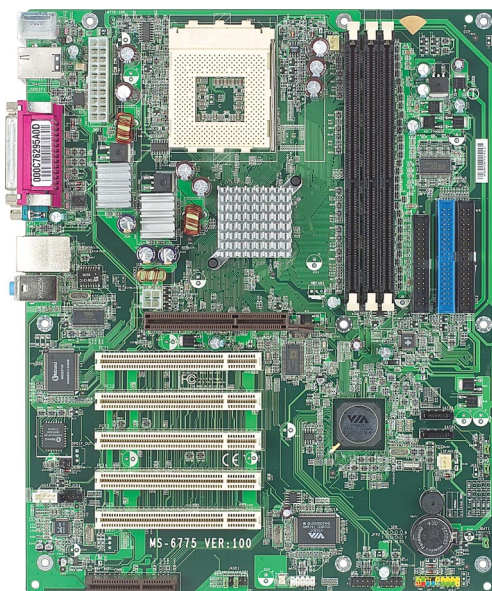




# KT6M-ILS

## MS-6775 (v1.X) ATX Mainboard



**Version 1.0**  
**G52-M6775X1**

Manual Rev: 1.0  
Release Date: August 2003



## **FCC-B Radio Frequency Interference Statement**

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This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

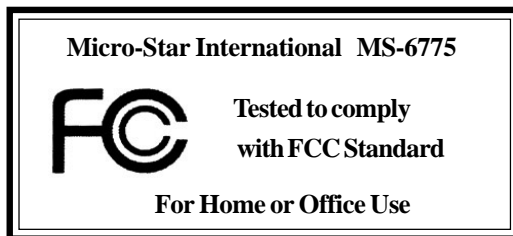
### **Notice 1**

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

### **Notice 2**

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

**VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.**



## Copyright Notice

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## Revision History

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Revision	Revision History	Date
V1.0	First release with chipset VIA KT600 & VIA VT8237	August 2003

## Safety Instructions

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1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection hence protects the equipment from overheating. **Do not cover the openings.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening that could damage or cause electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment has not work well or you can not get it work according to User's Manual.
  - The equipment has dropped and damaged.
  - The equipment has obvious sign of breakage.
12. **Do not leave this equipment in an environment unconditioned, storage temperature above 60° C (140°F), it may damage the equipment.**



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

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# *Getting Started*

Thank you for purchasing KT6M-ILS (MS-6775 v1.X) ATX mainboard. The KT6M-ILS is based on **VIA® Apollo KT600 & VT8237** chipsets and provides eight USB 2.0 ports for high-speed data transmission and Realtek ALC655 chip for 6-channel audio output. Designed to fit the advanced **AMD® Athlon™, Athlon™ XP or Duron™** processors, the KT6M-ILS delivers a high performance and professional desktop platform solution.



## Mainboard Specifications

### CPU

- Supports Socket A (Socket-462) for AMD® Athlon™/Athlon™ XP /Duron™ processors.
- Supports Athlon™/Athlon™ XP 2700+ processor and higher.

### Chipset

- VIA® Apollo KT600 chipset
  - FSB @200/266/333/400 MHz.
  - Supports DDR200/266/333/400 DDR SDRAM.
  - AGP 8X and PCI advanced high performance memory controller.
- VIA® VT8237 chipset
  - Ultra DMA 66/100/133 master mode EIDE controller.
  - Integrated dual channel native Serial ATA/RAID controller supplying 150MB/s supporting for RAID 0 and RAID 1
  - ACPI & PC2001 compliant enhanced power management.
  - Supports 8 USB 2.0 ports.
  - High bandwidth V-link Client controller

### Main Memory

- Supports six memory banks using three 184-pin 200/266/333/400 DDR SDRAMs.
- Supports up to 3GB memory size.
- Supports 2.5v DDR SDRAM DIMM.

### Slots

- One AGP (Accelerated Graphics Port) slot.
  - Supports AGP 3.0.
- Five 32-bit PCI bus slots (support 3.3v/5v PCI bus interface).
- One CNR slot.

### On-Board IDE

- An IDE controller on the VIA® VT8237 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 133/100/66 operation modes.
  - Can connect up to four Ultra ATA drives.
- Serial ATA/150 controller integrated in VT8237.
  - Up to 150MB/sec transfer speeds.
  - Can connect up to two Serial ATA drives.
  - Supports RAID 0 or RAID 1.

### **On-Board Peripherals**

➤ On-Board Peripherals include:

- 1 floppy port supports 2 FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
- 1 serial port (COM A)
- 1 parallel port supports SPP/EPP/ECP mode
- 1 audio port
- 8 USB 2.0 ports (Rear \* 4/ Front \* 4)

### **Audio**

- 6 channels software audio codec Realtek ALC655.
- Compliance with AC97 v2.2 Spec.
  - Meet PC2001 audio performance requirement.

### **LAN 10/100**

- VIA® VT6103
- Integrated Ethernet MAC and PHY transceiver, auto-negotiation operation.
  - Supports 10MB/s and 100MB/s.
  - Compliance with PCI v2.2 and LAN on Motherboard (LOM) standard.

### **BIOS**

- The mainboard BIOS provides “Plug & Play” BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.
- ACPI, 1.0a, APM1.2, PnP 1.0a, SMBIOS 2.3, USB 2.0, WFM 2.0, Overclock, Boot from USB device.

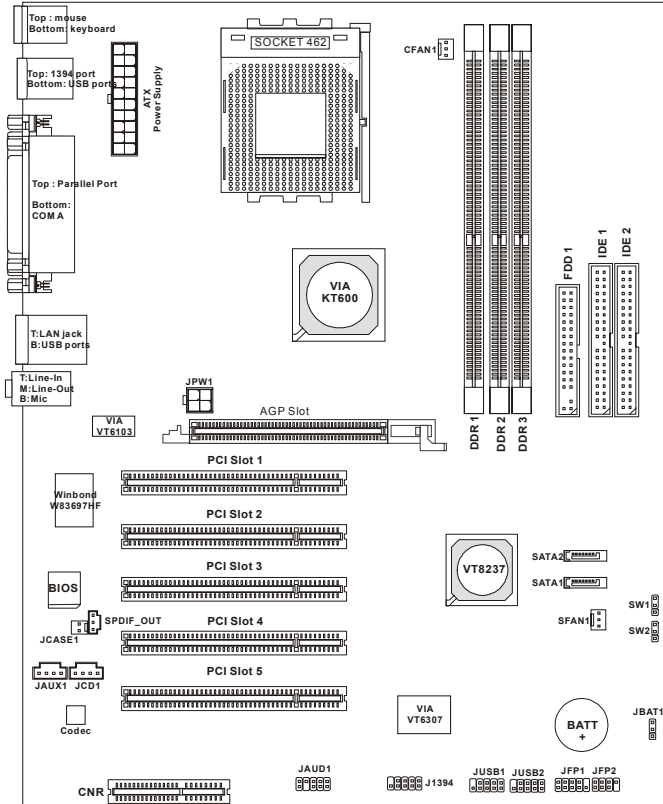
### **Dimension**

- ATX Form Factor: 12 inch (L) x 9.6 inch (W).

### **Mounting**

- 6 mounting holes.

# Mainboard Layout



KT6M-ILS (MS-6775 v1.X) ATX Mainboard

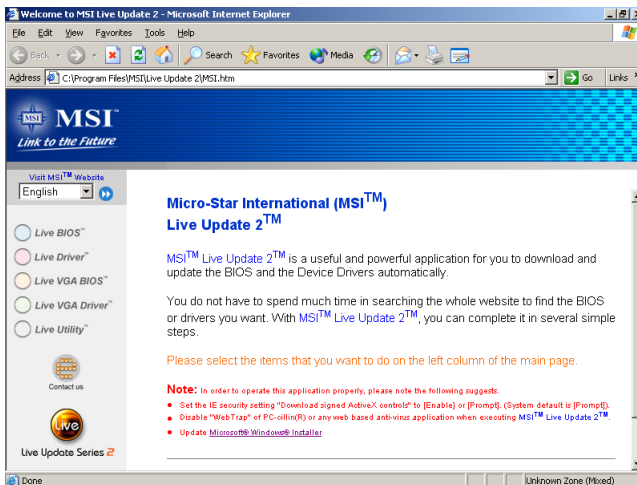
## MSI Special Features

### Live BIOS™/Live Driver™

The Live BIOS™/Live Driver™ is a tool used to detect and update your BIOS/drivers online so that you don't need to search for the correct BIOS/driver version throughout the Web site. To use the function, you need to install the "MSI Live Update 2" application. After installation, the "MSI Live Update 2" icon (as shown on the right) will appear on the screen.



Double click the "MSI Live Update 2" icon, and the following screen will appear:



Five buttons are placed on the leftmost pane of the screen. Click the desired button to start the update process.

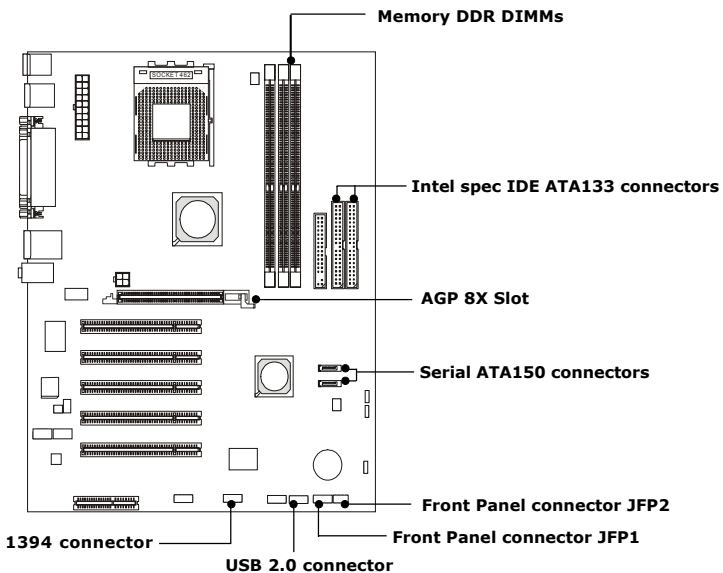
- **Live BIOS** – Updates the BIOS online.
- **Live Driver** – Updates the drivers online.
- **Live VGA BIOS** – Updates the VGA BIOS online.
- **Live VGA Driver** – Updates the VGA driver online.
- **Live Utility** – Updates the utilities online.

If the product you purchased does not support any of the functions listed above, a "sorry" message is displayed. For more information on the update instructions, insert the companion CD and refer to the "Live Update Guide" under the "Manual" Tab.

## Color Management

MSI has an unified color management rule for some connectors on the mainboards, which helps you to install the memory modules, expansion cards and other peripherals devices more easily and conveniently.

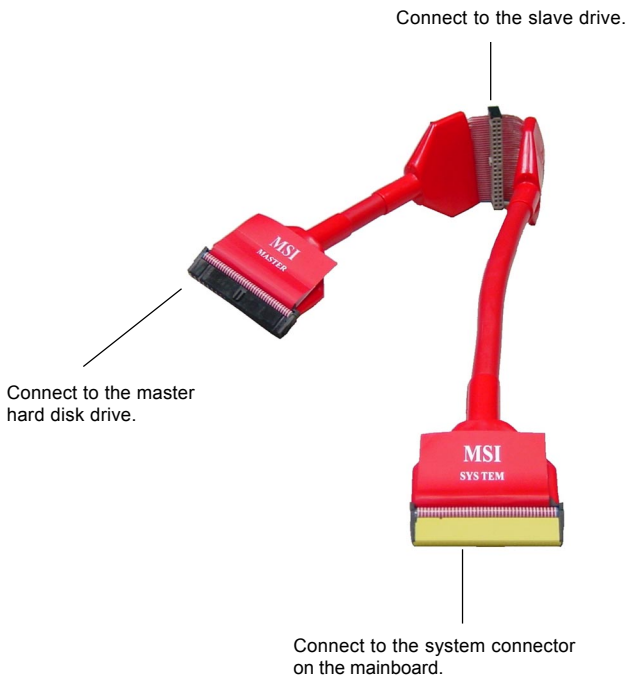
- Single DDR DIMMs: Black
- IDE ATA connector: Black
- Serial ATA150 connector: orange
- AGP 8X slot: brown
- 1394 connector: dark green
- USB 2.0 connector: yellow
- Front panel connector JFP1 : HDD LED in red, Reset Switch in blue, Power Switch in black, Power LED in light green.
- Front panel connector JFP2: Power LED in light green.



## Round Cable (Optional)

Round cable is an enhanced cable for PCI IDE and Ultra DMA controller. It has the following benefits:

- Data transfer rate at 133MB/s
- Backward compatibility (ATA33/66/100/133)
- Higher performance than traditional Flat cable (data rate)
- Improved data robustness
- Better airflow due to thinner ATA/133 cable



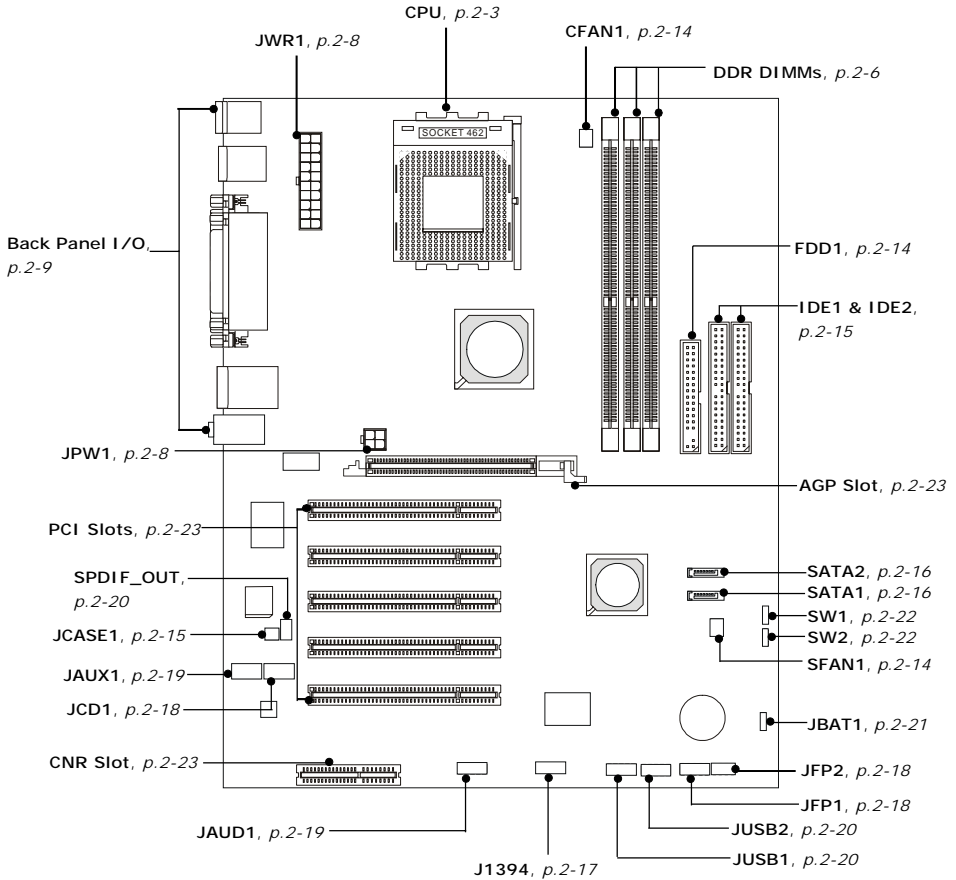
# 2

## *Hardware Setup*

This chapter tells you how to install the CPU, memory modules, and expansion cards, as well as how to setup the jumpers on the mainboard. Also, it provides the instructions on connecting the peripheral devices, such as the mouse, keyboard, etc.

While doing the installation, be careful in holding the components and follow the installation procedures.

# Quick Components Guide





## Central Processing Unit: CPU

The mainboard supports AMD® Athlon™, Athlon™ XP and Duron™ processors in the 462 pin package. The mainboard uses a CPU socket called Socket-462 for easy CPU installation. When you are installing the CPU, **make sure the CPU has a heat sink and a cooling fan attached on the top to prevent overheating.** If you do not find the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

### CPU Core Speed Derivation Procedure

**If** CPU Clock = 100MHz  
 Core/Bus ratio = 14  
**then** CPU core speed = Host Clock x Core/Bus ratio  
 = 100MHz x 14  
 = 1.4 GHz

### Memory Speed/CPU Clock Support Matrix

Memory CPU Clock	DDR 200	DDR 266	DDR 333	DDR 400
100MHz			X	X
133MHz	X			
166MHz	X			
200MHz	X			Note 1

: Yes.

Note 1: Maximum of 2 memory DIMMs are supported. If you install 3 memory DIMMs, system unreliability and instability may occur.

X: Not available .



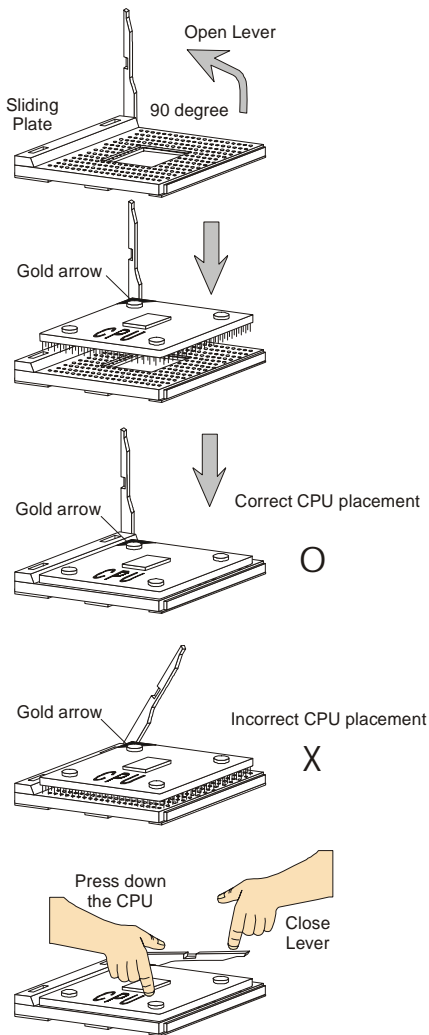
#### WARNING!

#### Thermal Issue for CPU

AMD Athlon™/Athlon™ XP/Duron™ processor with a speed of **600MHz and above** requires LARGER heatsink and fan. You also need to add thermal grease between the CPU and heatsink to improve heat dissipation. Then, make sure that the CPU and heatsink are securely fastened and in good contact with each other. These are needed to prevent damaging the processor and ensuring reliable operation. You can check AMD's web site for more information.

## CPU Installation Procedures for Socket 462

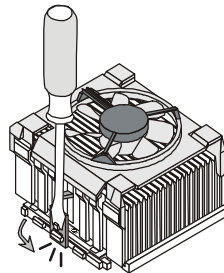
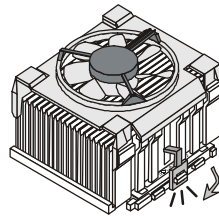
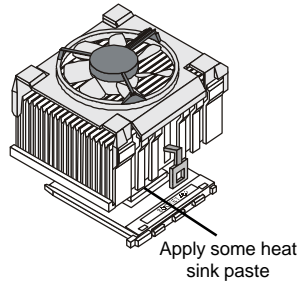
1. Please turn off the power and unplug the power cord before installing the CPU.
2. Pull the lever sideways away from the socket. Make sure to raise the lever up to a 90-degree angle.
3. Look for the gold arrow. The gold arrow should point towards the lever pivot. The CPU can only fit in the correct orientation.
4. If the CPU is correctly installed, the pins should be completely embedded into the socket and can not be seen. Please note that any violation of the correct installation procedures may cause permanent damages to your mainboard.
5. Press the CPU down firmly into the socket and close the lever. As the CPU is likely to move while the lever is being closed, always close the lever with your fingers pressing tightly on top of the CPU to make sure the CPU is properly and completely embedded into the socket.



## Installing AMD Athlon CPU (Socket 462) Cooler Set

The following instructions will guide you through the heat sink installation procedures. Please consult your agent for the proper CPU cooler set.

1. Position your CPU cooler set onto the CPU.
2. Use one end of the clip to hook the latch of the CPU sliding plate.
3. Hook the other latch to fix the cooling fan set. You may need a screw drive to press down the other side of the clip.
4. Connect the fan to the power supply connector provided on your mainboard.



### MSI Reminds You...

*Please apply some heat sink paste on top of CPU to dissipate the heat more effectively.*

## Memory

The mainboard provides 3 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 3GB. You can install PC3200/DDR400, PC2700/DDR333, PC2100/DDR266 or PC1600/DDR200 modules on the DDR DIMM slots (DDR 1~3).



**DDR DIMM Slots  
(DDR 1~3)**

### Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

## DDR DIMM Module Combination

Install at least one DIMM module on the slots. Memory modules can be installed on the slots in any order. You can install either single- or double-sided modules to meet your own needs.

Memory modules can be installed in any combination as follows:

Slot	Memory Module	Total Memory
DIMM 1 (Bank 0 & 1)	S/D	64MB~1GB
DIMM 2 (Bank 2 & 3)	S/D	64MB~1GB
DIMM 3 (Bank 4 & 5)	S/D	64MB~1GB
<b>Maximum System Memory Supported</b>		64MB~3GB

**S: Single Side**

**D: Double Side**

## Installing DDR Modules

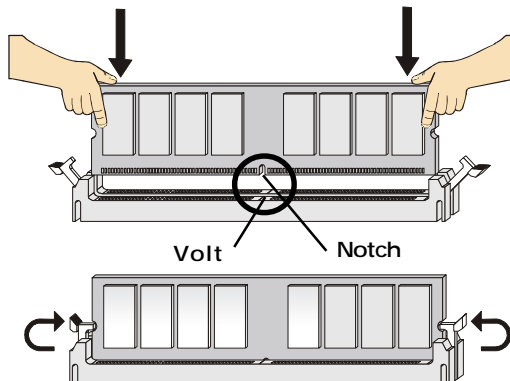
1. The DDR DIMM has only one notch on the center of module. The module will only fit in the right orientation.
2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the socket.



### MSI Reminds You...

*You can barely see the golden finger if the module is properly inserted in the socket.*

3. The plastic clip at each side of the DIMM slot will automatically close.

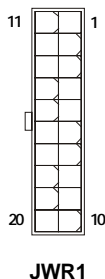


## Power Supply

The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

### ATX 20-Pin Power Connector: JWR1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

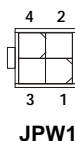


**JWR1 Pin Definition**

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

### ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

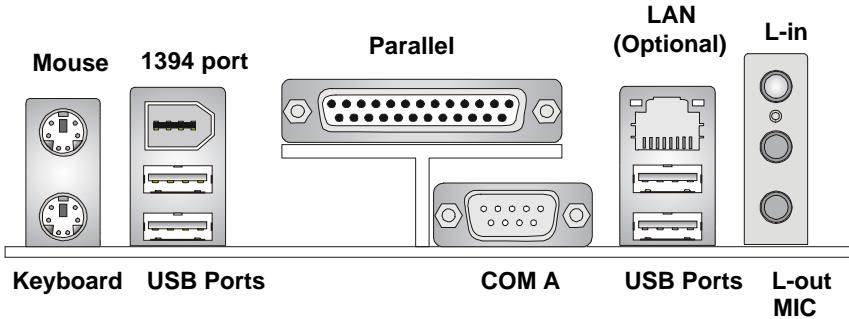


**JPW1 Pin Definition**

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

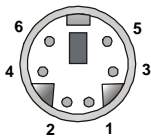
## Back Panel

The back panel provides the following connectors:



### Mouse Connector

The mainboard provides a standard PS/2<sup>®</sup> mouse mini DIN connector for attaching a PS/2<sup>®</sup> mouse. You can plug a PS/2<sup>®</sup> mouse directly into this connector. The connector location and pin assignments are as follows:



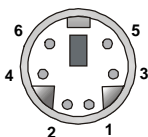
PS/2 Mouse (6-pin Female)

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

## Keyboard Connector

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a PS/2® keyboard. You can plug a PS/2® keyboard directly into this connector.



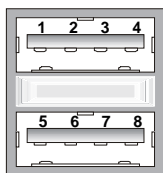
**PS/2 Keyboard (6-pin Female)**

**Pin Definition**

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

## USB 2.0 Connectors

The mainboard provides a UHCI (Universal Host Controller Interface) Universal Serial Bus root for attaching USB devices such as keyboard, mouse or other USB-compatible devices. You can plug the USB device directly into the connector.



**USB Ports**

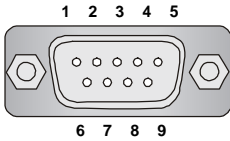
**USB Port Description**

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground



## Serial Port Connector: COMA

The mainboard offers one 9-pin male DIN connector as serial port COMA. The port is 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.



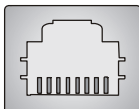
**9-Pin Male DIN Connector**

**Pin Definition**

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready)
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

## RJ-45 LAN Jack (Optional)

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). You can connect a network cable to the LAN jack.



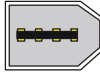
**RJ-45 LAN Jack**

**Pin Definition**

PIN	SIGNAL	DESCRIPTION
1	TDP	Transmit Differential Pair
2	TDN	Transmit Differential Pair
3	RDP	Receive Differential Pair
4	NC	Not Used
5	NC	Not Used
6	RDN	Receive Differential Pair
7	NC	Not Used
8	NC	Not Used

## 1394 Port

There is one 1394 port on the back panel providing the connection for 1394 devices.

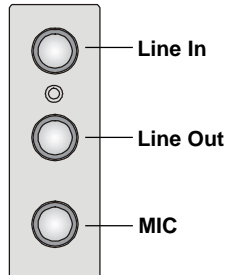


1394 port

## Audio Port Connectors

**Line Out** is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape player, or other audio devices. **Mic** is a connector for microphones.

### 1/8" Stereo Audio Connectors

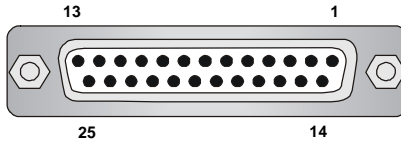


#### MSI Reminds You...

*For advanced audio application, Realtek ALC655 is provided to offer support for **6-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/6-channel audio. For more information on **6-channel audio operation**, please refer to Appendix A: Using 4- or 6-Channel Audio Function.*

## Parallel Port Connector: LPT1

The mainboard provides a 25-pin female centronic connector as LPT. A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) mode.



Pin Definition

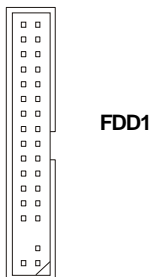
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

## Connectors

The mainboard provides connectors to connect to FDD, IDE HDD, case, LAN, USB Ports, IR module and CPU/System/Power Supply FAN.

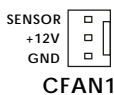
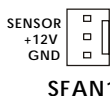
### Floppy Disk Drive Connector: FDD1

The mainboard provides a standard floppy disk drive connector that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



### Fan Power Connectors: CFAN1/SFAN1

The CFAN1 (processor fan) and SFAN1 (system fan) support system cooling fan with +12V. It supports three-pin head connector. When connecting the wire to the connectors, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset on-board, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

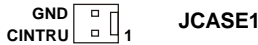


#### MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CFAN1 supports the fan control. You can install the Core Center utility that will automatically control the CPU fan speed according to the actual CPU temperature.

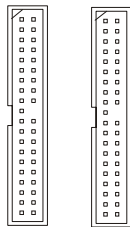
## Chassis Intrusion Switch Connector: JCASE1

This connector is connected to a 2-pin chassis switch. If the chassis is opened, the switch will be short. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.



## Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy and other devices.



IDE1 IDE2

### IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

### IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.



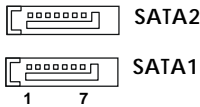
#### MSI Reminds You...

*If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.*

## Serial ATA/Serial ATA RAID Connectors controlled by VT8237: SATA1 & SATA2

The Southbridge of this mainboard is VIA VT8237 which supports two serial connectors SATA1 & SATA2.

SATA1 & SATA2 are dual high-speed Serial ATA interface ports. Each supports 1<sup>st</sup> generation serial ATA data rates of 150 MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to 1 hard disk device. Please refer to *Appendix B: VIA VT8237 Serial ATA RAID Introduction* for detail software installation procedure.

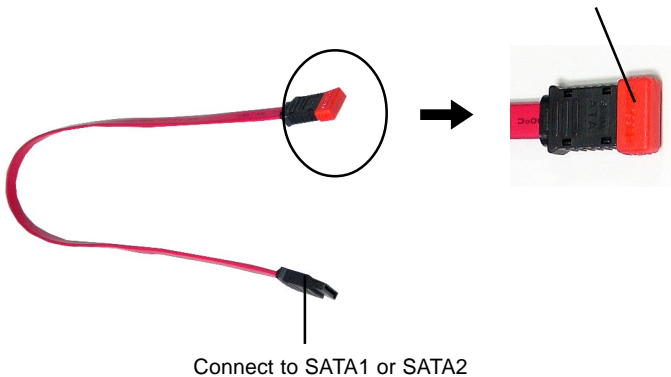


**SATA1 & SATA2 Pin Definition**

Pin	Signal	Pin	Signal
1	GND	2	TXP
3	TXN	4	GND
5	RXN	6	RXP
7	GND		

### Optional Serial ATA cable

Take out the dust cover and connect to the hard disk devices

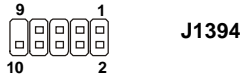


**MSI Reminds You...**

*Please do not fold the serial ATA cable in a 90-degree angle, since this will cause the loss of data during the transmission.*

## IEEE 1394 Connectors: J1394

The mainboard provides one 1394 pin header that allows you to connect optional IEEE 1394 ports.



J1394 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	TPA+	2	TPA-
3	Ground	4	Ground
5	TPB+	6	TPB-
7	Cable power	8	Cable power
9	Key (no pin)	10	Ground

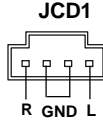
## How to attach the IEEE 1394 Port:

Connected to J1394



### CD-In Connector: JCD1

This connector is provided for CD-ROM audio.



### Front Panel Connectors: JFP1 & JFP2

The mainboard provides two front panel connectors for electrical connection to the front panel switches and LEDs. JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.



**JFP1 Pin Definition**

PIN	SIGNAL	DESCRIPTION
1	HD_LED_P	Hard disk LED pull-up
2	FP PWR/SLP	MSG LED pull-up
3	HD_LED_N	Hard disk active LED
4	FP PWR/SLP	MSG LED pull-up
5	RST_SW_N	Reset Switch low reference pull-down to GND
6	PWR_SW_P	Power Switch high reference pull-up
7	RST_SW_P	Reset Switch high reference pull-up
8	PWR_SW_N	Power Switch low reference pull-down to GND
9	RSVD_DNU	Reserved. Do not use.

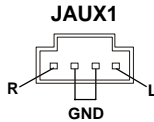
**JFP2 Pin Definition**

PIN	SIGNAL	PIN	SIGNAL
1	GND	2	SPK-
3	SLED	4	BUZ+
5	PLED	6	BUZ-
7	NC	8	SPK+



## Aux Line-In Connector: JAUX1

The connector is for DVD add-on card with Line-in connector.



## Front Panel Audio Connector: JAUD1

The JAUD1 front panel audio connector allows you to connect to the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.



JAUD1

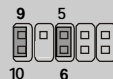
JAUD1 Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel



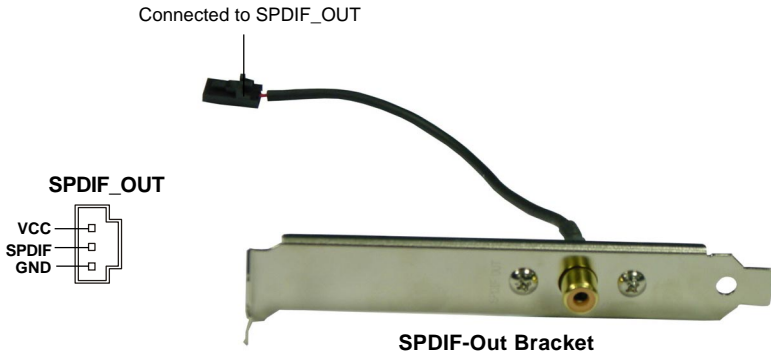
### MSI Reminds You...

*If you don't want to connect to the front audio header, pins 5 & 6, 9 & 10 have to be jumpered in order to have signal output directed to the rear audio ports. Otherwise, the Line-Out connector on the back panel will not function.*



## SPDIF-Out Connector: SPDIF\_OUT

This connector is used to connect SPDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission.



## Front USB Connectors: JUSB1 & JUSB2

The mainboard provides two USB 2.0 pin headers *JUSB1* & *JUSB2* that are compliant with Intel® I/O Connectivity Design Guide. USB 2.0 technology increases data transfer rate up to a maximum throughput of 480Mbps, which is 40 times faster than USB 1.1, and is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems** and the like.



**JUSB1 & JUSB2**  
(USB 2.0/Intel spec)

**JUSB1 & JUSB2 Pin Definition**

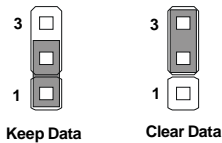
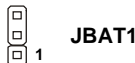
PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key	10	USBOC

## Jumpers

The motherboard provides the following jumpers for you to set the computer's function. This section will explain how to change your motherboard's function through the use of jumpers.

### Clear CMOS Jumper: JBAT1

There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper ) to clear data. Follow the instructions below to clear the data:



#### MSI Reminds You...

*You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

**FSB Clock Jumper: SW1, SW2**

These two jumpers provide 100MHz, 133MHz, 166MHz, and 200MHz Front Side Bus frequency selection for overclocking purpose.



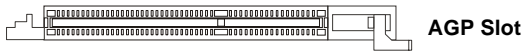
FSB = 100MHz	<p><b>SW1</b></p>	<p><b>SW2</b></p>
FSB = 133MHz	<p><b>SW1</b></p>	<p><b>SW2</b></p>
FSB = 166MHz	<p><b>SW1</b></p>	<p><b>SW2</b></p>
FSB = 200MHz	<p><b>SW1</b></p>	<p><b>SW2</b></p>

## Slots

The motherboard provides one AGP slot, five 32-bit PCI bus slots and one CNR slot.

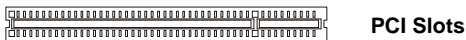
### AGP (Accelerated Graphics Port) Slot

The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 4x (1.07Gbps) and 8x (2.1Gbps) AGP cards.



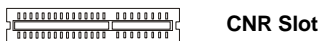
### PCI (Peripheral Component Interconnect) Slots

The PCI slots allow you to insert the expansion cards to meet your needs. When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.



### CNR Slot

The CNR slot allows you to insert the CNR expansion cards. CNR is a specially designed audio, or modem riser card for ATX family motherboards. Its main processing is done through software and controlled by the motherboard's chipset.



## PCI Interrupt Request Routing

The IRQ, acronym of interrupt request line and pronounced I-R-Q, are hardware lines over which devices can send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#
PCI Slot 4	INT C#	INT D#	INT A#	INT B#
PCI Slot 5	INT B#	INT C#	INT D#	INT A#

# 3

## ***BIOS Setup***

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.

You may need to run the Setup program when:

- ◆ An error message appears on the screen during the system booting up, and you are required to run SETUP.
- ◆ You want to change the default settings for customized features.

## Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <DEL> key to enter Setup.

DEL:Setup    F11:Boot Menu    F12:Network boot    TAB:Logo

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

## Selecting the First Boot Device

You are allowed to select the 1st boot device without entering the BIOS setup utility by pressing <F11>. When the same message as listed above appears on the screen, press <F11> to trigger the boot menu.

The POST messages might pass by too quickly for you to respond in time. If so, restart the system and press <F11> after around 2 or 3 seconds to activate the boot menu similar to the following.

Select First Boot Device		
Floppy	:	1st Floppy
IDE-0	:	IBM-DTLA-307038
CDROM	:	ATAPI CD-ROM DRIVE 40X M
[Up/Dn] Select	[RETURN] Boot	[ESC] cancel

The boot menu will list all the bootable devices. Select the one you want to boot from by using arrow keys, and then press <Enter>. The system will boot from the selected device. The selection will not make changes to the settings in the BIOS setup utility, so next time when you power on the system, it will still use the original first boot device to boot up.



## Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F7>	Load BIOS Setup Defaults
<F9>	Load High Performance Defaults
<F10>	Save all the CMOS changes and exit

## Getting Help

After entering the Setup utility, the first screen you see is the Main Menu.

### Main Menu

The main menu displays the setup categories the BIOS supplies. You can use the arrow keys (↑↓) to select the item. The on-line description for the selected setup category is displayed at the bottom of the screen.

### Default Settings

The BIOS setup program contains two kinds of default settings: the BIOS Setup and High Performance defaults. BIOS Setup defaults provide stable performance settings for all devices and the system, while High Performance defaults provide the best system performance but may affect the system stability.

## The Main Menu

Once you enter AMIBIOS NEW SETUP UTILITY, the Main Menu will appear on the screen. The Main Menu displays twelve configurable functions and two exit choices. Use arrow keys to move among the items and press <Enter> to enter the sub-menu.



### Standard CMOS Features

Use this menu for basic system configurations, such as time, date etc.

### Advanced BIOS Features

Use this menu to setup the items of AMI® special enhanced features.

### Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

### Power Management Features

Use this menu to specify your settings for power management.

### PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

### Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

### PC Health Status

This entry shows your PC health status.

**Frequency/Voltage Control**

Use this menu to specify your settings for frequency/voltage control.

**Set Supervisor Password**

Use this menu to set Supervisor Password.

**Set User Password**

Use this menu to set User Password.

**Load High Performance Defaults**

Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

**Load BIOS Setup Defaults**

Use this menu to load factory default settings into the BIOS for stable system performance operations.

**Save & Exit Setup**

Save changes to CMOS and exit setup.

**Exit Without Saving**

Abandon all changes and exit setup.

## Standard CMOS Features

The items inside STANDARD CMOS SETUP menu are divided into 9 categories. Each category includes none, one or more setup items. Use the arrow keys to highlight the item you want to modify and use the <PgUp> or <PgDn> keys to switch to the value you prefer.

Standard CMOS Features		[ Setup Help ]
System Time	16:31:26	Time is 24 hour format
System Date	Aug 13 2003 Wed	Hour: 00 - 23
▶ Primary IDE Master	Not Installed	Minute: 00 - 59
▶ Primary IDE Slave	Not Installed	Second: 00 - 59
▶ Secondary IDE Master		(1:30AM = 01:30:00,
▶ Secondary IDE Slave		1:30PM = 13:30:00)
Floppy Drive A	1.44 MB 3½	
Floppy Drive B	Not Installed	
Boot Sector Virus Protection	Disabled	
F1:Help	↑↓:Select Item	+/-:Change Values
Esc:Previous Menu	Enter:Select	→:Sub-Menu
		F7:Setup Defaults
		F6:Hi-Performance

### System Time

This allows you to set the system time that you want (usually the current time). The time format is <hour> <minute> <second>.

### System Date

This allows you to set the system to the date that you want (usually the current date). The format is <month> <date> <year> <day>.

<b>month</b>	The month from Jan. through Dec.
<b>date</b>	The date from 1 to 31 can be keyed by numeric function keys.
<b>year</b>	The year can be adjusted by users.
<b>day</b>	Day of the week, from Sun to Sat, determined by BIOS. Read-only.

### Primary/Secondary IDE Master/Slave

Press PgUp/<+> or PgDn/<-> to select the hard disk drive type. The specification of hard disk drive will show up on the right hand according to your selection.

Type	Select how to define the HDD parameters
Cylinders	Enter cylinder number
Heads	Enter head number
Write Precompensation	Enter write precomp cylinder
Sectors	Enter sector number
Maximum Capacity	Read the maximal HDD capacity
LBA Mode	Select <i>Auto</i> for a hard disk > 512 MB under Windows and DOS, or <i>Disabled</i> under Netware and UNIX
Block Mode	Select <i>Auto</i> to enhance the hard disk performance
Fast Programmed I/O Modes	Select <i>Auto</i> to enhance hard disk performance by optimizing the hard disk timing
32 Bit Transfer Mode	Enable 32 bit to maximize the IDE hard disk data transfer rate

**Floppy Drive A:/B:**

This item allows you to set the type of floppy drives installed. Available options: *Not Installed*, *1.2 MB 5¼*, *720 KB 3½*, *1.44 MB 3½* and *2.88 MB 3½*.

**Boot Sector Virus Protection**

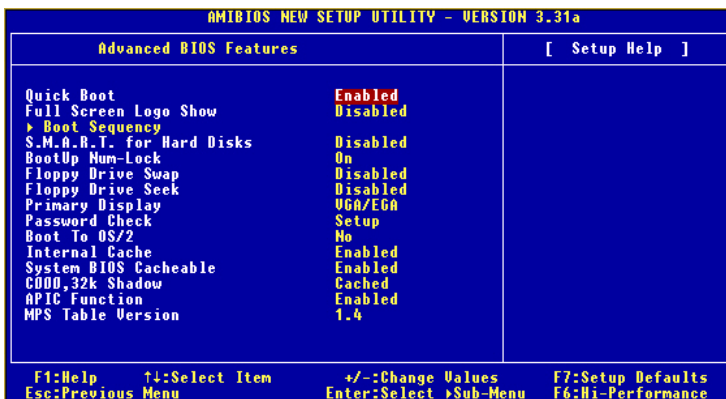
The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. When *Enabled*, BIOS will issue a virus warning message and beep if a write to the boot sector or the partition table of the HDD is attempted. Setting options: *Disabled* and *Enabled*.



**MSI Reminds You...**

*This feature only protects the boot sector, not the whole hard disk.*

## Advanced BIOS Features



### Quick Boot

Setting the item to *Enabled* allows the system to boot within 5 seconds since it will skip some check items. Available options: *Enabled*, *Disabled*.

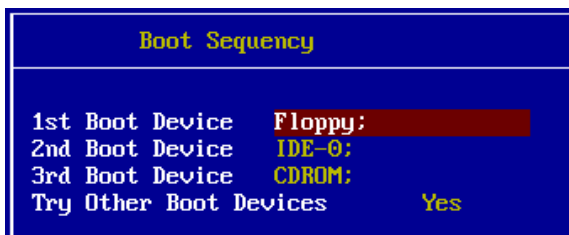
### Full Screen Logo Show

This item enables you to show the company logo on the bootup screen. Settings are:

- Enabled*      Shows a still image (logo) on the full screen at boot.
- Disabled*     Shows the POST messages at boot.

### Boot Sequence

Press <Enter> to enter the sub-menu screen.



### 1st/2nd/3rd Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts to load the disk operating system.



#### MSI Reminds You...

*Available settings for "1st/2nd/3rd Boot Device" vary depending on the bootable devices you have installed. For example, if you did not install a floppy drive, the setting "Floppy" does not show up.*

### Try Other Boot Devices

Setting the option to *Yes* allows the system to try to boot from other devices if the system fails to boot from the 1st/2nd/3rd boot device.

### S.M.A.R.T. for Hard Disks

This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline. Settings: *Enabled, Disabled*.

### BootUpNum-Lock

This item is to set the Num Lock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow end users to use the arrow keys on the numeric keypad. Setting options: *On, Off*.

### Floppy Drive Swap

Setting to *Enabled* will swap floppy drives A: and B:.

### Floppy Drive Seek

This setting causes the BIOS to search for floppy disk drives at boot time. When enabled, the BIOS will activate the floppy disk drives during the boot process: the drive activity light will come on and the head will move back and forth once. First A: will be done and then B: if it exists. Setting options: *Disabled, Enabled*.

### Primary Display

This configures the primary subsystem in the computer. Available options: *Mono (monochrome), CGA40x25, CGA80x25, VGA/EGA, Absent*.

### Password Check

This specifies the type of AMIBIOS password protection that is implemented. Setting options are described below.

Option	Description
Setup	The password prompt appears only when end users try to run Setup.
Always	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

### Boot To OS/2

This allows you to run the OS/2<sup>®</sup> operating system with DRAM larger than 64MB. When you choose *No*, you cannot run the OS/2<sup>®</sup> operating system with DRAM larger than 64MB. But it is possible if you choose *Yes*.

### Internal Cache

Cache memory is additional memory that is much faster than conventional DRAM (system memory). When the CPU requests data, the system transfers the requested data from the main DRAM into cache memory, for even faster access by the CPU. The setting controls the internal cache (also known as L1 or level 1 cache). Setting to *Enabled* will speed up the system performance.

### System BIOS Cacheable

Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result. Setting options: *Enabled, Disabled*.

### C000, 32k Shadow

This item specifies how the contents of the adapter ROM named in the item are handled. Settings are described below:

Option	Description
Disabled	The specified ROM is not copied to RAM.
Enabled	The contents of specified ROM are copied to RAM for faster system performance.
Cached	The contents of specified ROM are not only copied to RAM, the contents of the ROM area can be written to and read from cache memory.



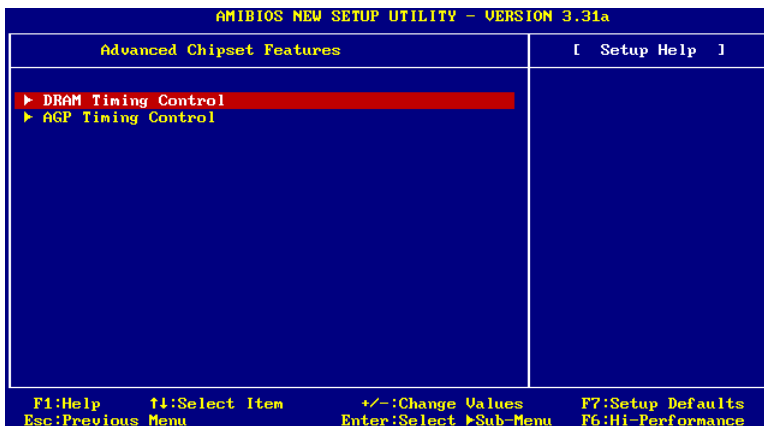
**APICFunction**

This field is used to enable or disable the APIC (Advanced Programmable Interrupt Controller). Due to compliance to PC2001 design guide, the system is able to run in APIC mode. Enabling APIC mode will expand available IRQs resources for the system. Settings: *Enabled, Disabled.*

**MPS Table Version**

This field allows you to select which MPS (Multi-Processor Specification) version to be used for the operating system. You need to select the MPS version supported by your operating system. To find out which version to use, consult the vendor of your operating system. Settings: *1.4, 1.1.*

## Advanced Chipset Features

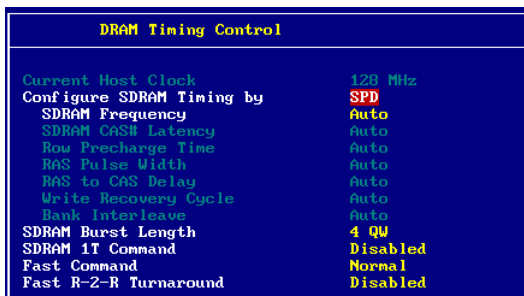


### MSI Reminds You...

*Change these settings only if you are familiar with the chipset.*

### DRAM Timing Control

Press <Enter> and the following sub-menu appears.



#### Current Host Clock

This item shows the current CPU frequency.

#### Configure SDRAM Timing by

Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to *SPD* enables SDRAM

Frequency, SDRAM CAS# Latency, Row Precharge Time, RAS Pulse Width, RAS to CAS Delay and SDRAM Bank Interleave automatically to be determined by BIOS based on the configurations on the SPD. Selecting *User* allows users to configure these fields manually.

**SDRAMFrequency**

Use this item to configure the clock frequency of the installed SDRAM. Settings options: *200MHz, 266MHz, 333MHz, 400MHz, Auto*.

**SDRAM CAS#Latency**

This controls the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: *Auto, 1.5, 2, 2.5, 3.0* (clocks). *2* (clocks) increases the system performance the most while *3* (clocks) provides the most stable performance.

**Row Precharge Time**

This item controls the number of cycles for Row Address Strobe (RAS) to be allowed to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refresh, refreshing may be incomplete and DRAM may fail to retain data. This item applies only when synchronous DRAM is installed in the system. Available settings: *Auto, 2, 3, 4, 5*.

**RAS Pulse Width**

This setting allows you to select the number of clock cycles allotted for the RAS pulse width, according to DRAM specifications. The less the clock cycles, the faster the DRAM performance. Settings: *Auto, 6, 7, 8, 9*.

**RAS to CAS Delay**

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The less the clock cycles, the faster the DRAM performance. Setting options: *Auto, 2, 3, 4, 5*.

**Write Recovery Cycle**

You may set the write recovery cycle of DRAM. The less the clock cycles, the less time the DRAM recovery cycle writes. Setting options: *Auto, 1T, 2T*.

### **Bank Interleave**

This field selects 2-bank or 4-bank interleave for the installed SDRAM. Disable the function if 16MB SDRAM is installed. Settings: *Disabled*, *Auto*, *2-Way* and *4-Way*.

### **SDRAM Burst Length**

This setting allows you to set the size of Burst-Length for DRAM. Bursting feature is a technique that DRAM itself predicts the address of the next memory location to be accessed after the first address is accessed. To use the feature, you need to define the burst length, which is the actual length of burst plus the starting address and allows internal address counter to properly generate the next memory location. The bigger the size, the faster the DRAM performance. Settings: *4 QW*, *8 QW*.

### **SDRAM 1T Command**

This setting controls the SDRAM command rate. Selecting *Enabled* allows SDRAM signal controller to run at 1T (T=clock cycles) rate. Selecting *Disabled* makes SDRAM signal controller run at 2T rate. *1T* is faster than *2T*. Setting options: *Disabled*, *Enabled*.

### **FastCommand**

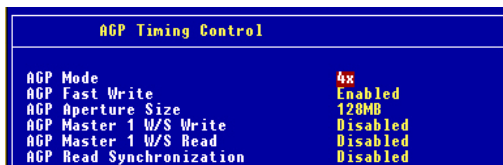
This item controls the internal timing of CPU. Selecting *Ultra* allows CPU to handle data/instructions at the fastest speed. *Fast* enables CPU to handle at a faster speed, while *Normal* let CPU handle them at the slowest rate.

### **Fast R-2-R Turnaround**

Burst read operation can be interrupted by new read of any bank. Random column access is allowed. READ to READ interval is minimum 1 CLK. Selecting *Enabled* to shorten the turnaround interval to improve the performance. Setting options: *Disabled*, *Enabled*.

### **AGP Timing Control**

Press <Enter> and the following sub-menu appears.



### **AGPMode**

The item sets an appropriate mode for the installed AGP card. Setting options: *1x, 2x, 4x*. Select *4x* only if your AGP card supports it.

### **AGP Fast Write**

This option enables or disables the AGP Fast Write feature. The Fast Write technology allows the CPU to write directly to the graphics card without passing anything through the system memory and improves the AGP 4X speed. Select *Enabled* only when the installed AGP card supports this function. Settings: *Enabled, Disabled*.

### **AGP Aperture Size**

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. The option allows the selection of an aperture size of *4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256 MB*.

### **AGP Master 1 W/S Write**

The field allows users to insert one wait state into the AGP write cycle. Settings: *Enabled, Disabled*.

### **AGP Master 1 W/S Read**

The field allows users to insert one wait state into the AGP read cycle. Settings: *Enabled, Disabled*.

### **AGP Read Synchronization**

The field allows you to enable or disable the AGP Read Synchronization feature. Settings: *Enabled, Disabled*.

## Power Management Features

Power Management Features		[ Setup Help ]
ACPI Standby State	S1/POS	
Call VGA BIOS at S3 Resuming	Disabled	
USB Wakeup From S3	Enabled	
Power Management/APM	Enabled	
Suspend Time Out (Minute)	Disabled	
Display Activity	Ignore	
CPU Critical Temperature	Disabled	
CPU HALT Command Detection	Disabled	
Power Button Function	On/Off	
After AC Power Loss	Power Off	
▶ Set WakeUp Events		

F1:Help    ↑↓:Select Item    +/-:Change Values    F7:Setup Defaults  
 Esc:Previous Menu    Enter:Select    ▶Sub-Menu    F6:Hi-Performance



### MSI Reminds You...

*S3-related functions described in this section are available only when your BIOS supports S3 sleep mode.*

### ACPI Standby State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME and Windows 2000, you can choose to enter the Standby mode in S1 (POS) or S3 (STR) fashion through the setting of this field. Options are:

- S1/POS**      The S1 sleep mode is a low power state. In this state, no system context is lost (CPU or chipset) and hardware maintains all system context.
- S3/STR**      The S3 sleep mode is a lower power state where the information of system configuration and open applications/files is saved to main memory that remains powered while most other hardware components turn off to save energy. The information stored in memory will be used to restore the system when a “wake up” event occurs.
- Auto**          BIOS determines the best mode automatically.

### Call VGA BIOS at S3 Resuming

Selecting *Enabled* allows BIOS to call VGA BIOS to initialize the VGA card when system wakes up (resumes) from S3 sleep state. The system resume time

is shortened when you disable the function, but system will need an AGP driver to initialize the VGA card. Therefore, if the AGP driver of the card does not support the initialization feature, the display may work abnormally or not function after resuming from S3.

### **USB Wakeup From S3**

This item allows the activity of the USB device to wake up the system from S3 (Suspend to RAM) sleep state. Settings: *Enabled, Disabled*.

### **Power Management/APM**

Setting to *Enabled* will activate an Advanced Power Management (APM) device to enhance Max Saving mode and stop CPU internal clock. Settings: *Disabled, Enabled*.

### **Suspend Time Out (Minute)**

After the selected period of system inactivity, all devices except the CPU shut off. Settings: *Disabled, 1, 2, 4, 8, 10, 20, 30, 40, 50, 60*.

### **Display Activity**

These items specify if the BIOS will monitor the activity of the specified hardware peripheral or component. If set to *Monitor*, any activity detected on the specified hardware peripheral or component will wake up the system or prevent the system from entering the power saving modes. Settings: *Monitor, Ignore*.

### **CPU Critical Temperature**

If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheating problem.

### **CPU HALT Command Detection**

This item allows your OS to determine whether the CPU will enter the HALT command state. Options: *Enabled, Disabled*.

### **Power Button Function**

This feature sets the function of the power button. Settings are:

- On/Off*      The power button functions as normal power off button.
- Suspend*    When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

### After AC Power Loss

This setting specifies whether your system will reboot after a power failure or interrupt occurs. Available settings are:

- Power Off*      Leaves the computer in the power off state.
- Power On*        Leaves the computer in the power on state.
- Last State*      Restores the system to the previous status before power failure or interrupt occurred.

### Set WakeUp Events

Press <Enter> and the following sub-menu appears.



### Wake Up On PME, Resume On KBC (with “Wake-Up Key” and “Wake-Up Password”), Resume On PS/2 Mouse

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected. Settings: *Enabled*, *Disabled*.



#### MSI Reminds You...

For “Wake-Up Key” function, the option “Specific Key” refers to the password you specify in the “Wake-Up Password” field. Once you set up a password, it will disable “Resume on PS/2 Mouse”.

### Resume By Alarm

This is used to enable or disable the feature of booting up the system on a scheduled time/date from the soft off (S5) state. Settings: *Enabled*, *Disabled*.

### Alarm Date/Hour/Minute/Second

If *Resume By Alarm* is set to *Enabled*, the system will automatically resume (boot up) on a specific date/hour/minute/second specified in these fields. Available settings for each item are:



Alarm Date	01 ~ 31, Every Day
Alarm Hour	00 ~ 23
Alarm Minute	00 ~ 59
Alarm Second	00 ~ 59

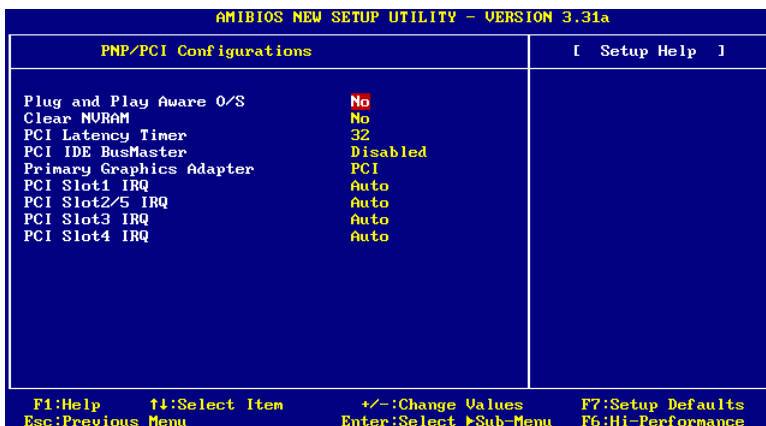


**MSI Reminds You...**

*If you have changed this setting, you must let the system boot up until it enters the operating system, before this function will work.*

## PNP/PCI Configurations

This section describes configuring the PCI bus system and PnP (Plug & Play) feature. PCI, or Peripheral Component Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



### Plug and Play Aware O/S

When set to *Yes*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 98, 2000 or ME. When set to *No*, BIOS will initialize all the PnP cards. Select *Yes* if the operating system is Plug & Play.

### Clear NVRAM

The ESCD (Extended System Configuration Data) NVRAM (Non-volatile Random Access Memory) is where the BIOS stores resource information for both PNP and non-PNP devices in a bit string format. When the item is set to *Yes*, the system will reset ESCD NVRAM right after the system is booted up and then set the setting of the item back to *No* automatically.

### PCILatency Timer

This item controls how long each PCI device can hold the bus before another takes over. When set to higher values, every PCI device can conduct transactions for a longer time and thus improve the effective PCI bandwidth.

For better PCI performance, you should set the item to higher values. Settings range from 32 to 248 at a 32 increment.

**PCIIDE BusMaster**

Set this option to *Enabled* to specify that the IDE controller on the PCI local bus has bus mastering capability. Settings options: *Disabled, Enabled*.

**Primary Graphics Adaptor**

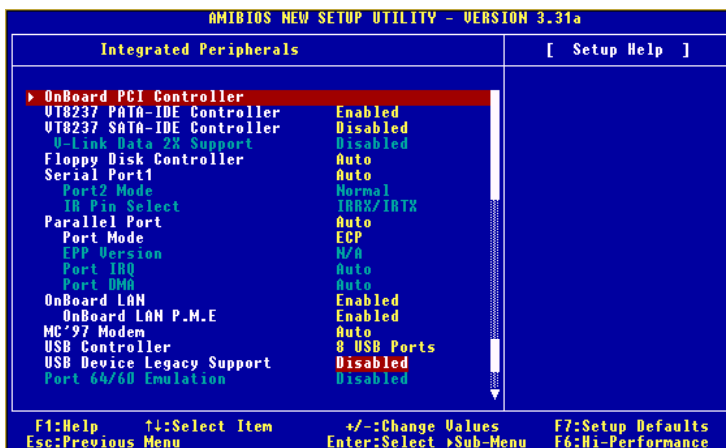
This setting specifies which VGA card is your primary graphics adapter. Setting options are:

- AGP*            The system initializes the installed AGP card first. If the AGP card is not available, it will initialize the PCI VGA card.
  
- PCI*             The system initializes the installed PCI VGA card first. If the PCI VGA card is not available, it will initialize the AGP card.

**PCI Slot1 IRQ, PCI Slot2/5 IRQ, PCI Slot3 IRQ, PCI Slot4 IRQ**

These items specify the IRQ line for each PCI slot. Setting options: 3, 4, 5, 7, 9, 10, 11, *Auto*. Selecting *Auto* allows BIOS to automatically determine the IRQ line for each PCI slot.

## Integrated Peripherals



### OnBoard PCI Controller

This is used to enable or disable the onboard PCI controller. *Please note that the options showed on your BIOS might be different depending on the motherboard you buy.*



### 1394 Controller, AC'97 Audio

Set these options to *Enabled* to enable the controllers of these 3 PCI devices.

### VT8237 PATA-IDE Controller

This setting is used to enable/disable the VT8237 PATA-IDE controller. Setting options: *Enabled, Disabled*.

### VT8237 SATA-IDE Controller

This setting is used to enable/disable the VT8237 SATA-IDE controller. Setting options: *Enabled, Disabled*.

### V-Link Data 2X Support

This setting controls the onboard V-Link Data 2X Support. Setting options: *Enabled, Disabled*.

### Floppy Disk Controller

This is used to enable or disable the onboard Floppy controller.

Option	Description
Auto	BIOS will automatically determine whether to enable the onboard Floppy controller or not.
Enabled	Enables the onboard Floppy controller.
Disabled	Disables the onboard Floppy controller.

### Serial Port 1

This item specifies the base I/O port address of the onboard Serial Port 1 (COM A). Selecting *Auto* allows AMIBIOS to automatically determine the correct base I/O port address. Settings: *Auto*, *3F8/COM1*, *2F8/COM2*, *3E8/COM3*, *2E8/COM4* and *Disabled*.

#### Port2 Mode

This item sets the operation mode for Serial Port 2. Settings: *Normal*, *1.6 uS*, *3/16 Baud* and *ASKIR* (the last three operation modes are setting options for IR function).

#### IR Pin Select

Set to *IRRX/IRTX* when using an internal IR module connected to the IR header. Set to *SINB/SOUTB*. when connecting an IR adapter to COM B.

### Parallel Port

This field specifies the base I/O port address of the onboard parallel port. Selecting *Auto* allows AMIBIOS to automatically determine the correct base I/O port address. Settings: *Auto*, *378*, *278*, *3BC*, *Disabled*.

#### Port Mode

This item selects the operation mode for the onboard parallel port: *ECP*, *Normal*, *Bi-Dir* or *EPP*.

#### EPP Version

The item selects the EPP version used by the parallel port if the port is set to *EPP* mode. Settings: *1.7*, *1.9*.

### **Port IRQ**

When *Parallel Port* is set to *Auto*, the item shows *Auto* indicating that BIOS determines the IRQ for the parallel port automatically.

### **Port DMA**

This feature needs to be configured only when *Parallel Port Mode* is set to the *ECP* mode. When *Parallel Port* is set to *Auto*, the field will show *Auto* indicating that BIOS automatically determines the DMA channel for the parallel port.

### **Onboard LAN**

This setting controls the onboard LAN controller. Setting options: *Disabled*, *Enabled*.

### **Onboard LAN P.M.E**

This setting controls the onboard LAN P.M.E controller. Setting options: *Disabled*, *Enabled*.

### **MC'97 Modem**

*Auto* allows the mainboard to detect whether a modem is used. If a modem is detected, the onboard MC'97 modem controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect a modem. Settings: *Auto*, *Enabled*, *Disabled*.

### **USB Controller**

This setting is used to enable/disable the onboard USB ports. Setting options: *Disabled*, *2 USB Ports*, *4 USB Ports*, *6 USB Ports*, *8 USB Ports*.

### **USB Device Legacy Support**

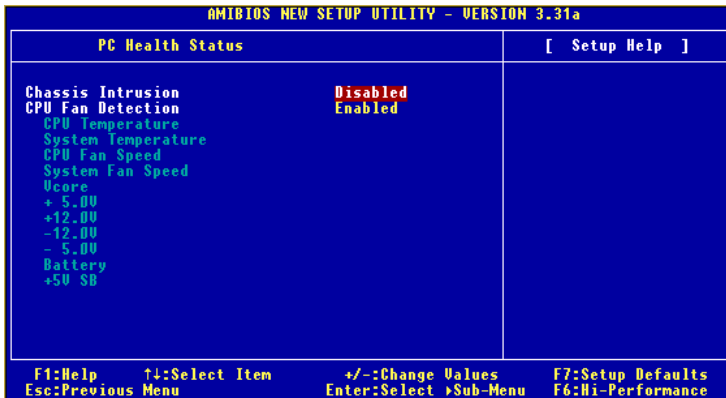
Set to *All Device* if you need to use any USB device in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix. Set to *No Mice* only if you want to use any USB device other than the USB mouse.

### **Port 64/60 Emulation**

This field allows you to enable or disable the USB Port 64/60 Emulation function. When the function is enabled, the USB keyboard is allowed to type some special combination keys.

## PC Health Status

This section shows the status of your CPU, fan, overall system status, etc. Monitor function is available only if there is hardware monitoring mechanism onboard.



### Chassis Intrusion

The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to *Reset*. The setting of the field will automatically return to *Enabled* later. Settings: *Enabled, Reset, Disabled*.

### CPU Fan Detection

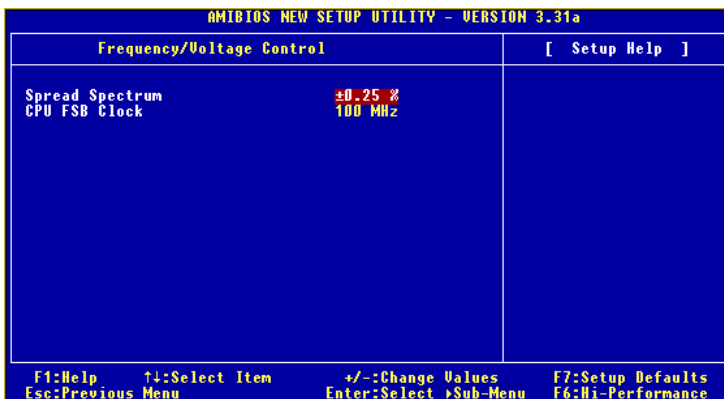
When enabled, the system will automatically monitor the CPU fan during boot-up. If it detects that the CPU fan is not rotating, the system will show an error message on the screen and halt the boot-up process. The function is **built with CPU fan power connector (CFAN1) only** and enables you to protect the CPU from possible overheating problem. If you don't connect the CPU fan to the CPU fan power connector, we recommend disabling the feature. Settings: *Enabled, Disabled*.

### CPU/System Temperature, CPU/System Fan Speed, Vcore, +5.0V, +12.0V, -12.0V, -5.0V, Battery, +5V SB

These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

## Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.



### Spread Spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, select *one of the options* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a slight jitter can introduce a temporary boost in clock speed which may just cause your overclocked processor to lock up. Available options: +/-0.25%, +/-0.5%, +/-0.75%, *Disabled*.

### CPU FSB Clock

This item allows you to select the CPU Front Side Bus clock frequency (in MHz) and overclock the processor by adjusting the FSB clock to a higher frequency. Select the number between 100~280 for needed frequency.



## Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:



Type the password, up to six characters in length, and press <Enter>. The password typed now will replace any previously set password from CMOS memory. You will be prompted to confirm the password. Retype the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have AMIBIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the PASSWORD CHECK option of the ADVANCED BIOS FEATURES menu. If the PASSWORD CHECK option is set to *Always*, the password is required both at boot and at entry to Setup. If set to *Setup*, password prompt only occurs when you try to enter Setup.



### MSI Reminds You...

#### *About Supervisor Password & User Password:*

*Supervisor password:* Can enter and change the settings of the setup menu.

*User password:* Can only enter but do not have the right to change the settings of the setup menu.

## Load High Performance/BIOS Setup Defaults

The two options on the main menu allow users to restore all of the BIOS settings to High Performance defaults or BIOS Setup defaults. The High Performance Defaults are the values set by the mainboard manufacturer for the best system performance but probably will cause a stability issue. The BIOS Setup Defaults are the default values also set by the mainboard manufacturer for stable performance of the mainboard.

When you select Load High Performance Defaults, a message as below appears:

```
[ Load High Performance Defaults ]
WARNING! This default might have potential reliability risk.
Press [Enter] to Continue
Or [ESC] to Abort
```

Pressing 'Enter' loads the default BIOS values that enable the best system performance but may lead to a stability issue.



### MSI Reminds You...

*The option is for power or overclocking users only. Use of high performance defaults will tighten most timings to increase the system performance. Therefore, a high-end system configuration is a must, which means you need high-quality VGA adapter, RAM and so on. We don't recommend that users should apply the high performance defaults in their regular systems. Otherwise, the system may become unstable or even crash. If the system crashes or hangs after enabling the feature, please CLEAR CMOS DATA to resolve the problem. For more information, refer to "Clear CMOS Jumper: JBAT1" in Chapter 2.*

When you select Load BIOS Setup Defaults, a message as below appears:

```
[ Load BIOS Setup Defaults ]
Press [Enter] to Continue
Or [ESC] to Abort
```

Pressing 'Enter' loads the default values that are factory settings for stable system performance.

## ***Appendix A: Using 4- or 6-Channel Audio Function***

The motherboard is equipped with Realtek ALC655 chip, which provides support for 6-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC655 allows the board to attach 4 or 6 speakers for better surround sound effect. The section will tell you how to install and use 4-/6-channel audio function on the board.

## Installing the Audio Driver

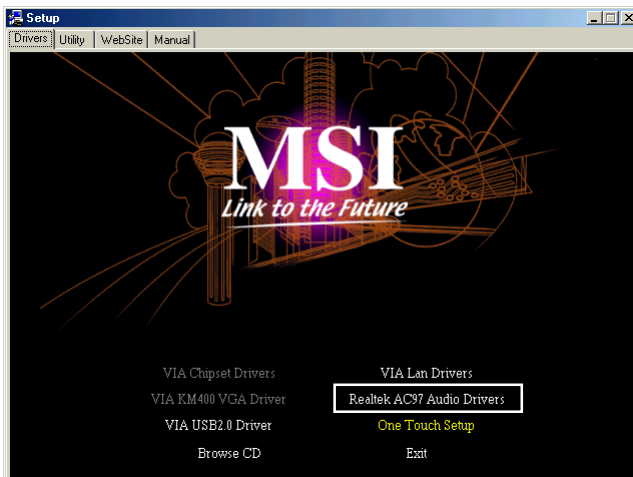
You need to install the driver for Realtek ALC655 chip to function properly before you can get access to 4-/6-channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

### Installation for Windows 98SE/ME/2000/XP


For Windows® 2000, you must install Windows® 2000 Service Pack2 or later before installing the driver.

The following illustrations are based on Windows® XP environment and could look slightly different if you install the drivers in different operating systems.

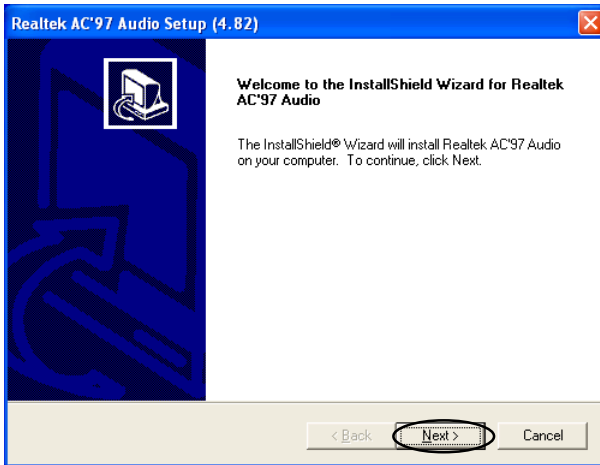
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear. (*Please note the screen below might be different depending on the different mainboard you purchased.*)
2. Click **Realtek AC97 Audio Drivers**.



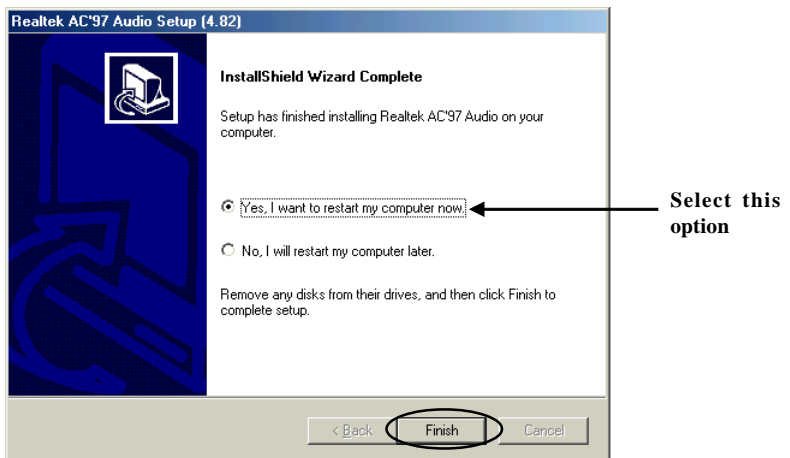
#### MSI Reminds You...

The **AC97 Audio Configuration**  software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

3. Click **Next** to start installing files into the system.



4. Click **Finish** to restart the system.



## Using 4- or 6-Channel Audio Function


After installing the audio driver, you are able to use the 4-/6-channel audio feature now. To enable 4- or 6-channel audio operation, first connect 4 or 6 speakers to the appropriate audio connectors, and then select 4- or 6-channel audio setting in the software utility.

### Using the Back Panel

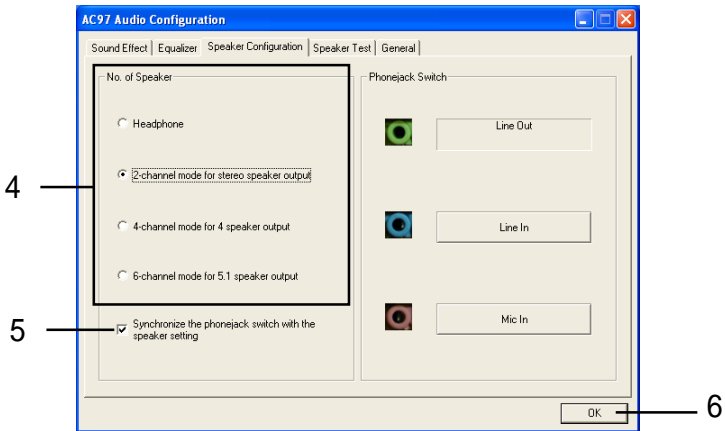
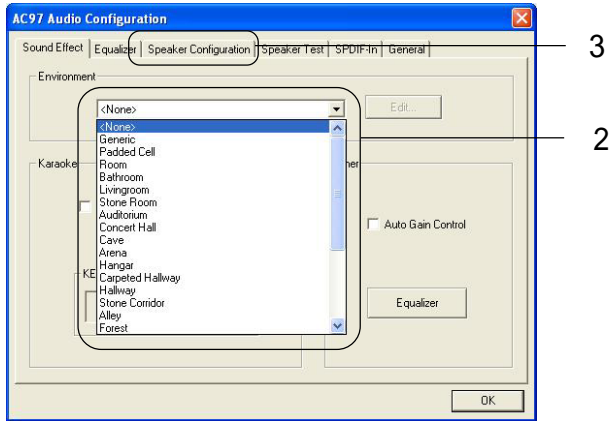
In addition to a default 2-channel analog audio output function, the audio connectors on the Back Panel also provide 4- or 6-channel analog audio output function if a proper setting is made in the software utility.

Read the following steps to have the Multi-Channel Audio Function properly set in the software utility, and have your speakers correctly connected to the Back Panel.

#### Configuration in the Software Utility

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Select a desired surround sound effect from the “Environment” drop-down menu.
3. Click the **Speaker Configuration** tab.
4. Select **Synchronize the phonejack switch with the settings**.
5. Select a desired multi-channel operation from **No. of Speakers**.
  - a. Headphone
  - b. 2-Channel Mode for Stereo-Speaker Output
  - c. 4-Channel Mode for 4-Speaker Output
  - d. 6-Channel Mode for 5.1-Speaker Output
6. Click **OK** to close this window.

## Using 4- or 6-Channel Audio Function



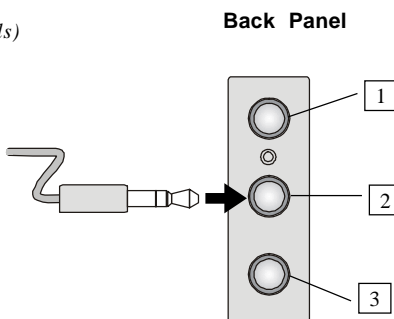
## Connecting the Speakers

When you have set the Multi-Channel Audio Function mode properly in the software utility, connect your speakers to the correct phone jacks in accordance with the setting in software utility.

### ■ 2-Channel Mode for Stereo-Speaker Output

Refer to the following diagram and caption for the function of each phone jack on the back panel when 2-Channel Mode is selected.

- 1 Line In
- 2 Line Out (*Front channels*)
- 3 MIC

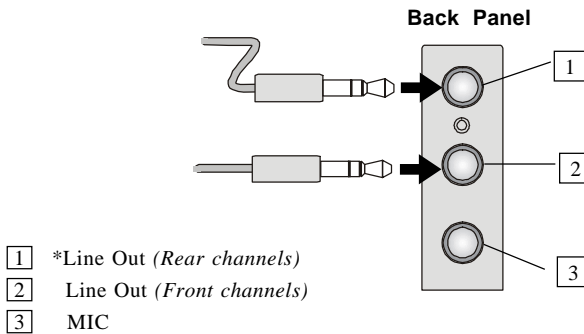




■ **4-Channel Mode for 4-Speaker Output**

The audio jacks on the back panel always provide 2-channel analog audio output function, however these audio jacks can be transformed to 4- or 6- channel analog audio jacks by selecting the corresponding multi-channel operation from **No. of Speakers**.

Refer to the following diagram and caption for the function of each jack on the back panel when 4-Channel Mode is selected.



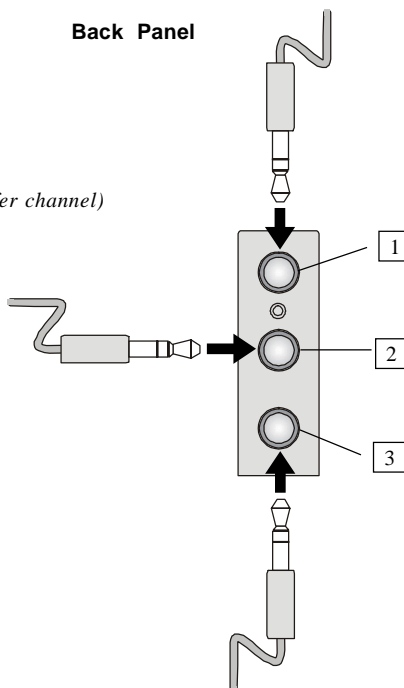
\* Line In function is converted to Line Out function when 4-Channel Mode for 4-Speaker Output is selected.

■ **6-Channel Mode for 6-Speaker Output**

Refer to the following diagram and caption for the function of each jack on the back panel when 6-Channel Mode is selected.

- 1 \* Line Out (*Rear channels*)
- 2 \* Line Out (*Front channels*)
- 3 Line Out (*Center and Subwoofer channel*)

\* Both Line In and MIC function are converted to Line Out function when 4-Channel Mode for 6-Speaker Output is selected.




**MSI Reminds You...**

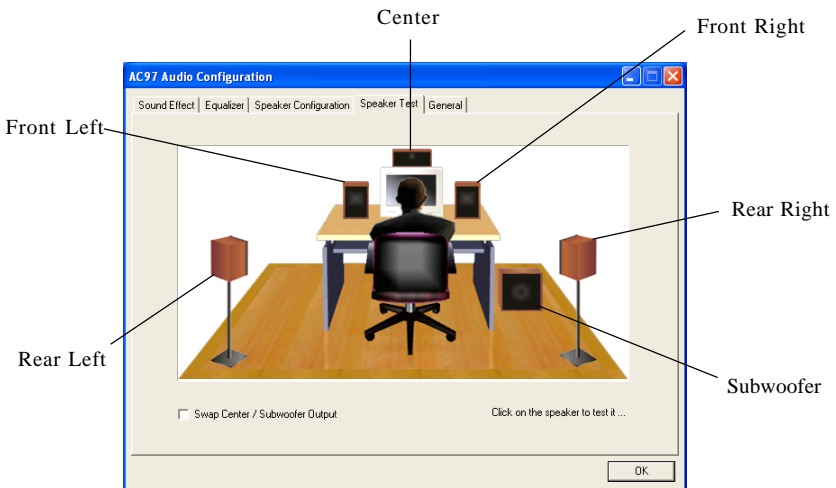
*If the Center and Subwoofer speaker exchange their audio channels when you play video or music on the computer, a converter may be required to exchange center and subwoofer audio signals. You can purchase the converter from a speaker store.*

## Testing the Connected Speakers

To ensure that 4- or 6-channel audio operation works properly, you may need to test each connected speaker to make sure every speaker work properly. If any speaker fails to make sound, then check whether the cable is inserted firmly to the connector or replace the bad speakers with good ones.

### Testing Each Speaker

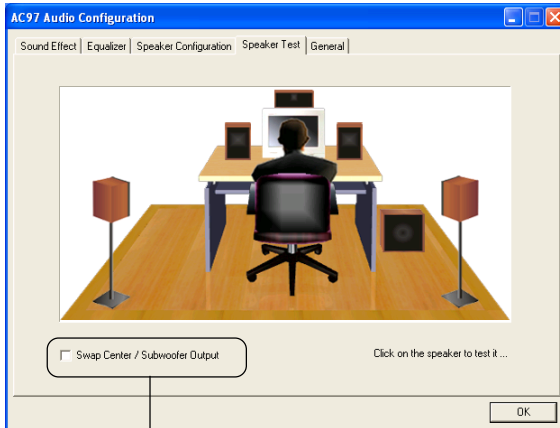
1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. Click the **Speaker Test** tab.
3. The following window appears. Select the speaker which you want to test by clicking it.



#### MSI Reminds You...

*6 speakers appear on the "Speaker Test" window only when you select "6-Channel Mode" in the "No. of Speakers" column. If you select "4-Channel Mode", only 4 speakers appear on the window.*

4. While you are testing the speakers in 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to readjust these two channels.




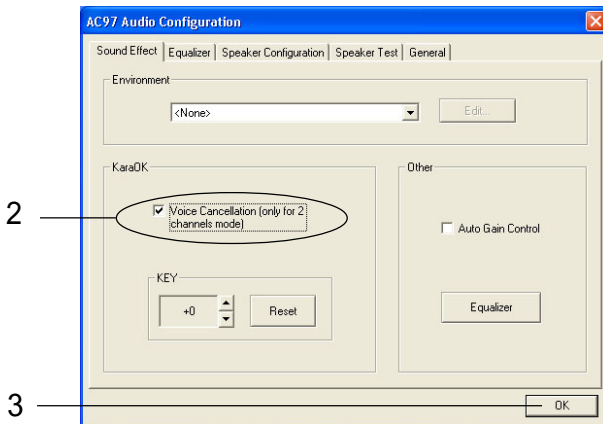
Select this function

## Playing KaraOK

The KaraOK function will automatically remove human voice (lyrics) and leave melody for you to sing the song. Note that this function applies only for 2-channel audio operation.

### Playing KaraOK

1. Click the audio icon  from the window tray at the lower-right corner of the screen.
2. In the Sound Effect tab, select **Voice Cancellation** under “KaraOK.”
3. Click **OK** to close this window.



## ***Appendix B: VIA VT8237 Serial ATA RAID Introduction***

The Southbridge VT8237 provides a hybrid solution that combines two independent SATA ports for support of up to two Serial ATA (Serial ATA RAID) drives.

Serial ATA (SATA) is the latest generation of the ATA interface. SATA hard drives deliver blistering transfer speeds of up to 150MB/sec. Serial ATA uses long, thin cables, making it easier to connect your drive and improving the airflow inside your PC.

The key features of VT8237 SATA RAID are:

1. Support two SATA hard disk drives.
2. Only SATA supports RAID.
3. Supports ATA 133 high performance hard disk drive.
4. Dual independent ATA channels and maximum connection of four hard disk drives allowed.
5. Supports Ultra DMA mode 6/5/4/3/2/1/0, DMA mode 2/1/0, and PIO mode 4/3/2/1/0.
6. Supports RAID 0 and RAID 1.
7. 4 KB to 64 KB striping block size support.
8. Bootable disk or disk array support.
9. Windows-based RAID configure and management software tool. (Compatible with BIOS)
10. Supports hot-swap failed disk drive in RAID 1 array.
11. ATA SMART function support.
12. Microsoft Windows 98, Me, NT4.0, 2000, XP operating systems support.
13. Event log for easy troubleshooting.

## Introduction

This section gives a brief introduction on the RAID-related background knowledge and a brief introduction on VIA SATA RAID Host Controller. For users wishing to install their VIA SATA RAID driver and RAID software, proceed to **Driver and RAID Software Installation** section.

### RAID Basics

RAID (Redundant Array of Independent Disks) is a method of combining two or more hard disk drives into one logical unit. The advantage of an Array is to provide better performance or data fault tolerance. Fault tolerance is achieved through data redundant operation, where if one drives fails, a mirrored copy of the data can be found on another drive. This can prevent data loss if the operating system fails or hangs. The individual disk drives in an array are called “members”. The configuration information of each member is recorded in the “reserved sector” that identifies the drive as a member. All disk members in a formed disk array are recognized as a single physical drive to the operating system.

Hard disk drives can be combined together through a few different methods. The different methods are referred to as different RAID levels. Different RAID levels represent different performance levels, security levels and implementation costs. The RAID levels which the VIA VT8237 SATA RAID Host Controller supports are RAID 0 and RAID 1. The table below briefly introduced these RAID levels.

RAID Level	No. of Drives	Capacity	Benefits
RAID 0 (Striping)	2	Number drives * 2	Highest performance without data protection
RAID 1 (Mirroring)	2	Smallest size	Data protection

### **RAID 0 (Striping)**

RAID 0 reads and writes sectors of data interleaved between multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. The striping block size can be set from 4KB to 64KB. RAID 0 does not support fault tolerance.

### **RAID 1 (Mirroring)**

RAID 1 writes duplicate data onto a pair of drives and reads both sets of data in parallel. If one of the mirrored drives suffers a mechanical failure or does not respond, the remaining drive will continue to function. Due to redundancy, the drive capacity of the array is the capacity of the smallest drive. Under a RAID 1 setup, an extra drive called the .spare drive. can be attached. Such a drive will be activated to replace a failed drive that is part of a mirrored array. Due to the fault tolerance, if any RAID 1 drive fails, data access will not be affected as long as there are other working drives in the array.



## BIOS Configuration

When the system powers on during the POST (Power-On Self Test) process, press <Tab> key to enter the BIOS configuration.

```
VIA Technologies, Inc. VIA V16420 RAID BIOS Setting Utility V1.10
Copyright (C) VIA Technologies, Inc. All Right reserved.

Press < Tab > key into User Window!
Scan Devices, Please wait...
Channel 0 Master: Maxtor 34098H4
Channel 1 Master: Maxtor 34098H4
```

The Serial ATA RAID volume may be configured using the VIA Tech. RAID BIOS. Always use the arrow keys to navigate the main menu, use up and down arrow key to select the each item and press <Enter> to call out the list of creation steps. The main interface of BIOS configuration utility is as below:

```
VIA Tech. RAID BIOS Ver V1.10
```

<pre>▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View</pre>	<pre>Create a RAID array with the hard disks attached to VIA IDE controller  F1 : View Array/disk Status ↑,↓ : Move to next item Enter: Confirm the selection ESC : Exit</pre>				
Channel	Drive Name	Array Name	Mode	Size(GB)	Status
Channel0 Master	Maxtor 34098H4		ATA 133	37.27	Hdd
Channel1 Master	Maxtor 34098H4		ATA 133	37.27	Hdd

## Create Disk Array

Use the up and down arrow keys to select the **Create Array** command and press <Enter>.

```

VIA Tech. RAID BIOS Ver V1.10

▶ Auto Setup For Data Security
▶ Array Mode RAID 1 (Mirroring)
▶ Select Disk Drives
▶ Start Create Process

Create a RAID array with
the hard disks attached to
VIA IDE controller

F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit

Channel      Drive Name      Array Name      Mode      Size(GB)      Status
Channel0 Master Maxtor 34098H4      ATA 133 37.27  Hdd
Channel1 Master Maxtor 34098H4      ATA 133 37.27  Hdd
    
```



### MSI Reminds You...

*The “Channel”, “Drive Name”, “Mode” and “Size (GB)” in the following example might be different from your system.*

Select **Array Mode** and press <Enter>, a list of array modes will appear. Highlight the target array mode that you want to create, and press <Enter> to confirm the selection. If RAID 1 or RAID 0/1 is selected, an option list will popup and enable the users to select **Create only** or **Create and duplicate**. **Create only** will allow BIOS to only create an array. The data on the mirroring drive may be different from the source drive. **Create and duplicate** lets BIOS copy the data from the source to the mirroring drive.

```

VIA Tech. RAID BIOS Ver V1.10

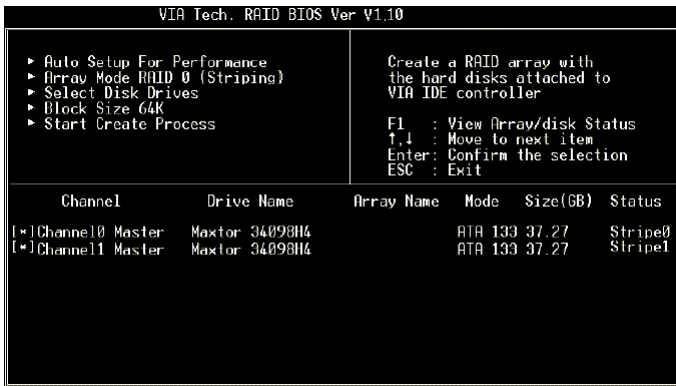
▶ RAID 0 for performance
▶ RAID 1 for data protection
▶ RAID 0/1
▶ RAID SPAN for capacity

Create a RAID array with
the hard disks attached to
VIA IDE controller

F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit

Channel      Drive Name      Array Name      Mode      Size(GB)      Status
Channel0 Master Maxtor 34098H4      ATA 133 37.27  Hdd
Channel1 Master Maxtor 34098H4      ATA 133 37.27  Hdd
    
```

After array mode is selected, there are two methods to create a disk array. One method is “**Auto Setup**” and the other one is “**Select Disk Drives**”. **Auto Setup** allows BIOS to select the disk drives and create arrays automatically, but it does not duplicate the mirroring drives even if the user selected **Create and duplicate** for RAID 1. It is recommended all disk drives are new ones when wanting to create an array. **Select Disk Drives** lets the user select the array drives by their requirements. When using **Select Disk Drives**, the channel column will be activated. Highlight the target drives that you want to use and press <Enter> to select them. After all drives have been selected, press <Esc> to go back to the creation steps menu.



If user selects a RAID 0 array in step 2, the block size of the array can also be selected. Use the arrow key to highlight **Block Size** and press <Enter>, then select a block size from the popup menu. The block size can be 4KB to 64KB.





**MSI Reminds You...**

*Even though 64KB is the recommended setting for most users, you should choose the block size value which is best suited to your specific RAID usage model.*

**4KB:** *For specialized usage models requiring 4KB blocks*

**8KB:** *For specialized usage models requiring 8KB blocks*

**16KB:** *Best for sequential transfers*

**32KB:** *Good for sequential transfers*

**64KB:** *Optimal setting*

Use the arrow key to highlight **Start Create Process** and press <Enter>. A warning message will appear, Press **Y** to finish the creation, or press **N** to cancel the creation.

Important note: All existing content in the hard drive will be destroyed after array creation.

## Delete Disk Array

A RAID can be deleted after it has been created. To delete a RAID, use the following steps:

1. Select **Delete Array** in the main menu and press <Enter>. The channel column will be activated.
2. Select the member of an array that is to be deleted and press <Enter>. A warning message will show up, press Y to delete or press N to cancel.

```
VIA Tech. RAID BIOS Ver V1.10

▶ Create Array
▶ Delete Array
▶ Create/Delete Spare
▶ Select Boot Array
▶ Serial Number View

The selected array will be destroyed.
Are you sure? Continue? Press Y/N

Delete a RAID array contain
the hard disks attached to
VIA IDE controller

F1 : View Array/disk Status
↑,↓ : Move to next item
Enter: Confirm the selection
ESC : Exit

Channel      Drive Name      Array Name      Mode      Size(GB)      Status
[*]Channel0 Master Maxtor 34098H4  ARRAY 0      ATA 133 37.27  Stripe0
[*]Channel1 Master Maxtor 34098H4  ARRAY 0      ATA 133 37.27  Stripe1
```

Deleting a disk array will destroy all the data on the disk array except RAID 1 arrays. When a RAID is deleted, the data on these two hard disk drives will be reserved and become two normal disk drives.

## Create and Delete Spare Hard Drive

If a RAID 1 array is created and there are drives that do not belong to other arrays, the one that has a capacity which is equal to or greater than the array capacity can be selected as a spare drive for the RAID 1 array. Select **Create/Delete Spare** and press <Enter>, the channel column will then be activated. Select the drive that you want to use as a spare drive and press <Enter>, the selected drive will be marked as **Spare**. The spare drive cannot be accessed in an OS.

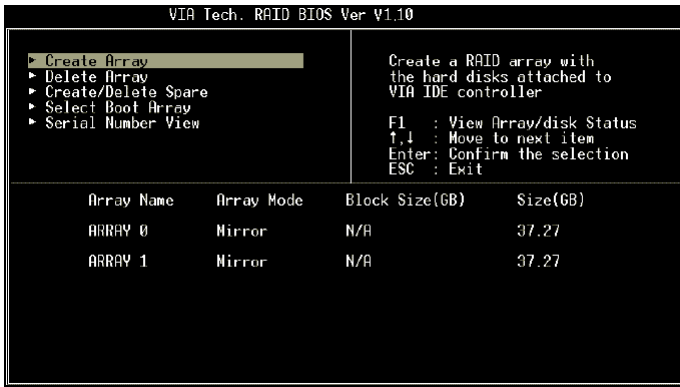
To delete a spare drive, highlight **Create/Delete Spare** and press <Enter>. The spare drive will be highlighted, press <Enter> to delete the spare drive.



### View Serial Number of Hard Drive

Highlight **Serial Number View** and press <Enter>. Use arrow key to select a drive, the selected drive's serial number can be viewed in the last column. The serial number is assigned by the disk drive manufacturer.

Press the **F1** key to show the array status on the lower screen. If there are no disk arrays then nothing will be displayed on the screen.



## Duplicate Critical RAID 1 Array

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

```
----- Critical RAID 1 -----
Duplicate now
Continue to boot

----- Critical Status -----
The RAID 1 array needs to
be duplicated to ensure
data consistency.

Fault Hdd Found:
Channel 1 Device 0 Fault

----- Remaining members of the failed array -----
Channel    Drive Name    Array Name    Mode    Size(GB)    Status
Channel11 Device0    IC35L040AVV07-0    Array0    ATA 100    38.34    Mirror
Channel10 Device0    IC35L040AVV07-0    Array0    ATA 100    38.34    Source

Note:
1) Press <ESC> to Exit.
2) After Execute, Press <TAB> immediately can into Utility Window!
```

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

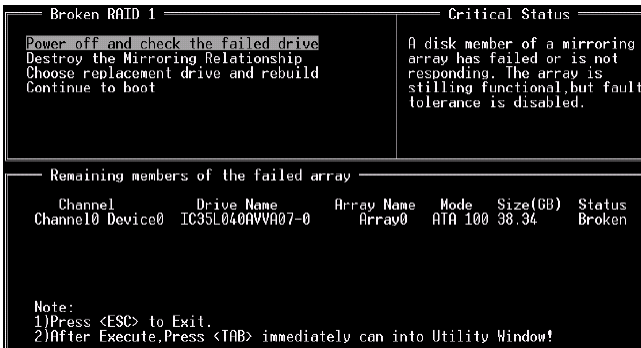


### Rebuild Broken RAID 1 Array

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

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

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



#### 1. Power off and Check the Failed Drive:

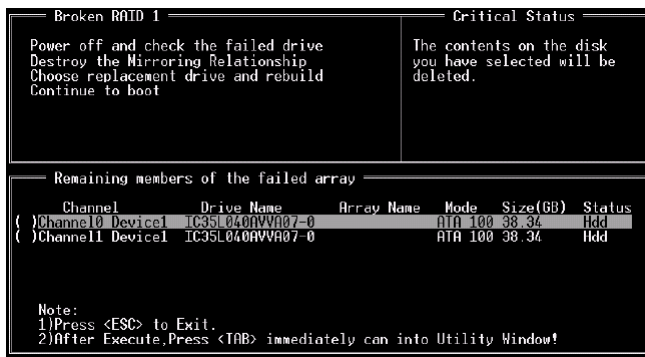
This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

#### 2. Destroy the Mirroring Relationship:

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

### 3. Choose Replacement Drive and Rebuild:

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



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

### 4. Continue to boot:

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

## **Installing RAID Software & Drivers**

### **Install Driver in Windows OS**

#### **► New Windows OS (2000/XP/NT4) Installation**

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

1. Start the installation:

Boot from the CD-ROM. Press **F6** when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.

2. When the Windows Setup window is generated, press **S** to specify an Additional Device(s).

3. Insert the driver diskette *VIA VT6420/VT8237 Disk Driver* into drive A: and press <Enter>.

4. Depending on your operation system, choose *VIA Serial ATA RAID Controller(Windows XP)*, *VIA Serial ATA RAID Controller (Windows 2000)* or *VIA Serial ATA RAID Controller (Windows NT4)* from the list that appears on Windows XP Setup screen, press the <Enter> key.

5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.

6. From the Windows XP Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP installation

#### **► Existing Windows XP Driver Installation**

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

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

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

4. The drivers will be automatically installed.

#### **► Confirming Windows XP Driver Installation**

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

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

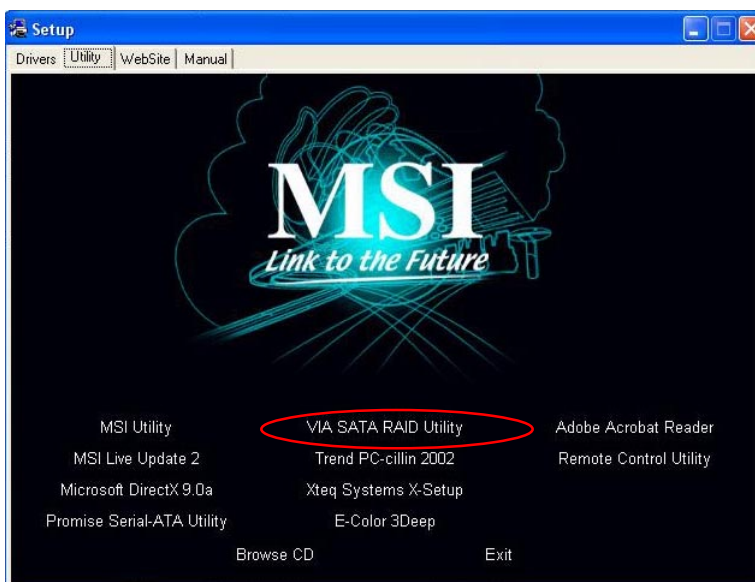
3. Click the "+" in front of the **SCSI and RAID Controllers** hardware type. The driver *VIA IDE RAID Host Controller* should appear.

## **Installation of VIA SATA RAID Utility**

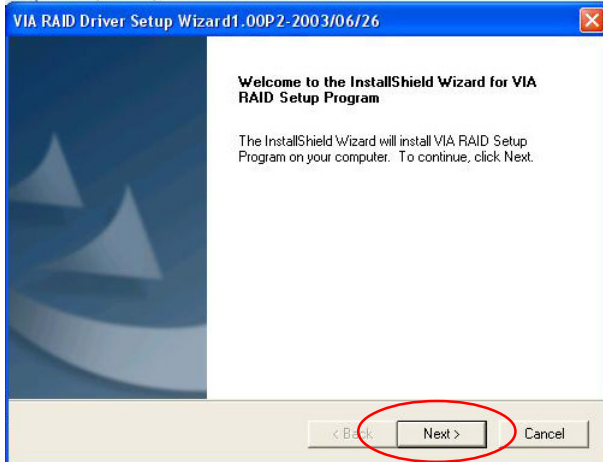
The VIA SATA RAID Utility is the software package that enables high-performance RAID 0 arrays in the Windows\* XP operating system. This version of VIA SATA RAID Utility contains the following key features:

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

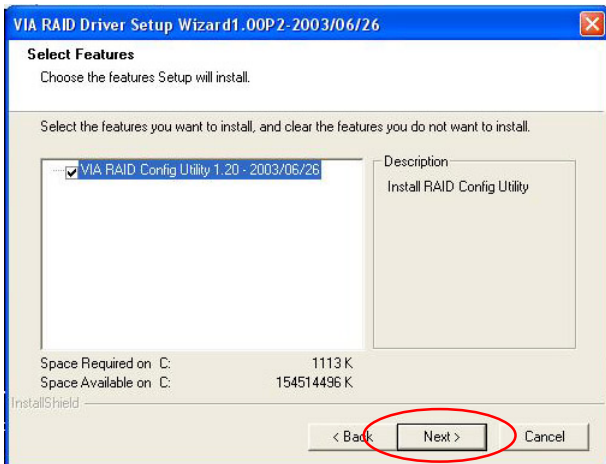
Insert the MSI CD and click on the **VIA SATA RAID Utility** to install the software.



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

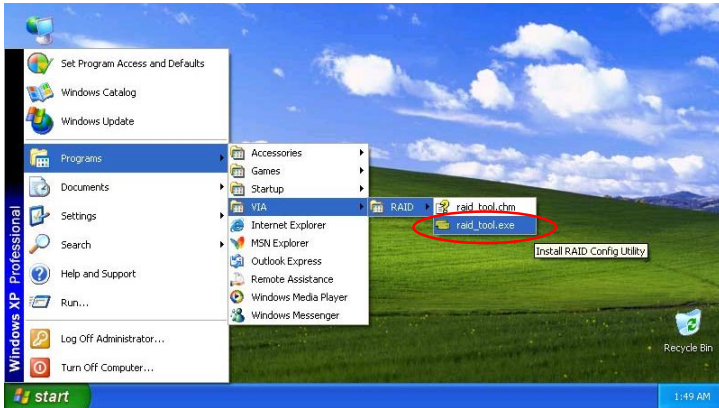



Put a check mark in the check box to install the feature you want. Then click **Next** button to proceed the installation.



## Using VIA RAID Tool

Once the installation is complete, go to **Start** ---> **Programs** ---> **VIA** --> **raid\_tool.exe** to enable **VIA RAID Tool**.



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



The main interface is divided into two windows and the toolbar above contain the main functions. Click on these toolbar buttons to execute their specific functions. The left windowpane displays the controller and disk drives and the right windowpane displays the details of the controller or disk drives. In KT6 Delta, the available features are as following:



View by Controller



View by Devices





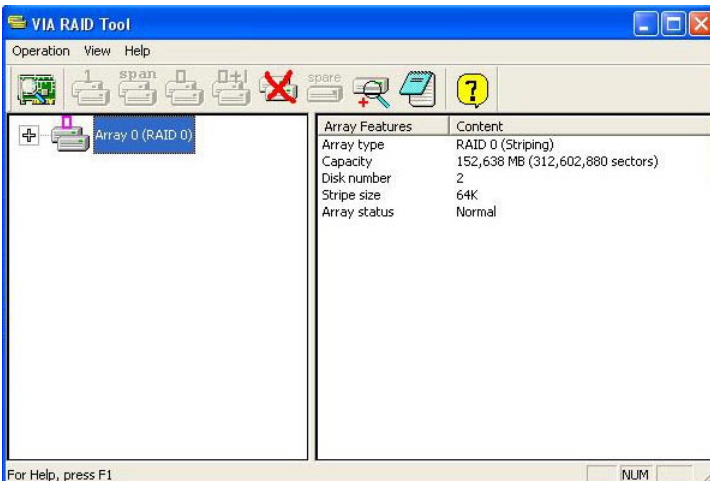
View Event log



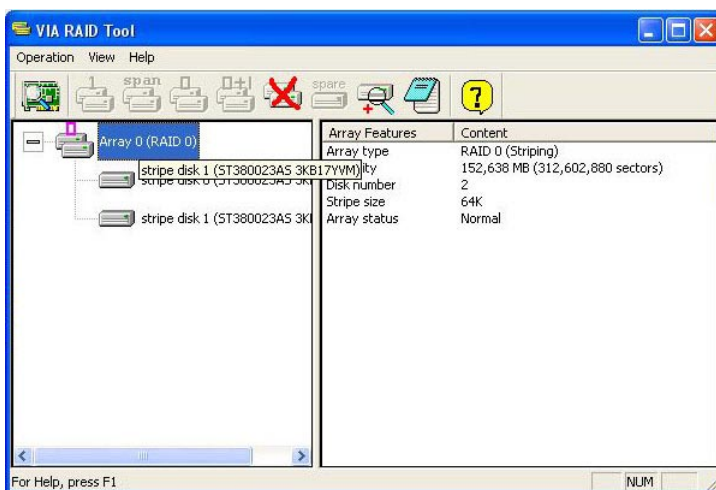
Help Topics

It means that VT8237 SATA RAID in KT6 Delta only has the feature of monitoring the statuses of RAID 0 and RAID 1.

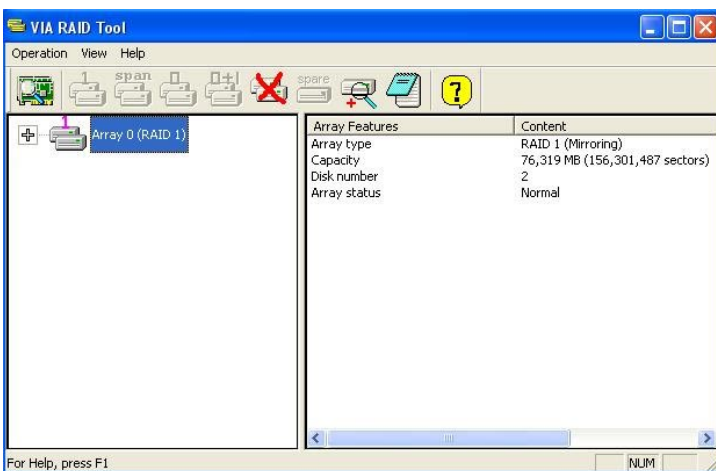
Click on  or  button to determine the viewing type of left window pane. There are two viewing types: By controllers and by device. Click on the object in the left window pane to display the status of the object in the right windowpane. The following screen shows the status of Array 0---RAID 0.



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

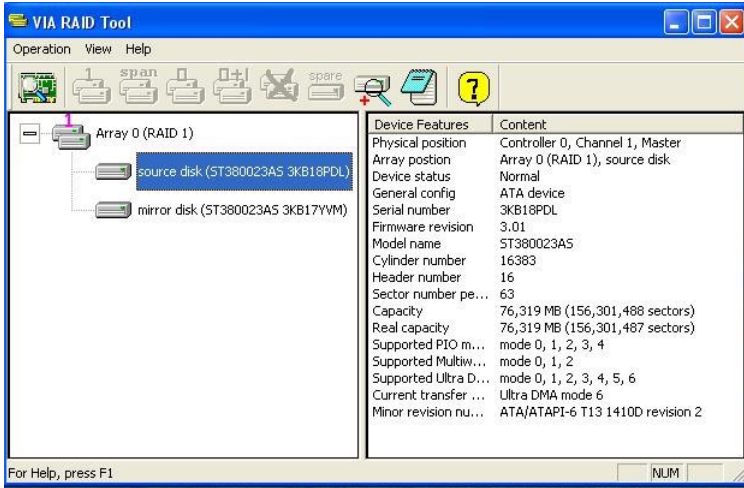


You may also use the same  or  button to view the statuses of Array 0---RAID 1.





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



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