click the “Yes” button to agree with the Licence Agreement and continue.



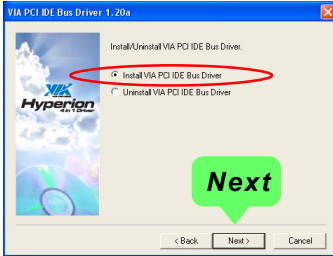
4. On the screen below, check “Normally Install” and click “Next” to continue. (If you check “Quick Install”, you will skip the detailed procedures of the VIA 4-in-1 Setup.)

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

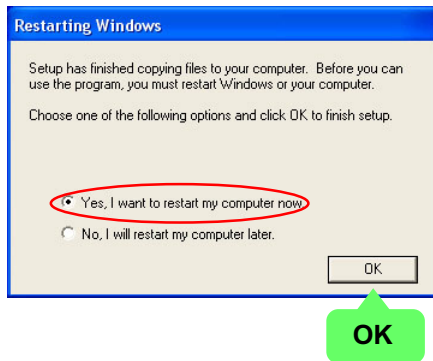
- VIA PCI IDE Bus Driver
- AGP Driver (AGP 3.0 Supported)
- VIA INF Driver 2.00a



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



10. 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.



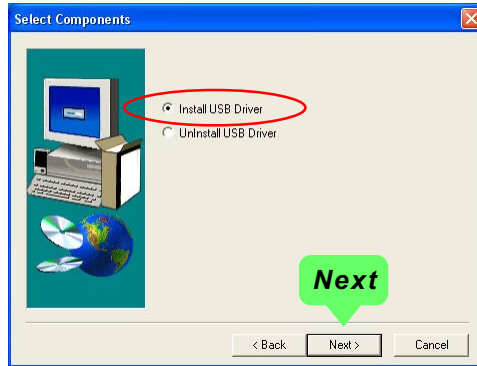
3-3 USB 2.0 Driver installation

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 2K/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, user must install the USB2.0 driver to activate the USB2.0 support:

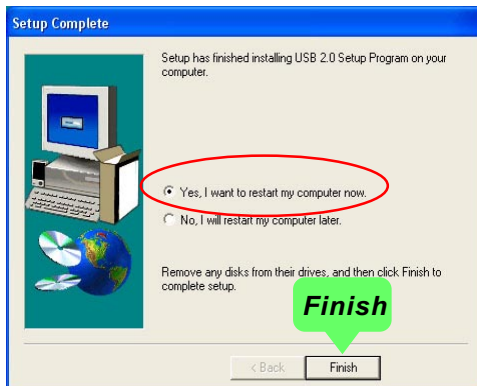
1. Following the procedures of opening the Support CD, click to choose "VIA USB 2.0 Driver" to proceed. Please notice that the USB card driver is different from the USB 2.0 driver typically for the on-board USB. Do not use the USB card driver here.
3. Instantly the "USB 2.0 Setup Program" will pop up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



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



5. 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.



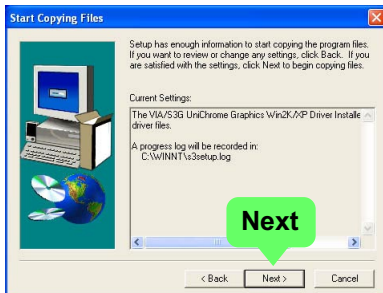
3-4 Graphics Driver Installation

1. Click to “Install Graphics Driver”. The Graphics Driver is specifically for on-board VGA.

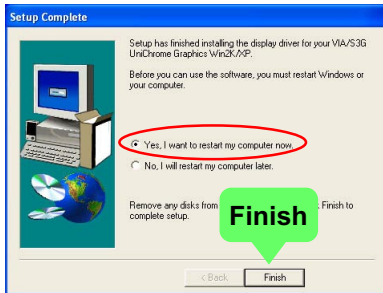
2. When the screen of “VIA/S3G UniChrome Win2K/XP Display Setup Program” appears, please press “Next” button to continue.



3. Then the dialog window will tell you where the driver to be installed, please press “Next” button to go on.



3. After all the setup procedures have completed, click to “Finish” button to exit the Installation program and re-start your system.



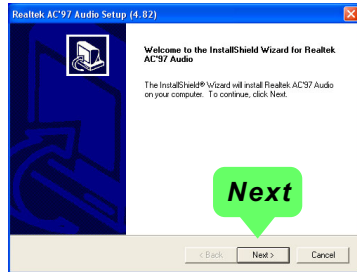
3-5 AC'97 Audio Driver Installation

Realtek AC97 Audio Codec on board, AC'97 2.2 compatible stereo audio code for PC multimedia systems. Realtek AC'97 Audio Codec Driver is provided in Support CD for user's installation.

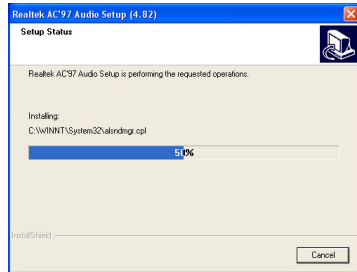
3-5.1 Install AC'97 6-channel Audio Driver

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

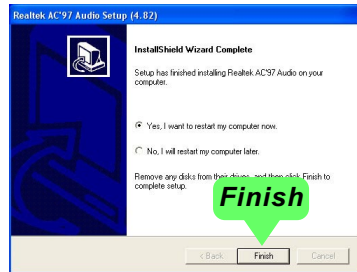
2. Instantly, the "InstallShield Wizard" screen appears to guide you through the "Realtek AC'97 Audio Setup".



3. Instantly, the Setup program proceeds to install the softwares which include AC'97 driver and AVRack. (If you want to stop setup, click the "Cancel" button.)



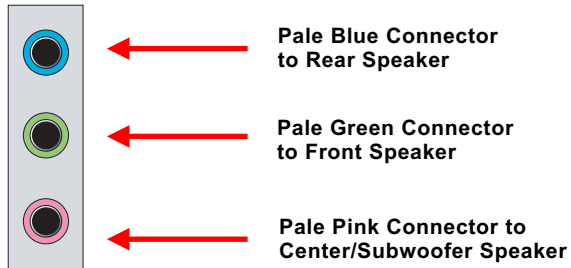
4. After the setup process is finished, please check the radial button "Yes, I want to restart my computer now." And click "Finish" to restart your system.



3-5.2 Verify 6-channel Audio

After installation of AC'97 6-channel Codec, you must configure the 5.1 Speaker connection to enable the 6-channel audio.

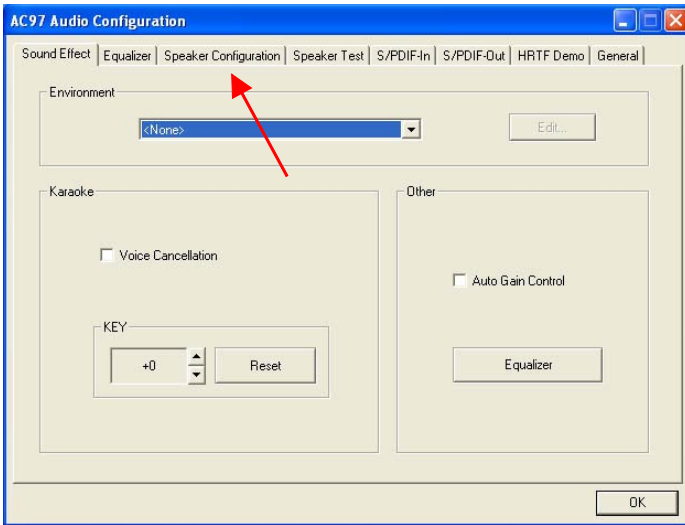
1. Connect your on-board Audio Connector to your 6-channel speakers as depicted in the figure below:



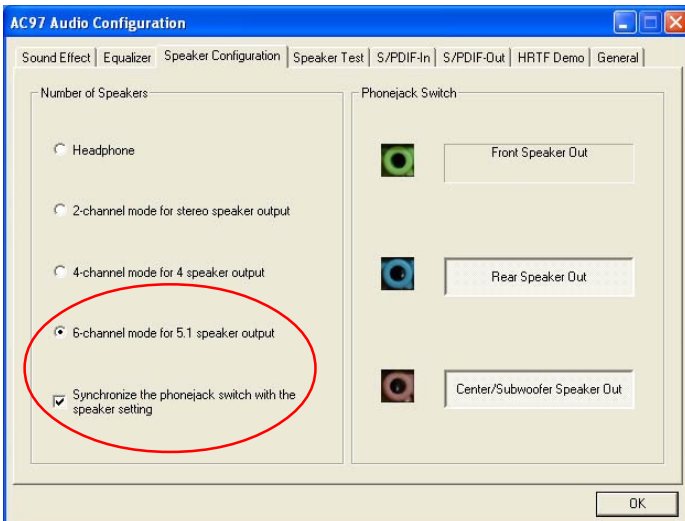
2. After Connection is done, start your Windows system and double click the Avance Sound Effect manager icon to enter 6-channel configuration:



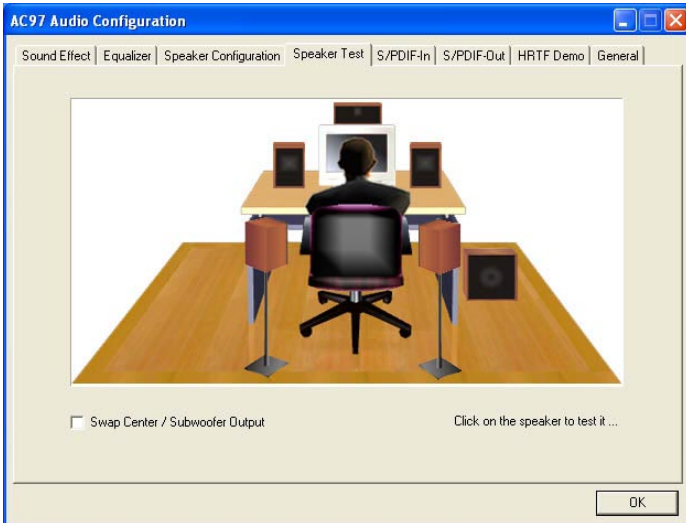
3. The “AC’97 Audio Configuration” screen will pop out. Click the “Speaker Configuration” bar with your mouse.



4. Instantly, the “Speaker Configuration” screen will pop out. Pick the items “6-channel mode for 5.1 speakers output” and “ Synchronize the phonejack switch with the speakers settings” and then click “OK” to finish configuration.



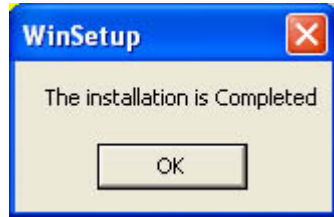
5. At finishing the Speakers Configuration, you can also click the “Speaker Test” bar on the screen to test the 6-channel performance. The figure below is the “Speaker Test” screen with testing instructions enclosed on it. Follow the instructions to perform the Speakers Test.



3-6 Giga LAN Driver Installation

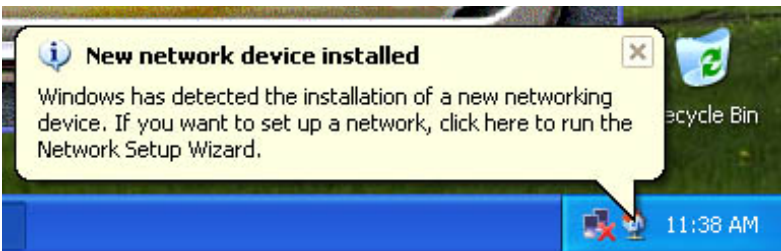
3-6.1 Installation

1. Following the procedures of opening the Support CD, click to “Onboard Giga LAN Driver” to proceed.
2. Instantly, “The installation is completed” screen appears, indicating that LAN Driver setup is finished.



3-6.2 Verification

1. After LAN Driver setup, a new networking icon will appear at the corner of the “Start” screen of your system, indicating that a network channel has been set up.



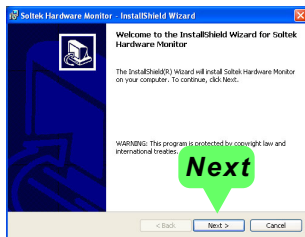
3-7 Hardware Monitor Utility Installation

3-7.1 Installation

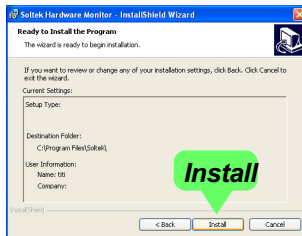
Hardware Monitor is built on this mainboard. Its installation is programmed to a fully automated mode on Windows 9X/Me/NT4/2000/XP. Users can follow the model installation below for its installation on various Windows System.

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

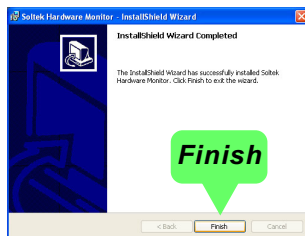
2. The Soltek Hardware Monitor InstallShield Wizard will pop up to guide you to the installation. Press “Next” button to continue.



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

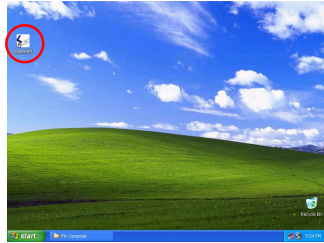


4. After all the setup process is complete, click “Finish” to exit the wizard.



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.

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.

The screenshot shows the Soltek Hardware Monitor software interface. It features a futuristic, metallic design with a central 'SOLTEK' logo. The interface is divided into several sections: 'TEMPERATURE' (CPU Die: 40, ABS II: 47, RT 2: 29), 'FAN TACHOMETER' (Fan 1: Not Found, Fan 2: 6750, Fan 3: Not Found), and 'VOLTAGE' (CPU Voltage: 1.712, DIMM Voltage: 2.512, 3.3V: 2.286, 5V: 4.919, 12V: 12.096, -12V: -12.944, 5VSB: 4.914, Battery: 7.080). A 'SOLTEK' button is located on the right side of the interface. A 'Status Warning LED' is also visible. A context menu is open over the 'SOLTEK' button, showing options: 'About SoltekHM', 'Hide', and 'Exit'. The text 'SOLTEK COMPUTER INC.' is visible at the bottom of the interface.

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.

Chapter 4 AMI 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 Update 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:

DEL : 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 check and configure the BIOS Setup for the new start.

4-4 The POST (Power On Self Test)

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 Update 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 for upgrading saving, and verifying the system BIOS. The Update Utility can also be run from a hard disk drive or a network drive.
- It is highly recommended that you save a copy of the original mainboard BIOS along with a Flash EPROM Programming utility (*amiflash.exe*) to a bootable floppy disk so that you can reinstall the BIOS when in need.
- Normally, to update BIOS is unnecessary if the system is working fine. Users should only update BIOS when incompatible problems are encountered or new features have to be added to system.
- “AMIFLASH.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, 2000 or XP environment.***

• **Please follow the steps below for updating the system BIOS:**

Step 1. Please visit the board maker’s website, download the zip files of the latest BIOS and AMI flash utility “**amiflash.exe**” for your mainboard. After unzipping, the BIOS file format will be *.ROM, of which “ * ” stands for the specific BIOS file name.

Step 2. Create a bootable diskette. Then copy the BIOS file and AMI flash utility “**amiflash.exe**” into the diskette.

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

Step 4. Under “A “ prompt, type “ **amiflash *.ROM** “ and then press <Enter> to run BIOS update program. (*.ROM depends on your mainboard model and version code. Instead of typing “*”, you should type the specific file name for your specific mainboard). For example, you may type “amiflash MP005.rom ”.

Step 5. When the message “Flash ROM Update Completed - Pass.” appears, please restart your system.

Step 6. You will see a message “CMOS Memory Size Wrong” during booting the system. Press or <F1> to run CMOS setup utility, then reload “Load Failsafe Defaults” or “**Load Optimal Defaults**” and save this change.

4-6 BIOS SETUP --- CMOS Setup Utility

4-6.1 CMOS Setup Utility

This mainboard comes with the AMI BIOS from American Megatrends 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 RUN SETUP

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

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.

<ul style="list-style-type: none">▶ Standard BIOS Features▶ Advanced BIOS Features▶ Advanced Chipset Features▶ PCI/PNP Resource Management▶ Boot Configuration Setup▶ Power Management Features	<ul style="list-style-type: none">▶ BIOS Security FeaturesLoad Optimal DefaultsDiscard ChangesSave Changes and ExitDiscard Changes and Exit
↑↓←→: Move Enter: Select +/-: Values F10: Save Esc: Exit F1: General Help F7: Previous Values F8: Fail-Safe Defaults F9: Optimize Defaults	
Configure Time and Date. Display System Information...	

3. 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.
4. You may return to the Main Menu anytime by pressing <Esc>.
5. In the Main Menu, "Save Changes and Exit" saves your changes and reboots the system, and "Discard Changes and Exit" ignores your changes and exits the program.

6. In entering the Main option of the Main Menu, please use the functions in the Function List to configure the setting:

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

Use [Enter], [Tab] or [Shift-Tab] to select a field.

Use [+] or [-] to choose the options.

<F1>: "General Help" provides explanations of the hot-key functions available.

<F7>: "Previous values" allows user to discard previous values or not.

<F8>: "Fail-safe defaults" allows user to load Fail-safe Defaults or not. Save and Exit Setup.

<F9>: "Optimized Defaults" allows user to load Optimal Defaults or not.

**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>**

4-6.3.1 IDE Configuration

Choose “IDE Configuration” in “Advanced BIOS Features” and press <Enter>. The following sub-screen will appear for IDE Devices configuration:

IDE Configuration		Help Item
OnBoard PCI IDE Controller	Both	
▶ Primary IDE Master	Hard Disk	
▶ Primary IDE Slave	ATAPI CDROM	
▶ Secondary IDE Master	Not Detected	
▶ Secondary IDE Slave	Not Detected	
▶ Third IDE Master	Not Detected	
▶ Fourth IDE Master	Not Detected	
Hard Disk Write Protect	Disabled	
IDE Detect Time Out (Sec)	35	
ATA(PI) 80Pin Cable Detection	Host & Device	

OnBoard PCI IDE Controller

Allows you to enable/disable onboard PCI IDE controller.
Choices: Disabled; Primary; Secondary; Both

4-6.3.1-1 Primary/Secondary IDE Master/Slave

▶ Primary IDE Master	Hard Disk
▶ Primary IDE Slave	ATAPI CDROM
▶ Secondary IDE Master	Not Detected
▶ Secondary IDE Slave	Not Detected
▶ Third IDE Master	Not Detected
▶ Fourth IDE Master	Not Detected

Press <Enter> to show the detected information of Primary/Secondary IDE Master/slave device(s). If any IDE device is detected in any one of the above items press <Enter> to reveal the IDE information:

Primary/(Secondary) IDE Master/(Slave)

Primary/(Secondary) IDE Master/(Slave)	Help Item
Device : Hard Disk Vendor : WDC WD400BB-00DEA0 Size : 40.0GB LBA Mode : Supported Block Mode : 16Sectors PIO Mode : 4 Async DMA : MultiWord DMA-2 Ultra DMA : Ultra DMA-5 S.M.A.R.T. : Supported	
Type LBA/Large mode Block (Multi-Sector Transfer) PIO Mode DMA Mode S.M.A.R.T. 32Bit Data Transfer	Auto Auto Auto Auto 200MHz Auto Disabled

Type

To select the types of the IDE devices:
 Not Installed;
 Auto: Setting type automatically
 CD-ROM: ATAPI (Packet Interface) CD-ROM drive
 ARMD: ATAPI Removable Media Device

LBA/Large mode

To select or disable LBA/Large mode.

Block (Multi-Sector Transfer)

To select or disable Block Mode. The data transfer from and to the device occurs one sector or multiple sectors at a time.

PIO Mode

To select or disable PIO Mode.
 Choices: Disabled; 1, 2, 3, 4

DMA Mode

To select DMA Mode.
 Choices: Auto; SWDMAn; MWDMA; UDMA

S.M.A.R.T

Allows you to enable / disable the Self Monitoring Analysis and Reporting Technology for the hard disk.

32Bit Data Transfer

To auto-select (default) or disable 32Bit Data Transfer.

4-6.3.1-2 Hard Disk Write Protect

Hard Disk Write Protect Allows you to Enabled / Disable(default) Hard Disk Write Protection

4-6.3.1-3 IDE Detect Time Out

IDE Detect Time Out (Sec) Allows you to set time out for IDE Detection.
Choices: 0 - 35 seconds in 5 seconds stepping

4-6.3.1-4 ATA(P) 80Pin Cable Detection

ATA(PI) 80Pin Cable Detection Allows you to select ATA(PI) devices for 80Pin Cable Detection. To set Host & Device allows onboard IDE controller and IDE disk drive to detect the type of IDE cable used.
Choices: Host & Device, Host, Device

4-6.3.3 Super IO Configuration

Choose “SuperIO Configuration” in “Advanced BIOS Features” and press <Enter>. The following sub-screen will appear for configuration:

SuperIO Configuration

Configure Win687THF Super IO Chipset	Help Item
OnBoard Floppy Controller	Enabled
Serial Port1 Address	3F8/IRQ4
Serial Port2 Address	2F8/IRQ3
Serial Port2 Mode	Standard
OnBoard CIR Port	Disabled
Parallel Port Address	378
Parallel Port Mode	Normal
Parallel Port IRQ	IRQ7

OnBoard Floppy Controller

Allows you to enable / disable the Onboard Floppy Controller.
Choices: Enabled; Disabled

Serial Port1 Address

Allows you to set the Onboard Serial Port1 Address.
Choices: Disabled; 3F8/IRQ4; 3E8/IRQ4; 2E8/IRQ3;

Serial Port2 Address

Allows you to set the Onboard Serial Port2 Address.
Choices: Disabled; 2F8/IRQ3; 3E8/IRQ4; 2E8/IRQ3;

Serial Port 2 Mode

If Serial Port2 Address is not disabled, it allows you to set the Serial Port 2 Mode.

Choices are:

Standard;

IrDA SIR: Providing 3 items for configuration:

IR Duplex Mode:

Half Duplex; Full Duplex

IR Tx2Rx 40-Bits Delay Sel:

No 40-Bits Delay; Tx 40-Bits Delay

ASK IR: Providing 3 items for configuration:

IR Duplex Mode:

Half Duplex; Full Duplex

IR Tx2Rx 40-Bits Delay Sel:

No 40-Bits Delay; Tx 40-Bits Delay

IR Rx2Tx 40-Bits Delay Sel:

No 40-Bits Delay; Rx 40-Bits Delay

OnBoard CIR Port

Allows you to set the onboard CIR Port.

Choices: Disabled; 2E0; 3E0; 298

CIR Port IRQ

If Onboard CIR Port is not disabled, this item appears to allow you to set the onboard CIR

Port IRQ for 2E0 ,3E0 and 298

Choices for 2E0, 3E0 and 298:

IRQ3; IRQ4; IRQ10; IRQ11

Parallel Port Address

Allows you to configure Parallel Port Address.
Choices: Disabled; 378; 278; 3BC;

Parallel Port Mode

If Parallel Port Address is set 378/278/3BC, Parallel Port Mode appears to allow you to set the Parallel Port Mode. The choices are:

- Normal;
- EPP;
- EPP & ECP:
 - ECP Mode DMA Channel:
 - DMA0; DMA1; DMA3

Parallel Port IRQ: IRQ5; IRQ7

If Parallel Port Address is set 378/278/3BC, Parallel Port IRQ appears to allow you to set the Parallel Port IRQ.
Choices:IRQ5; IRQ7

4-6.3.4 Hardware Health Configuration

Choose “Hardware Health Configuration” in “Advanced BIOS Features” and press <Enter>. The following sub-screen will appear for configuration:

Hardware Health Configuration		Help Item
CPU Temperature	: 43°C/111°F	
ABS II Shut Down Temperature	: 85°C/185°F	
SMART FAN Control	Enabled	
CPU External Temp. Reading	: 34°C/93°F	
System Temp. Reading	: 32°C/89°F	
Fan1 Speed	: 3125 RPM	
Fan2 Speed	: N/A	
VcoreA(Vcore)	: 1.504 V	
VIN0 (VCC3.3)	: 3.306 V	
VIN1(VCC5)	: 6.909 V	
VIN2(VDIMM)	: 2.661 V	
VIN3(+12V)	: 12.319 V	
VBAT	: 3.048 V	

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
 F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimize Defaults

CPU Temperature

Shows current CPU internal temperature.

ABS II Shutdown Temperature

This feature allows you to set the shutdown temperature to the running CPU.
 Choices: Disabled; 80°C~115°C in 5°C stepping

SMART FAN Control

Smart Fan control will increase or decrease the fan speed of the CPU fan. The hotter the CPU gets, the more speed the fan increases.

CPU External Temp. Reading

Shows current CPU external temperature.

System Temp. Reading

Shows current system temperature.

Fan1/2 Speed

Displaying the current speed of the CPU/chassis Fan.

VCoreA(Vcore)

Showing CPU core actual voltage value.

VIN0/VIN1/VIN2/VIN3/VBAT

Showing current voltage against the VIN0/VIN1/VIN2/VIN3/VBAT power supply.

4-6.3.5 USB Configuration

Choose “USB Configuration” in “Advanced BIOS Features” and press <Enter>. The following sub-screen will appear for configuration:

USB Configuration		Help Item
Module Version - 2.23.0-7.4		Enable USB host controllers.
USB Devices Enabled : None		
USB 1.1 Ports configuration	USB 8 Ports	
USB 2.0 Ports Enable	Enabled	
Legacy USB Support	Enabled	
Port 64/60 Emulation	Disabled	
USB 2.0 Controller Mode	HiSpeed	

USB 1.1 Ports Configuration

Allows you to set the USB 1.1 port(s).
Choices: 8 USB Ports; Disabled

USB 2.0 Ports Enable

Allows you to enable / disable the USB 2.0 Ports.

Legacy USB Support

Allows you to enable / disable the Legacy USB support.
Choices: Enabled; Disabled; Auto

Port 64/60 Emulation

Allows you to enable / disable the Port 64/60 Emulation.

USB 2.0 Controller Mode

Allows you to configure the USB 2.0 Controller Mode.
Choices: FullSpeed(12Mbps); HiSpeed(480Mbps)

4-6.3.6 Frequency/Voltage Control

Choose “Frequency/Voltage Control” in “Advanced BIOS Features” and press <Enter>. The following sub-screen will appear for configuration:

Frequency/Voltage Control		Help Item
Frequency/Voltage Configuration		
CPU Linear Frequency	Enabled	
CPU Clock	133	
Clock Spread Spectrum Contro	Disabled	
CPU Ratio Selection	Default	
AGP Voltage Control	1.5V	
DIMM Voltage Control	Auto	
CPU Voltage Control	Auto	

CPU Linear Frequency

Allows you to enable / disable / auto-detect the CPU Linear Frequency setting. If enabled, the CPU Frequency Setting item will appear for user’s configuration.

CPU Clock

This item allows you to set CPU Clock.
Choices: 100MHz ~250MHz in 1MHz stepping.

Clock Spread Spectrum Contro

This function will reduce the EMI (Electromagnetic Interference) in your system. If you do not have an EMI problem, leave this item disabled.

CPU Ratio Selection

Allows you to configure the CPU Ratio if the ratio is unlocked.

AGP Voltage Control

Allows you to configure the AGP Voltage.
Choices: 1.5V; 1.6V; 1.7V; 1.8V

DIMM Voltage Control

Allows you to configure the DIMM Voltage.
Choices: Auto; 2.6V; 2.7V; 2.8V; 2.9V;

CPU Voltage Control

Allows you to configure the CPU Voltage. Usually, to raise CPU voltage will raise the chance of CPU overclocking and yet risk damage of CPU.
Choices: Auto; 1.100V ~1.850V in 0.025V stepping

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:

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.
Advanced Chipset Features

Advanced Chipset Settings	Help Item
<p>Warning: Setting wrong values in below sections may cause system to malfunction.</p> <p>▶ NorthBridge VIA KM400(A) Configuration Press Enter ▶ SouthBridge VIA VT8237 Configuration Press Enter</p>	

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
 F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

4-6.4.1 NorthBridge Configuration

Choose “NorthBridge Configuration” in “Advanced Chipset Features” and press <Enter>. The following sub-screen will appear for configuration:

NorthBridge VIA KM400(A) Configuration

		Help Item
*****OnChip VGA*****		
CPU Direct Access OnChip VGA	Enabled	
OnChip VGA Frame Buffer Size	64MB	
Boot Device Select	CRT	
TV Type	NTSC	
TV Output Connector	Composite	
LCD Panel Type	7	
TV Layout	Default	
Dithering	Disabled	
***** DRAM Timing *****		
Configure SDRAM Timing by SPD	Disabled	
SDRAM Frequency	Auto	
SDRAM CAS# Latency	2.5	
SDRAM Bank Interleave	Disabled	
SDRAM Burst Length	4QW	
SDRAM Command Rate	2T	
Primary Graphics Adapter	AGP	
VLink 8X Supported	Disabled	
V-Link DATA 2X Support	Disabled	
Search for MDA Resources	Yes	
AGP Mode	AGP 8X	
AGP Read Synchronizaion	Disabled	
AGP Fast Write	Disabled	
Graphics Aperture Size	64MB	
AGP Master 1 W/S Read	Disabled	
AGP Master 1 W/S Write	Disabled	
Fast Command	Normal	

***** OnChip VGA *****

CPU Direct Access OnChip VGA

Allows CPU to access OnChip VGA directly.

OnChip VGA Frame Buffer Size

Allow you to set the memory capacity for onboard VGA.
Choices:

Boot Device Select

Allows you to select primary boot device.
Choices: CRT; LCD; CRT+LCD; TV; CRT+TV; DVI; CRT+DVI

TV Type

Allows you to select TV type.
Choices: NTSC; PAL; PALM; PALN; PALNc

TV Output Connector

Allows you to select TV Output Connector.
Choices: Composite; S-Video0; R/G/BI Cr/Y/Cb; SDTV-R/G/B; SDTV-Pr/Y/Pb; S-Video1

LCD Panel Type

Allows you to select LCD Panel Type.
Choices: 1-15

Dithering

Allows you to enable/disable Dithering.

******* DRAM Timing *******

Configure SDRAM Timing by SP

Allows you to select the DRAM Timing mode.

Choices:

Enabled: BIOS will access SPD (Serial Presence Detect) automatically to configure module timing;

Disabled: If "Configure SDRAM Timing by SP" is set to Disabled, the following 1 items will appear for user's configuration:

SDRAM CAS# Latency -- for SDRAM CAS#(Column Address Strode) Latency cycle:

1.5; 2.0; 2.5; 3.0

SDRAM Bank Interleave--allows you to enable / disable SDRAM Bank Interleave function:

Disabled; 2-way; 4-way

SDRAM Burst Length

Allows you to SDRAM Burst Length.

Choices: 4QW; 8QW

SDRAM Command Rate

Allows you to set the SDRAM Command Rate.

Choices: 1T; 2T

Primary Graphics Adapter

To select the Primary Graphics Adapter.

Choices: AGP; PCI

VLink 8x Supported

Allows you to enable / disable VLink 8x mode.

V-Link Data 2X Support

Allows you to enable / disable V-Link Data 2X mode.

AGP Mode

Allows you to select the AGP Mode on board. This item supports 1X/2X/4X/8X AGP Mode.

AGP Read Synchronization

Allows you to enable / disable the AGP Read Synchronization.

AGP Fast Write

Allows you to enable / disable the AGP Fast Write function.

Graphics Aperture Size

Series of options are available: None; 8MB; 16MB; 32MB; 64MB. 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 Master 1 W/S Read/Write

Allows you to enable / disable the AGP Master 1 W/S Read/Write function.

Fast Command

Allows you to set Fast Command mode.

Choices: Birnak; Fast; Ultra

4-6.4.2 SouthBridge VIA VT8237 Configuration

Choose “SouthBridge VIA VT8237 Configuration” in “Advanced Chipset Features” and press <Enter>. The following sub-screen will appear for configuration:

SouthBridge VIA VT8237 Configuration

PCI Delay Transaction	Disabled	Help Item
OnBoard SATA-IDE	RAID	
RAID BIOS Execute	Enabled	
OnBoard AC'97 Audio	Enabled	
VIA 6307 IEEE 1394	Enabled	
VIA 6122 Gigabit Ethernet	Enabled	

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

PCI Delay Transaction

To enable / disable PCI Delay Transaction.

OnBoard SATA-IDE

Allows you to configure on board SATA mode.
Choices: RAID; Disabled

RAID BIOS Execute

The RAID BIOS will be hidden during booting the system if enabled.

OnBoard AC' 97 Audio

To enable / disable onboard AC' 97 Audio.

VIA 6307 IEEE 1394

Allows you to enable/disable onboard IEEE 1394 controller.

VIA 6122 Gigabit Ethernet

Allows you to enable/disable onboard Gigabit Ethernet controller.

4-6.5 PCI/PNP Resource Management

PCI/PNP Resource Management allows you to modify the system's power saving functions.

Choose "PCI/PNP Resource Management" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2004, American Megatrends, Inc.
PCI/PNP Resource Management

Advanced PCI/PNP Settings	Help Item
Warning: Setting wrong values in below sections may cause system to malfunction.	
Plug & Play O/S	No
PCI Latency Timer	64
Allocate IRQ to PCI VGA	Yes
Palette Snooping	Disabled
PCI IDE BusMaster	Disabled
OffBoard PCI/ISA IDE Card	Auto
IRQ3	Available
IRQ4	Available
IRQ5	Available
IRQ7	Available
IRQ9	Available
IRQ10	Available
IRQ11	Available
IRQ14	Available
IRQ15	Available
DMA Channel 0	Available
DMA Channel 1	Available
DMA Channel 3	Available
DMA Channel 5	Available
DMA Channel 6	Available
DMA Channel 7	Available
Reserved Memory Size	Disabled

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
 F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

Plug & Play O/S

To configure the PNP devices by BIOS or O/S.
 Choices: No(by BIOS); Yes(by O/S)

PCI Latency Timer

To set the PCI Latency Time.
 Choices: 32; 64; 96; 128; 160; 192; 224; 248;

Allocate IRQ to PCI VGA

To enable/disable to assign IRQ to PCI VGA if the VGA card requests IRQ.

Palette Snooping

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.

PCI IDE BusMaster

Allows you to enable / disable the PCI IDE Bus Master function.

OffBoard PCI/ISA IDE Card

Some PCI IDE card may require this to be set to the PCI slot number that is holding the card. Please leave this at default.

IRQ 3/4/5/7/9/10/11/14/15

Allows you to specify available IRQs to be used by PCI/PNP devices.
Choices: Available; Reserved

DMA 0/1/3/5/6/7

Allows you to specify available DMAs to be used by PCI/PNP devices.
Choices: Available; Reserved

Reserved Memory Size

Allows you to specify memory size to reserve for legacy ISA devices.
Choices: Disabled; 16K; 32K; 64K

4-6.6 Boot Configuration Setup

Boot Configuration Setup allows you to modify the system's boot settings with the onboard devices.

Choose "Boot Configuration Setup" from the Main Menu and a screen with a list of options will appear:

CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.

Boot Configuration Setup

Boot Settings	Help Item
<ul style="list-style-type: none">▶ Boot Settings Configuration Press Enter▶ Boot Device Priority Press Enter▶ Hard Disk Drives Press Enter▶ Removable Drives Press Enter▶ ATAPI CDROM Drives Press Enter	

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

4-6.6.1 Boot Settings Configuration

Choose “Boot Settings Configuration” in “Boot Configuration Setup” and press <Enter>. The following items will appear for onfiguration:

Boot Configuration Setup		Help Item
Boot Settings Configuration		
Quick Boot	Enabled	
AddOn ROM Display Mode	Force BIOS	
Bootup Num-Lock	On	
PS/2 Mouse Support	Auto	
Wait For ‘F1’ If Error	Enabled	
Hit ‘DEL’ Message Display	Enabled	
Interrupt 19 Capture	Disabled	

Quick Boot

Allows you to enable / disable quick boot of your system. If enabled, BIOS will skip certain tests while booting. This will decrease the time needed to boot the system.

AddOn ROM Display Mode

If “Force BIOS” is chosen, the vendor’s logo screen will be followed by the “AddOn ROM” initial screen (the screen showing the add-on card BIOS message). If “Keep Current” is chosen, no “Add-On ROM” screen is followed.

Bootup Num-lock

To toggle between On or Off to control the state of the NumLock keys when the system boots. If On, the numeric keypad is in numeric mode. If off, the numeric keypad is in cursor control mode.

PS/2 Mouse Support

Allows you enable/disable PS/2 Mouse support.

Wait For ‘F1’ If Error

Allows you to hit F1 key when errors occur.
Choices: Enabled; Disabled

Hit ‘DEL’ Message Display

The system will show “Press DEL key to run Setup when enabled.
Choices: Enabled; Disabled

Interrupt 19 Capture

Allows option ROMs to trap interrupt 19.
Choices: Enabled; Disabled

4-6.6.2 Boot Device Priority

Choose “Boot Device Priority” in “Boot Configuration Setup” and press <Enter>. The bootable devices installed on board will appear and are allowed to assign the Boot Priority.

Boot Device Priority		Help Item
1st Boot Device	1st FLOPPY DRIVE	
2nd Boot Device	PM-WDC WD400BB-00	
3rd Boot Device	DVD-ROM	

1st/2nd/3rd Boot Device

To set (by pressing <Enter>) the already-installed devices as the 1st/2nd/3rd boot device. Choices: Disabled; Device(s) installed

4-6.6.3 Hard Disk/Removable/ATAPI CDROM Drives

Choose “Hard Disk/Removable/CD/DVD Drives” in “Boot Configuration Setup” and press <Enter>. The bootable devices installed on board will appear and are allowed to assign the Boot Priority.

Boot Configuration Setup		Help Item
Boot Settings ▶ Boot Settings Configuration ▶ Boot Device Priority ▶ Hard Disk Drives ▶ Removable Drives ▶ ATAPI CDROM Drives	Press Enter Press Enter Press Enter Press Enter Press Enter	Configure Settings during System Boot.

Hard Disk/Removable/CD/DVD Drives

Press <Enter> to show the already-installed devices for setting Boot Priority.

4-6.7 Power Management Features

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

Run the Power Management Features as follows:

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

APM Configuration

Power Management Features	Help Item
<ul style="list-style-type: none">▶ APM Configuration Press Enter▶ ACPI Configuration Press Enter	

4-6.7.1 APM Configuration

Choose “APM Configuration” in “Power Management Features” and press <Enter>. The following subscreen will appear for configuration:

APM Configuration		Help Item
Power Management/APM	Enabled	
Power Button mode	On/Off	
Restore on AC /Power Loss	Power Off	
Standby Time Out	Disabled	
Suspend Time Out	Disabled	
Hard Disk Time Out (Minute)	Disabled	
Green PC Monitor Power State	Suspend	
Video Power Down Mode	Suspend	
Hard Disk Power Down Mode	Suspend	
Advanced Monitor Events Controls		
Display Activity	Ignore	
Monitor IRQ3	Monitor	
Monitor IRQ4	Ignore	
Monitor IRQ5	Ignore	
Monitor IRQ7	Monitor	
Monitor IRQ9	Ignore	
Monitor IRQ10	Ignore	
Monitor IRQ11	Ignore	
Monitor IRQ13	Ignore	
Monitor IRQ14	Monitor	
Monitor IRQ15	Ignore	
Advanced Resume Events Controls		
Resume On Ring	Disabled	
Resume On PME#	Disabled	
Resume On KBC	Disabled	
Wake-Up	Any Key	
Resume On PS/2 Mouse	Disabled	
Resume On RTC Alarm	Disabled	
RTC Alarm Date (Days)	15	
System Time	12:30:30	

Power Management/APM

To enable/ disable the Power management

Power Button Mode

To set power Button function.
Choices: On/Off; Suspend; Standby

Restore on AC/Power Loss

To set the restore state from AC/Power Loss.
Choices: Last State; Power Off ; Power On

Standby Time Out (Minute)

To set the duration of Suspend Time Out.
Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Suspend Time Out (Minute)

To set the duration of Standby Time Out.
Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Hard Disk Time Out (Minute)

To set the duration of Hard Disk Time Out.
Choices: Disabled; 1; 2; 4; 8; 10; 20; 30; 40; 50; 60

Green PC Monitor Power State

Allows you to select the Green PC Monitor Power State.
Choices: Off; Standby; Suspend

Video Power Down Mode

Allows you to select the Video Power Down Mode.
Choices: Disabled; Standby; Suspend

Hard Disk Power Down Mode

Allows you to select the Hard Disk Power Down Mode.
Choices: Disabled; Standby; Suspend

Advanced Monitor Events Controls

Display Activity

Allows you to monitor or to ignore Display activity.

Monitor IRQ3/4/5/7/9/10/11/13/14/15

Allows you to monitor or to ignore IRQ activity.

Advanced Resume Events Controls

Resume on Ring

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.

Resume on PME#

Allows you to enable / disable the Resume on PME# function.

Resume on KBC

Allows you to enable / disable the Resume on keyboard function.

Wake-Up Key

Allows you to set the key to wake up the system.
Choices: Any Key; Specific Key

Wake-Up Password

Allows you to set the password to wake up the system.

Resume on PS/2 Mouse

Allows you to enable / disable the Resume on PS/2 Mouse function.

Resume On RTC Alarm

Allows you to enable / disable the Resume On RTC Alarm function.
If enabled, the following items will appear for user's configuration.

RTC Alarm Date / Hour / Minute / Second

If resume On RTC Alarm is enabled, this field allows you to set the Alarm date Hour, Minute and second.

RTC Alarm Date (Days) : Every Day; 01 ~ 31

RTC Alarm Hour (hours): 00 ~ 23

RTC Alarm Minutes (Minutes): 00 ~ 59

RTC Alarm Second (Seconds): 00 ~ 59

4-6.7.2 ACPI Configuration

Choose "ACPI Configuration" in "Advanced BIOS Features" and press <Enter>. The following sub-screen will appear for ACPI configuration:

ACPI Configuration

ACPI Settings		Help Item
ACPI Aware O/S	Yes	General ACPI Configuration settings
▶ General ACPI Configuration	Press Enter	
▶ Advanced ACPI Configuration	Press Enter	

ACPI Aware O/S

Allows you to enable ACPI Aware O/S function if your O/S supports ACPI. Windows XP, 2000, 98SE all support ACPI. Choices:

Yes: If "Yes" it allows you to configure "General ACPI".

No: If "No", no "General ACPI" to be configured.

▶ General ACPI Configuration:

Pressing < Enter > on General ACPI Configuration will reveal the following item(s).

Suspend mode

This item allows you to select the Suspend mode. You can select S3(STR) for suspending to DRAM if your system supports this mode. Or you can select S1 (POS) for Power on Suspend under ACPI mode.

Choices: S1(POS); S3(STR)(Optional); Auto

(Optional) USB Device Wakeup Function

This item allows you to enable / disable the USB device Wakeup function.

▶ Advanced ACPI Configuration:

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

ACPI 2.0 Support

Allows you to enable / disable ACPI (Advanced Configuration and Power Interface) 2.0 Support function.

Choices: Yes; No

ACPI APIC Support

Allows you to enable / disable ACPI APIC (Advanced Programmable Interrupt Controller) Support function.

BIOS-->AML ACPI table

Allows you to enable / disable BIOS-->AML ACPI table function.

Headless mode

Allows you to enable / disable Headless operation mode through ACPI.

4-6.8 Boot Security Features

Boot Security Features allows you to modify the system’s boot security settings.

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

**CMOS Setup Utility - Copyright (C) 1985-2002, American Megatrends, Inc.
Boot Security Features**

Security Settings	Help Item	
Supervisor Password : Not Installed User Password : Not Installed	Install or Change the password.	
Change Supervisor Password		Press Enter
Change User Password		Press Enter
Clear User Password		Press Enter
Boot Sector Virus Protection		Disabled

↑↓←→ : Move Enter : Select +/- : Values F10: Save Esc: Exit F1: General Help
F7 : Previous Values F8 : Fail-Safe Defaults F9: Optimized Defaults

4-6.8.1 Supervisor Password

To show the status of Supervisor Password. “Installed” is displayed when supervisor password is set up. Otherwise, “Not Installed” is displayed.

4-6.8.2 User Password

To show the status of User Password. “Installed” is displayed when supervisor password is set up. Otherwise, “Not Installed” is displayed.

4-6.8.3 Change Supervisor Password

This option allows you to set a new Supervisor password for the system:

1. Choose "Change Supervisor Password" in the "BIOS Security Features" and press <Enter>. Then the following message appears:

[Enter new supervisor password]

2. The first time you run this option, enter your password up to 6 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 New Password]

4. Enter the same password "exactly" the same as you have just typed to confirm the password and press <Enter>.
5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the password setup, you should press "Save Changes and Exit" and choose "OK" to exit and save setup.
7. If you enter a new password into the box, you will be using this new password after you have finished and saved this new setup. Instead, if you press <Enter> before you enter any new password into the instruction box, another message box appears, telling you that you have disabled the Supervisor Password. That means, no password is set for either entering BIOS Setup or system:

[Password uninstalled]
[OK]

User Access Level

Allows you to set four different Access Levels when Supervisor Password has been set. Choices: Full Access; Limited; View Only; No Access

Note: "User Access Level" and "Password Check" will appear when "Supervisor Password" has been set.

4-6.8.4 Change User Password

This option allows you to set a new User password for the system:

1. Choose “Change User Password” in the “BIOS Security Features” and press <Enter>. Then the following message appears:

[Enter New Password]

2. The first time you run this option, enter your password up to 6 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 New Password]

4. Enter the same password “exactly” the same as you have just typed to confirm the password and press <Enter>.
5. The following message appears to confirm the new password setup.

[Password installed]
[OK]

6. Then press any key to continue your CMOS Setup. To save the password setup, you should press “Save Changes and Exit” and choose “OK” to exit and save setup.

4-6.8.5 Clear User Password

1. To remove the current user password, choose “Clear User Password” and press <Enter>. An instruction box appears on the screen, assuring to clear User Password:

Clear User Password?
[OK] [Cancel]

2. Then choose [OK] and press <Enter>. The User Password is successfully removed.

Password Check

Allows you to set BIOS to check up password with a password prompt at BIOS Setup or whenever restarting system. This option will appear when you have set Supervisor Password or User Password.
Choices: Setup; Always

4-6.8.6 Boot Sector Virus Protection

Boot Sector Virus Protection

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.

4-6.9 Save Changes and Exit

Save Changes and Exit allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and press <Enter>. The following message appears:

[Saving configuration changes and exit setup?]	
[OK]	[Cancel]

Press <Enter> key to save the configuration changes and exit CMOS Setup to restart your system.

4-6.10 Discard Changes (and Exit)

Discard Changes option allows you to exit (or not exit) the Setup Utility without saving the modifications that you have specified. Highlight this option on the Main Menu and press <Enter> and the following message appears:

[Discard Changes (and exit setup?)]	
[OK]	[Cancel]

Follow the message and press <Enter> key to exit CMOS Setup and restart system.

4-6.11 Load Optimal Defaults

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

[Load Optimal Defaults ?]	
[OK]	[Cancel]

Press <Enter> now to load Optimal values for all the Setup options.

4-6.12 Discard Changes

Discard Changes option allows you to cancel the modifications that you have specified in the Setup Utility. Highlight this option on the Main Menu and press <Enter> and the following message appears:

[Discard Changes?]	
[OK]	[Cancel]

Follow the message and press <Enter> key to cancel the modifications that you have specified.

Chapter 5 SATA RAID Setup

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 mainboard is integrated with VT8237 SATA RAID as well as Promise PDC20378 SATA RAID interface. But they cannot be configured into one RAID system. They should be configured separately as two RAID systems.

This Chapter is to introduce the SATA RAID Configurations :

5-0 About Disk Array

5-1 Enable SATA RAID in System BIOS (VT8237)

5-2 To Enter VIA Tech. RAID BIOS Setup

5-3 Using VIA RAID BIOS Setup to Create Disk Array

5-4 Using VIA RAID BIOS Setup to Change Array mode

5-5 To Install SATA RAID Driver

5-0 About Disk Array

5-0-1 Disk Array Interpretation

A “Disk Array” is formed from a group of 2 or more 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):

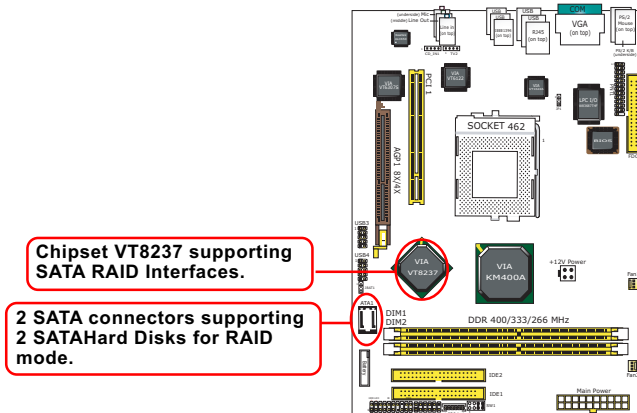
RAID 0 is a group of 2 to 4 Disk Drives configured together with RAID technology to provide better data transfer performance than a single drive since the workload is balanced between the array members. Reads and Writes of RAID 0 data are interleaved between multiple drives. When any disk member fails, 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 4GB (4x1GB) 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 Enable SATA RAID in System BIOS (VT8237)



To enable SATA RAID controller, boot the system 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 < Delete > key (not the < Tab > key) to enter CMOS BIOS Setup. Choose “Advanced Chipset Features” and “South Bridge VIA VT8237 configuration”. As soon as you click on the “OnBoard SATA-IDE”, choose “RAID” so as to enable the SATA RAID interface.

South Bridge VIA VT8237 configuration:

To press < Enter > on South Bridge VIA VT8237 configuration will reveal the following item(s).

OnChip SATA-IDE To enable/disable the onchip SATA RAID interface.

5-2 To Enter VIA Tech. RAID BIOS Setup

Boot the system with “RAID Interface” 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>																														
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Channel1 Slave	No Drive																														

The Hard Disks connected to SATA connectors are detected by RAID BIOS.

5-3 Using VIA RAID BIOS Setup to Create Disk Array

(5-3-1) 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>																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Channel</th> <th>Drive Name</th> <th>Array Name</th> <th>Mode</th> <th>Size(GB)</th> <th>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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(5-3-2) 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>																														
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Channel</th> <th>Drive Name</th> <th>Array Name</th> <th>Mode</th> <th>Size(GB)</th> <th>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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Channel1 Slave	No Drive																														

(5-3-3) 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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(5-3-4) 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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(5-3-5) 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 	<p>Set/Clear bootable array</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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[] Channel1 Master	ST380023AS	ARRAY 0	ATA 133	74.53	Stripe 1																										
Channel1 Slave	No Drive																														

(5-3-6) 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 	<p>Set/Clear bootable array</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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Channel0 Slave	No Drive																														
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Channel1 Slave	No Drive																														

(5-3-7) 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 	<p>Set/Clear bootable array</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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(5-3-8) 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 	<p>Set/Clear bootable array</p> <p>F1 : View Array/disk Status ↓ ↑ : Move to next item Enter : Confirm the selection ESC : Exit</p>																														
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5-4 Using VIA RAID BIOS Setup to change Array mode

(5-4-1) If you want 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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Channel1 Slave	No Drive																														

(5-4-2) Instantly, the Bootable Hard Disk(s) is marked up for deletion. Press <Enter> key on this screen to delete the set-up 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>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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(5-4-3) 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 style="border: 1px solid black; border-radius: 50%; padding: 5px; display: inline-block;">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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(5-4-4) 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 <li style="background-color: black; color: white;">▶ 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 To Install SATA RAID Driver

SATA-RAID Driver is incorporated in Support CD/Floppy Diskette for user's installation. This driver is intended for both SATA and SATA RAID installation.

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

- (1) Get ready the Floppy Diskette holding the RAID Driver.
(This Driver Diskette should have been enclosed in the mainboard Package.)
- (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.

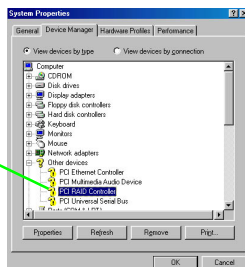
5-5-2 To Install SATA RAID Driver on Windows 98SE/ME

- (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

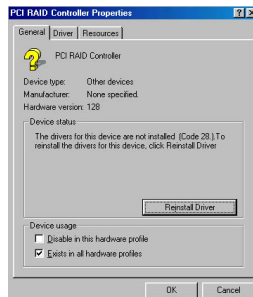
- (8) In the “Device manager” screen, you can see the item “PCI RAID Controller” with a yellow question mark on its left side, which indicates that the RAID controller is already detected by system but the driver is not installed yet. Please point to this item with your mouse and double click on it (or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

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



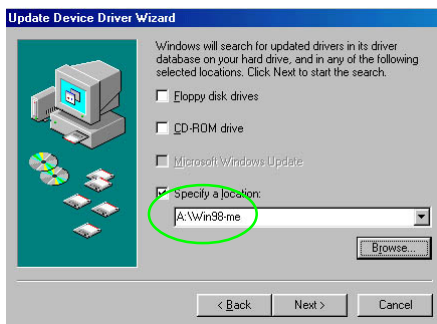
- (9) Instantly, the “PCI RAID Controller Properties” screen shows up. Please click the “General” bar to continue.

- (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.

