



K8T Neo2 Series

MS-6702E (v1.X) ATX Mainboard



G52-M6702E4

Manual Rev: 1.2

Release Date: August 2004



FCC-B Radio Frequency Interference Statement

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.

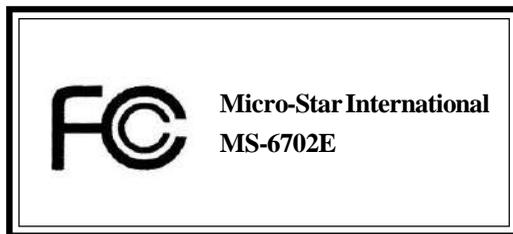
Notice 1

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.



This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation

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Revision History

Revision	Revision History	Date
V1.0	First release for PCB 1.X with K8T800 PRO	June 2004
V1.1	European version	July 2004
V1.2	Update Hardware & BIOS contents	August 2004

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

- Visit the MSI homepage & FAQ site for technical guide, BIOS updates, driver updates, and other information: <http://www.msi.com.tw> & http://www.msi.com.tw/program/service/faq/faq/esc_faq_list.php
- Contact our technical staff at: support@msi.com.tw

Safety Instructions

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 K8T Neo2 (MS-6702E v1.X) ATX mainboard. The K8T Neo2 is based on **VIA® K8T800 Pro North Bridge & VT8237 South Bridge** chipsets and provides eight USB 2.0 ports for high-speed data transmission, RealTek ALC850 chip for 7.1-channel audio output, and a SPDIF interface for digital audio transmission. Designed to fit the advanced **AMD® Athlon 64 and Athlon 64 FX** processors, the K8T Neo2 delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports 64-bit AMD® Athlon 64 and Athlon 64 FX processor (Socket 939)
 - Supports up to 3500+, 3800+ Athlon 64 FX 53, or higher CPU
- (For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

- VIA® K8T800 Pro chipset
 - HyperTransport™ connection to AMD Athlon 64 processor
 - 8 or 16 bit control/address/data transfer both directions
 - 1000/800/600/400/200 MHz "Double Data for Rate" operation for both directions
 - AGP v3.0 compliant with 8x transfer mode
- VIA® VT8237 chipset (487 BGA)
 - Integrated Sound Blaster/Direct Sound AC97 audio
 - Ultra DMA 66/100/133 master mode PCI EIDE controller
 - ACPI
 - Supports 2 Serial ATA ports
 - Supports 8 USB 2.0 ports

Main Memory

- Supports Dual channel DDR266/333/400 DDR SDRAM for four 184-pin DDR DIMMs
 - Supports a maximum memory size of 4GB
 - Supports Dual-channel DDR
- (For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.)

Slots

- One (Accelerated Graphics Port) AGP slot
 - AGP 3.0 specification compliant
- Five 32-bit Master 3.3v / 5v PCI Bus slots

On-Board IDE

- An IDE controller on the VIA® VT8237 chipset provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 66/100/133 operation modes
- Can connect up to 4 IDE devices
- Serial ATA/150 controller integrated by VIA VT8237
 - Up to 150MB/s transfer rate
 - Can connect up to 2 serial ATA devices
 - RAID 0, RAID 1 supported

IEEE 1394 (Optional)

- Supports up to three 1394 ports. Transfer rate is up to 400Mbps
- Controlled by VIA 6306 chipset

Promise 20579 On-Board (Optional)

- Supports two SATA and one IDE
 - RAID 0, RAID 1 and RAID 0+1 supported
 - RAID function work with ATA133+SATA H/D or two SATA H/D
- Connect up to two SATA devices (such as SATA HDD, CD-ROM, DVD-ROM) and two ATA133 devices

- SATA 150MB/s with extensions (SATA II Phase I)
- RAID Smart function
- SATA ATAPI device compatible

On-Board Peripherals

- On-Board Peripherals include:
 - 1 floppy port supports 1 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes
 - 1 serial port (COMA)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 1 IrDA connector for SIR/ASKIR/HPSIR
 - 1 audio port
 - 1 D-Bracket 2 pinheader
 - Supports 8 USB 2.0 ports

Audio

- 7.1 channels software audio codec RealTek ALC850
- Compliance with AC97 v2.3 Spec
- Meet PC2001 audio performance requirement

Gigabit LAN

- Realtek® 8110S PCI Gigabit LAN Controller
 - Integrated Fast Ethernet MAC and PHY in one chip
 - Supports 10Mb/s, 100Mb/s and 1000Mb/s multi-mode

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: 30.4 cm (L) x 24.4 cm (W)

Mounting

- 9 mounting holes

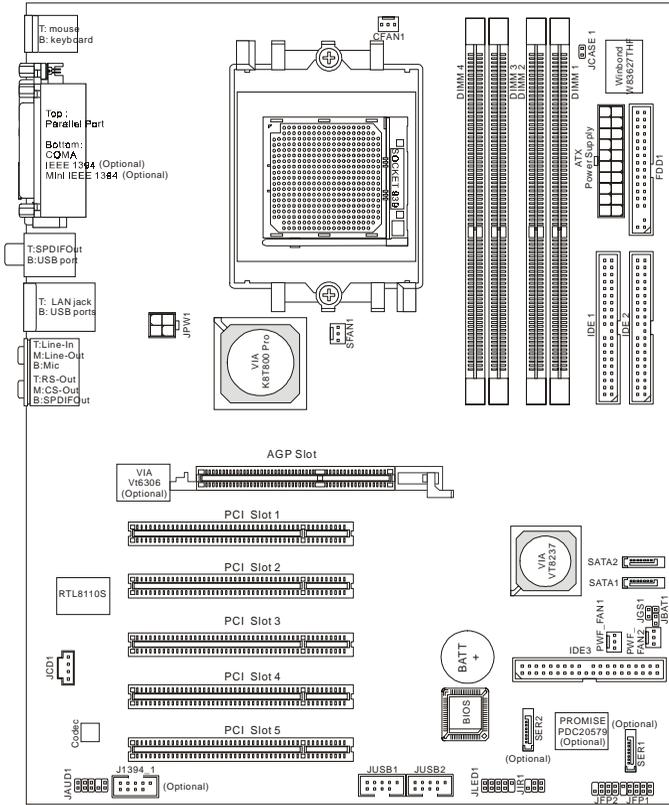


MSI Reminds You...

1. Please note that users cannot install OS, neither WinME nor Win98, in their SATA hard drive. Under these two OSs, SATA can only be used as a normal storage device.
2. To create a bootable RAID volume for a Windows 2000 environment, Microsoft's Windows 2000 Service Pack 4 (SP4) is required. As the end user cannot boot without SP4, a combination installation CD must be created before attempting to install the operating system onto the bootable RAID volume.
To create the combination installation CD, please refer to the following website:

<http://www.microsoft.com/windows2000/downloads/servicepacks/sp4/HFdeploy.htm>

Mainboard Layout



K8T Neo2 (MS-6702E) v1.X ATX Mainboard

Packing Contents



MSI motherboard



MSI Driver/Utility
CD & diskette



SATA Cable (Optional)



Power Cable (Optional)



D-Bracket 2 (Optional)



Round Cable of
IDE Devices



User's Guide



Back IO Shield



Round Cable of
Floppy Disk

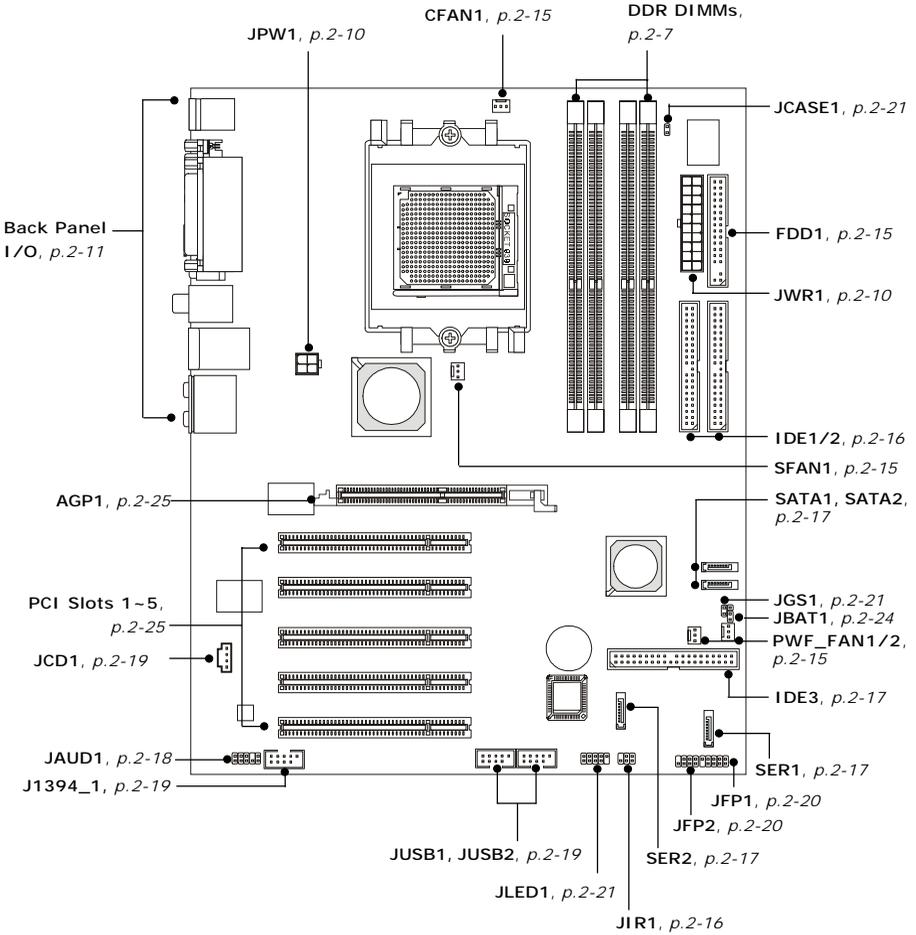
2

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 64 and Athlon 64 FX processor. The mainboard uses a CPU socket called Socket-939 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 have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer. *For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php.*



MSI Reminds You...

Overheating

Overheating will seriously damage the CPU and system, always make sure the cooling fan can work properly to protect the CPU from overheating.

The system will be automatically shut down and secured when CPU overheating occurred, so that you won't be able to restart the system at this situation. To release the security, please press and hold the POWER button up to 4 seconds or disconnect the power cable from the AC outlet, and then restart the system.

Replacing the CPU

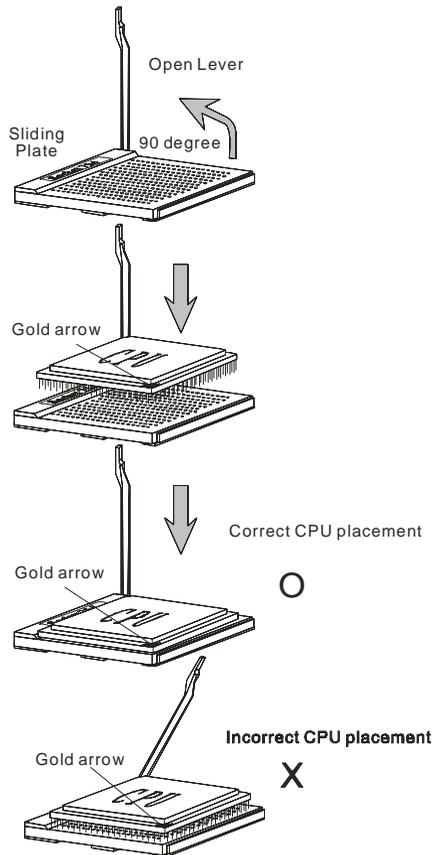
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

Overclocking

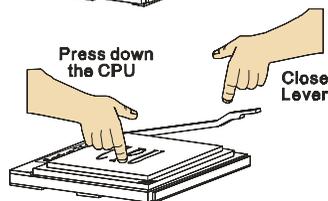
*This motherboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

CPU Installation Procedures for Socket 939

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.



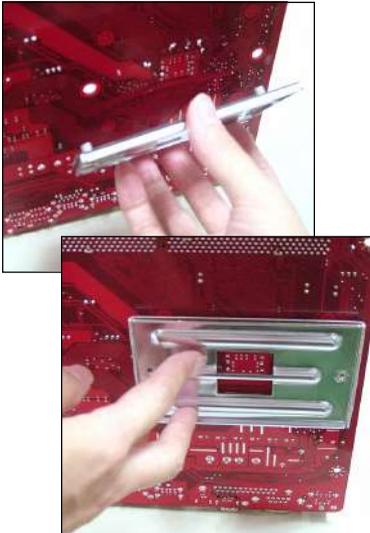
Installing AMD Athlon 64 / Athlon 64 FX CPU Cooler Set

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 have the heat sink and cooling fan, contact your dealer to purchase and install them before turning on the computer.

1. Detach the shield of the backplate's paster.

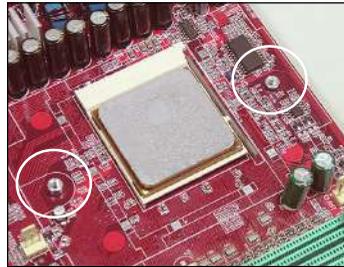


2. Turn over the mainboard, and install the backplate to the proper position.



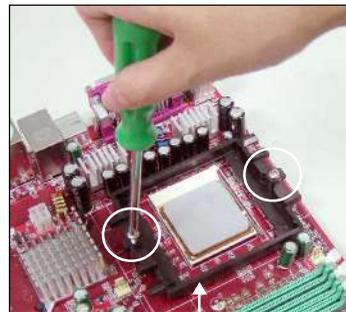
3. Turn over the mainboard again, and place the mainboard on the flat surface.

Locate the two screw holes of the mainboard.



4. Align the retention mechanism and the backplate.

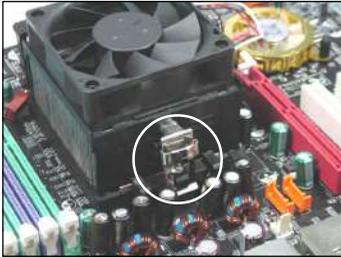
Fix the retention mechanism and the backplate with two screws.



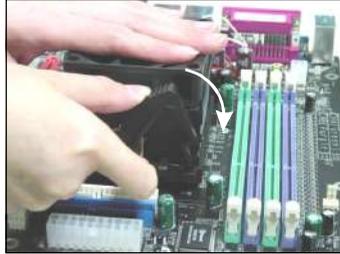
retention mechanism

5. Position the cooling set onto the retention mechanism.

Hook one end of the clip to hook first, and then press down the other end of the clip to fasten the cooling set on the top of the retention mechanism.



7. Fasten down the lever.

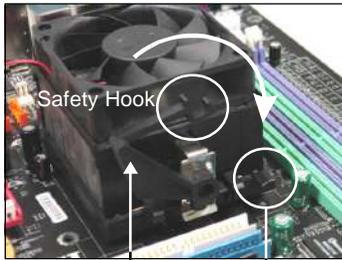


8. Make sure the safety hook completely clasps the fixed bolt of the retention mechanism.



6. Locate the Fix Lever, Safety Hook and the Fixed Bolt.

Lift up the intensive fixed lever.



Fixed Lever

Fixed Bolt

9. Attach the CPU Fan cable to the CPU fan connector on the mainboard.

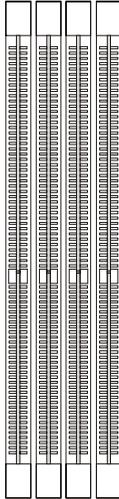


MSI Reminds You...

While disconnecting the Safety Hook from the fixed bolt, it is necessary to keep an eye on your fingers, because once the Safety Hook is disconnected from the fixed bolt, the fixed lever will spring back instantly.

Memory

The mainboard provides 4 slots for 184-pin DDR SDRAM DIMM (Double In-Line Memory Module) modules and supports the memory size up to 4GB. You can install DDR266/333/400 modules on the DDR DIMM slots (DDR 1~4).



DIMM4~1
(from left to right)

DIMM Module Combination

Install at least one DIMM module on the slots. Each DIMM slot supports up to a maximum size of 1GB. Users can install either single- or double-sided modules to meet their own needs. Please note that **each DIMM can work respectively for single-channel DDR, but there are some rules while using dual-channel DDR** (Please refer to the suggested DDR population table below). Users may install memory modules of different type and density on different-channel DDR DIMMs. However, the **same type and density memory modules** are necessary while using dual-channel DDR, or instability may happen. Please refer to the following table for detailed dual-channel DDR. Other combination not listed below will function as single-channel DDR.

	GREEN Slots		PURPLE Slots		System Density
	DIMM1 (Ch A)	DIMM2 (Ch A)	DIMM3 (Ch B)	DIMM4 (Ch B)	
Single channel		128MB~1GB			128MB~1GB
Dual channel		128MB~1GB		128MB~1GB	256MB~2GB
Dual channel	128MB~1GB	128MB~1GB	128MB~1GB	128MB~1GB	512MB~4GB



MSI Reminds You...

- DDR combination of this board works **ONLY** in the 3 combinations listed in the table above.
- Please select the identical memory modules to install on channel A or channel B, or it may cause some unknown failure.
- Always insert the memory modules into the **GREEN slots first**, and it is strongly recommended not to insert the memory modules into the PURPLE slots while the GREEN slots are left empty.
- This mainboard **DO NOT** support the memory module installed with more than 18 pieces of IC (integrated circuit).
- Do not support three memory modules.

Recommended Memory Combination List

DIMM Slot				Max Speed
GREEN slots		PURPLE slots		
DIMM1	DIMM2	DIMM3	DIMM4	
-	S	-	-	DDR400
-	D	-	-	DDR400
-	S	-	S	DDR400
-	D	-	D	DDR400
S	S	S	S	DDR400
D	D	D	D	DDR333

S: Single Side

D: Double Side

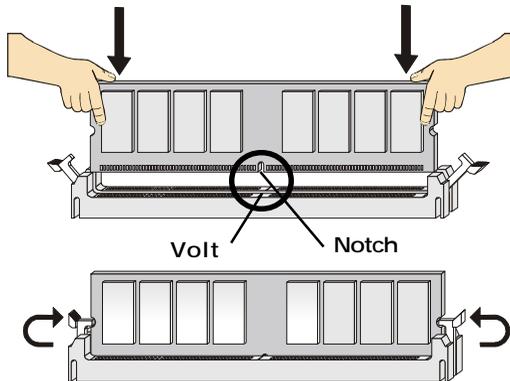
For the updated supporting memory modules, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_trp_list.php.

**MSI Reminds You...**

1. *The maximum memory speed decreases when the following Memory Combination is selected (you can also refer to the Recommended Memory Combination list shown in the previous page:*
 - Each channel is installed with two double-sided memory modules
2. *Due to the chipset resource deployment, the system density will only be detected up to 3+GB (not full 4GB) when each DIMM is installed with an 1GB memory module.*

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

**MSI Reminds You...**

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

Power Supply

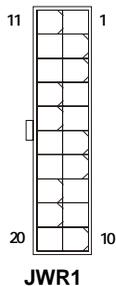
The mainboard supports ATX power supply for the power system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

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.

ATX 12V Power Connector: JPW1

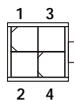
This 12V power connector is used to provide power to the CPU.



JWR1

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



JPW1

JPW1 Pin Definition

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

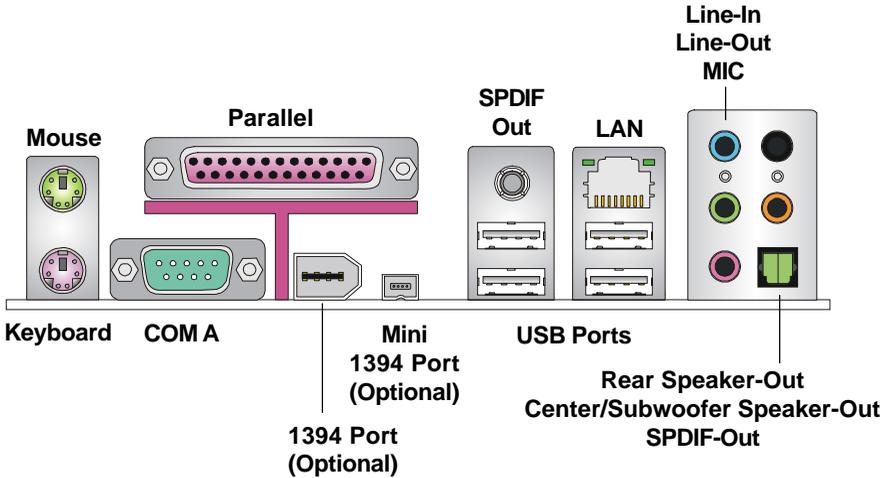


MSI Reminds You...

1. These two connectors connect to the ATX power supply and have to work together to ensure stable operation of the mainboard.
2. Power supply of 300 watts (or above) is highly recommended for system stability.
3. The system will be automatically shut down and secured when CPU overheating occurred, so that you won't be able to restart the system at this situation. To release the security, please press and hold the POWER button up to 4 seconds or disconnect the power cable from the AC outlet, and then restart the system.

Back Panel

The back panel provides the following connectors:



Mouse Connector (Green)

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

Keyboard Connector (Purple)

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.



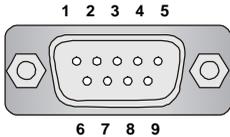
PS/2 Mouse (6-pin Female)
PS/2 Keyboard (6-pin Female)

Pin Definition

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

Serial Port Connector

The mainboard offers one 9-pin male DIN connector as the serial port. The port is a 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.



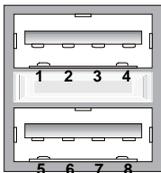
9-Pin Male DIN Connector

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

USB Connectors

The mainboard provides two OHCI (Open Host Controller Interface) Universal Serial Bus roots 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

IEEE1394 Ports (Optional)

The mainboard provides two IEEE 1394 ports in the rear I/O. The mini IEEE1394 port is designed for you to connect the IEEE1394 device with external power. The standard IEEE1394 port connects to IEEE1394 devices without external power. The IEEE1394 high-speed serial bus components provide the enhanced PC connectivity for a wide range of devices, including consumer electronics audio/video (A/V) appliances, storage peripherals, other PCs, and portable devices.



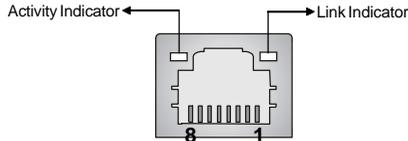
**IEEE1394 Port
(Standard)**



**IEEE1394 Port
(Mini)**

RJ-45 LAN Jack

The mainboard provides one standard RJ-45 jack for connection to Local Area Network (LAN). Giga-bit LAN enables data to be transferred at 1000, 100 or 10Mbps. You can connect a network cable to the LAN jack.



RJ-45 LAN Jack

LED	Color	LED State	Condition
Left	Green	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
	Orange	On	100 Mbit/sec data rate is selected.
		On	1000 Mbit/sec data rate is selected.

Giga-bit LAN Pin Definition

PIN	SIGNAL	DESCRIPTION
1	D0P	Differential Pair 0+
2	D0N	Differential Pair 0-
3	D1P	Differential Pair 1+
4	D2P	Differential Pair 2+
5	D2N	Differential Pair 2-
6	D1N	Differential Pair 1-
7	D3P	Differential Pair 3+
8	D3N	Differential Pair 3-

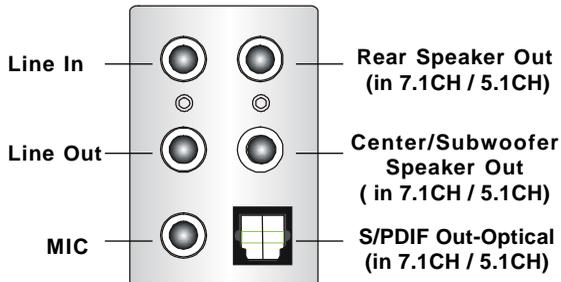
Audio Port Connectors

The left 3 audio jacks are for 2-channel mode for stereo speaker output: **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.

However, there is an advanced audio application provided by Realtek ALC850 to offer support for **7.1-channel audio operation** and can turn rear audio connectors from 2-channel to 4-/5.1-channel audio.

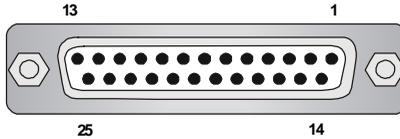


S/PDIF Out-Coaxial



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

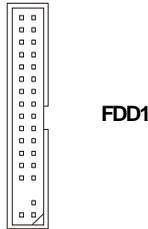
PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	PaperEnd
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select 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 FAN.

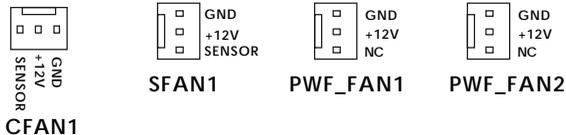
Floppy Disk Drive Connector: FDD1

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 / PWF_FAN1 / PWF_FAN2

The CFAN1 (processor fan), SFAN1 (system fan 1), PWF_FAN1 (Power Supply fan) and PWF_FAN2 (Power Supply 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.

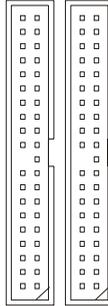


MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CFAN1 supports the fan control. You can install **Core Center** utility that will automatically control the CPU fan speed according to the actual CPU temperature.
3. Please refer to the recommend CPU fans at AMD® official website.

Hard Disk Connectors: IDE1/IDE2

The mainboard has a 32-bit IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode and DMA mode 0–5, Bus Master, and Ultra DMA 33/66/100/133 function. You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) 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.

IrDA Infrared Module Header: JIR1

The connector allows you to connect to IrDA Infrared module. You must configure the setting through the BIOS setup to use the IR function. JIR1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

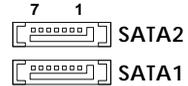
JIR1 Pin Definition



Pin	Signal	Pin	Signal
1	NC	2	NC
3	VCC5	4	GND
5	IRTX	6	IRRX

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

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



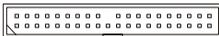
SATA1 & SATA2 are dual high-speed Serial ATA interface ports. Each supports 1st generation serial ATA data rates of 150 MB/s. Both connectors are fully compliant with Serial ATA 1.0 specifications. Each Serial ATA connector can connect to one hard disk device. Please refer to *VIA Serial ATA/Serial ATA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

Parallel ATA/Serial ATA RAID Connectors controlled by Promise 20579: IDE3/SER1/SER2 (Optional)

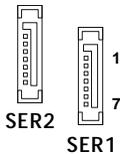
The brand new Promise 20579 chipset supports one IDE connector IDE3 and two serial connectors SER1 & SER2.

IDE3 is a 32-bit Enhanced PCI IDE and Ultra DMA 66/100/133 controller that provides PIO mode and DMA mode 0~5, Bus Master, and Ultra DMA 66/100/133 function. You can connect up to 2 hard disk drives---one IDE master and one IDE slave.

SER1 & SER2 are dual high-speed Serial ATA interface ports. Each supports 1st 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 *Chapter 5 Promise FastTrak579 Parallel ATA/Serial ATA Raid* section for detail software installation procedure.



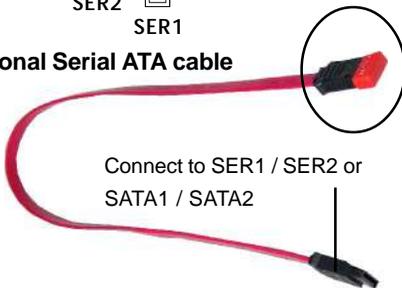
IDE3



SER1 & SER2 Pin Definition

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

Optional Serial ATA cable



Connect to SER1 / SER2 or
SATA1 / SATA2



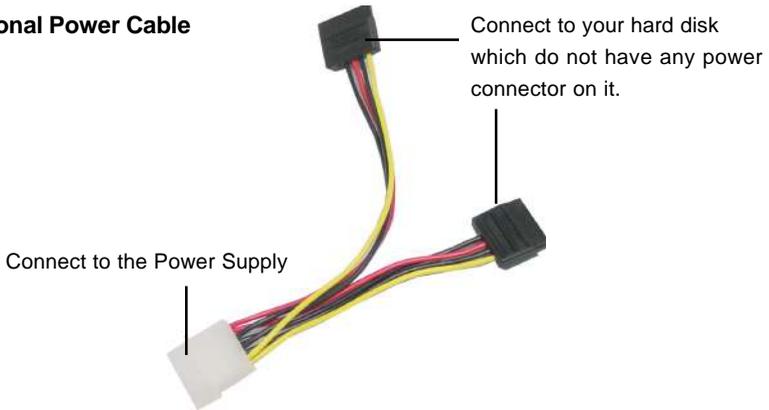
Take out the dust cover and
connect to the hard disk
devices



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.

Optional Power Cable



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.

Pin Definition

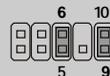


PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return 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



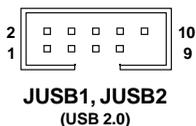
MSI Reminds You...

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.



Front USB Connectors: JUSB1/JUSB2

The mainboard provides two standard USB 2.0 pin headers *JUSB1* & *JUSB2*. 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.**



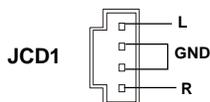
JUSB1 & JUSB2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	Key (no pin)	10	USBOC



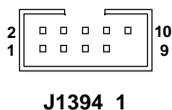
CD-In Connector: JCD1

The connector is for CD-ROM audio connector.



IEEE 1394 Connector: J1394_1 (Optional)

The mainboard provides a 1394 pin header that allow you to connect IEEE 1394 port via an external IEEE1394 bracket (optional).



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

Connected to J1394_1

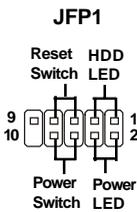


IEEE1394 Bracket (Optional)

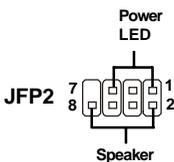
Front Panel Connectors: JFP1/JFP2

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+

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.



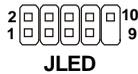
Power Saving Switch Connector: JGS1

Attach a power saving switch to this connector. Press the switch once to have the system entered the Sleep/Suspend state. Press the switch again to wake up the system.



D-Bracket™ 2 Connector: JLED (Optional)

The mainboard comes with a JLED connector for you to connect to D-Bracket™ 2. D-Bracket™ 2 is a USB Bracket that supports both USB1.1 & 2.0 spec. It integrates four LEDs and allows users to identify system problem through 16 various combinations of LED signals.



JLED Pin Definition

Pin	Signal
1	DBG1 (high for green color)
2	DBR1 (high for red color)
3	DBG2 (high for green color)
4	DBR2 (high for red color)
5	DBG3 (high for green color)
6	DBR3 (high for red color)
7	DBG4 (high for green color)
8	DBR4 (high for red color)
9	Key
10	NC



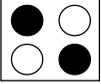
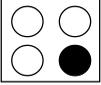
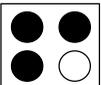
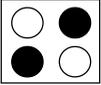
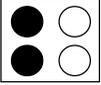
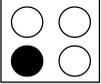
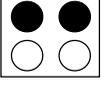
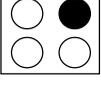
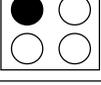
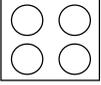
D-Bracket™ 2 is an external USB bracket integrating four Diagnostic LEDs, which use graphic signal display to help users understand their system. The LEDs provide up to 16 combinations of signals to debug the system. The 4 LEDs can debug all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for the overclocking users. These users can use the feature to detect if there are any problems or failures.

D-Bracket™ 2 supports both USB 1.1 & 2.0 specification.



● Red ○ Green

D-Bracket™ 2	Description
<div style="display: flex; justify-content: space-between;"> 1 2 </div>  <div style="display: flex; justify-content: space-between;"> 3 4 </div>	<p>System Power ON The D-LED will hang here if the processor is damaged or not installed properly.</p>
	<p>Early Chipset Initialization</p>
	<p>Memory Detection Test Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly.</p>
	<p>Decompressing BIOS image to RAM for fast booting.</p>
	<p>Initializing Keyboard Controller.</p>
	<p>Testing VGA BIOS This will start writing VGA sign-on message to the screen.</p>

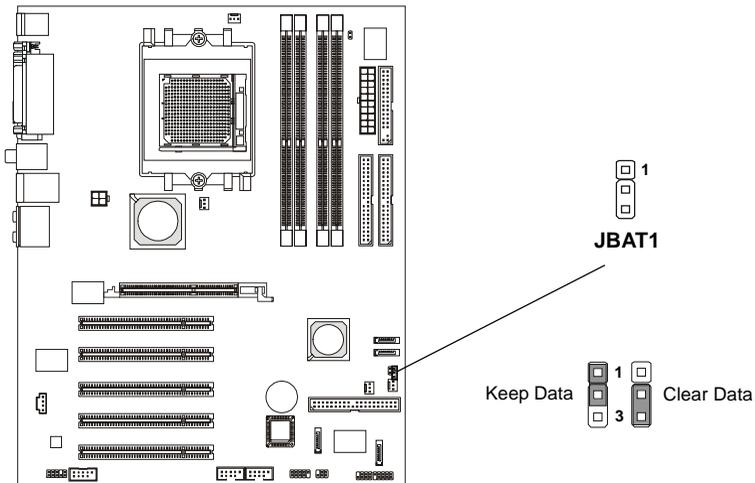
D-Bracket™ 2	Description
	<p>Processor Initialization</p> <p>This will show information regarding the processor (like brand name, system bus, etc...)</p>
	<p>Testing RTC (Real Time Clock)</p>
	<p>Initializing Video Interface</p> <p>This will start detecting CPU clock, checking type of video onboard. Then, detect and initialize the video adapter.</p>
	<p>BIOS Sign On</p> <p>This will start showing information about logo, processor brand name, etc...</p>
	<p>Testing Base and Extended Memory</p> <p>Testing base memory from 240K to 640K and extended memory above 1MB using various patterns.</p>
	<p>Assign Resources to all ISA.</p>
	<p>Initializing Hard Drive Controller</p> <p>This will initialize IDE drive and controller.</p>
	<p>Initializing Floppy Drive Controller</p> <p>This will initialize Floppy Drive and controller.</p>
	<p>Boot Attempt</p> <p>This will set low stack and boot via INT 19h.</p>
	<p>Operating System Booting</p>

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 system configuration data. 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...

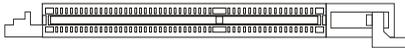
You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

The mainboard provides one AGP slot and five 32-bit PCI bus slots.

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 8x/4x AGP card.

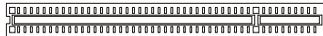


AGP Slot

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.

The orange PCI slot (PCI5) also works as a communication slot, which allows you to insert the communication card, such as the wireless LAN PCI cards of MSI.



PCI Slots

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 C#	INT D#	INT A#	INT B#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
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 requests you to run SETUP.
- ◆ You want to change the default settings for customized features.



MSI Reminds You...

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*
2. *While booting up, the BIOS version is shown in the 1st line appearing after the memory count. It is usually in the format: example: A6702VMS V3.0 070604*

where:

1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)

2th - 5th digit refers to the model name

6th - The VIA chipset.

7th - 8th digit refers to the customer, MS=all standard customers.

V3.0 refers to the BIOS version.

070604 refers to the date this BIOS is released.

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 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, 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.



MSI Reminds You...

The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.

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 Optimal Defaults
<F9>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter.

You can use arrow keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.



```

▶ IDE Primary Master
▶ IDE Primary Slave
▶ IDE Secondary Master
▶ IDE Secondary Slave

```

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

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.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

H/W Monitor

Use this menu to specify your settings for hardware.

Cell Menu

Use this menu to specify your settings for CPU/AGP frequency/voltage control and overlocking.

Set Supervisor Password

Use this menu to set Supervisor Password.

Set User Password

Use this menu to set User Password.

Load Fail-Safe Defaults

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

Load Optimal Defaults

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

Save & Exit Setup

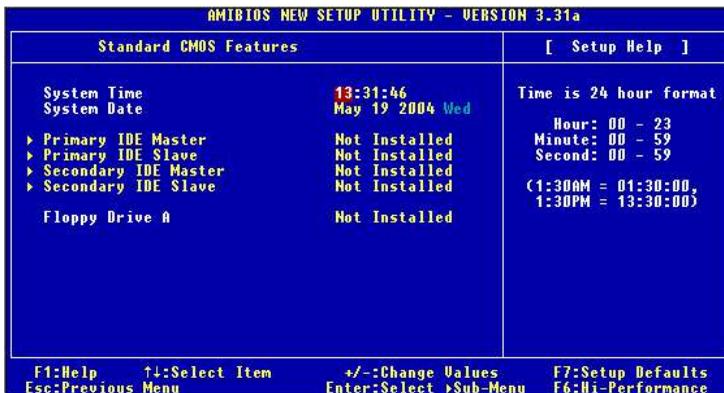
Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Standard CMOS Features

The items inside Standard CMOS Features 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.



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>.

month	The month from Jan. through Dec.
date	The date from 1 to 31 can be keyed by numeric function keys.
year	The year can be adjusted by users.
day	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.

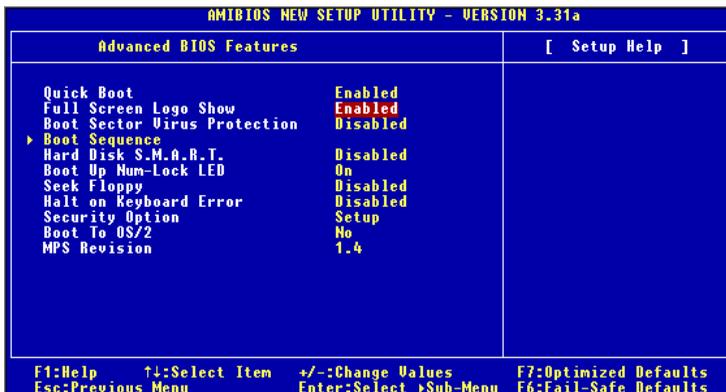
[Type]	Select how to define the HDD parameters
[Cylinders]	Enter cylinder number
[Heads]	Enter head number
[Write Precompensation]	Enter write precomp cylinder
[Sectors]	Enter sector number
[Maximum Capacity]	Read the maximal HDD capacity

[LBA Mode]	Select Auto for a hard disk > 512 MB under Windows and DOS, or Disabled under Netware and UNIX
[Block Mode]	Select Auto to enhance the hard disk performance
[Fast Programmed I/O Modes]	Select Auto 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:

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"].

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:

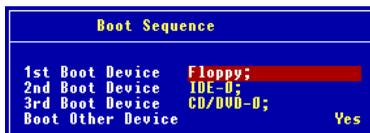
- [Enabled] Shows a still image (logo) on the full screen at boot.
- [Disabled] Shows the POST messages at boot.

Boot Sector Virus Protection

The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings: [Disabled] and [Enabled].

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 AMIBIOS attempts to load the operating system.

Boot Other Device

Setting the option to [Enabled] allows the system to try to boot from other device if the system fails to boot from the 1st/2nd/3rd boot device.

Hard Disk S.M.A.R.T.

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].

Boot Up Num-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].

Seek Floppy Drive

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: [Enabled], [Disabled].

Halt On Keyboard Error

The setting determines whether the system will stop if an error is detected. Setting options: [Enabled], [Disabled].

Security Option

This specifies the type of BIOS password protection that is implemented. Settings 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.

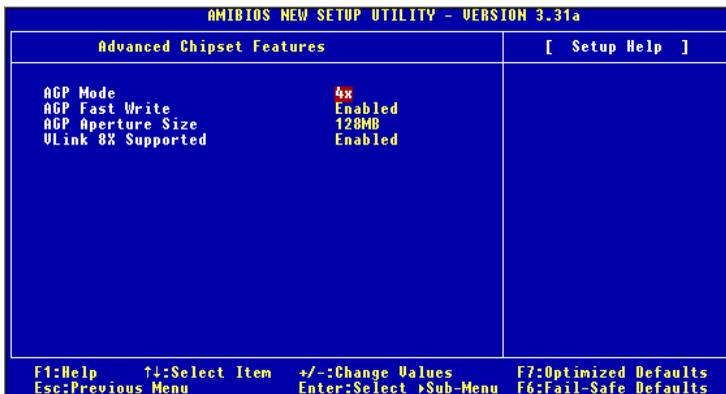
Boot To OS/2

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

MPS Revision

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.

AGP Mode

The item sets an appropriate mode for the installed AGP card. Setting options: [1x], [2x], [4x], and [Auto]. 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].

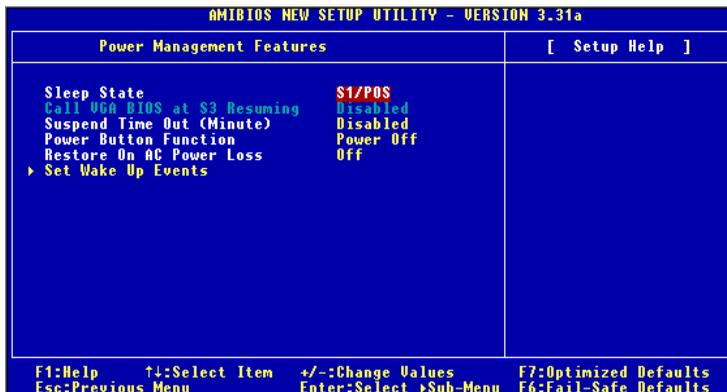
AGP Aperture Size

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.

VLink 8X Supported

This item enables or disables the 8X VLink Data Rate. Setting options: [Enabled], [Disabled].

Power Management Features



MSI Reminds You...

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

Sleep State

This item specifies the power saving modes for ACPI function. If your operating system supports ACPI, such as Windows 98SE, Windows ME, Windows 2000, and Windows XP 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.

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].

Power Button Function

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

- [Power Off] The power button functions as a normal power on/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.

Restore On AC Power Loss

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

- [Off] Always leaves the computer in the power off state.
- [On] Always 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.



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].

Wake Up by Keyboard (with “Wake-Up Key” and “Wake-Up Password”), Wake Up by 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 “Wake up by 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 **P**eripheral **C**omponent **I**nterconnect, 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.

PNP/PCI Configurations		[Setup Help]
Clear NVRAM	No	
Primary Graphics Adapter	AGP	
PCI Slot1 IRQ	Auto	
PCI Slot2/5 IRQ	Auto	
PCI Slot3 IRQ	Auto	
PCI Slot4 IRQ	Auto	
PCI Latency Timer	64	

F1:Help ↑:Select Item +/-:Change Values F7:Optimized Defaults
Esc:Previous Menu Enter:Select →Sub-Menu F6:Fail-Safe Defaults

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.

Primary Graphics Adaptor

This setting specifies which VGA card is your primary graphics adapter. Setting options: [PCI], and [AGP].

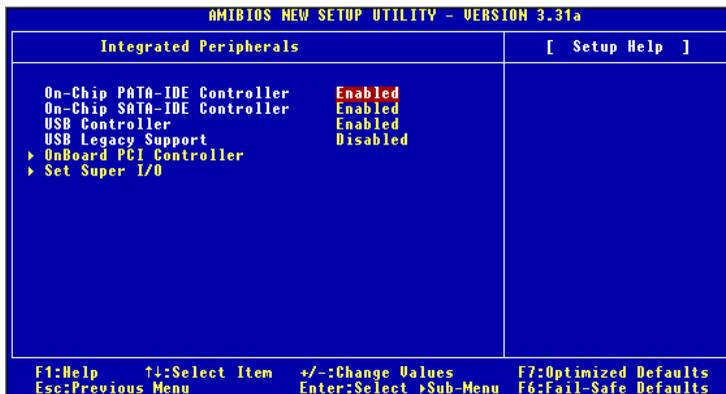
PCI Slot1 IRQ, PCI Slot2/5 IRQ, PCI Slot3 IRQ, PCI Slot4 IRQ

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

PCI Latency 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.

Integrated Peripherals



On-Chip PATA-IDE Controller

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

On-Chip SATA-IDE Controller

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

USB Controller

This setting is used to enable/disable the onboard USB ports. Setting options: [Disabled], [Enabled].

USB Legacy Support

Set to [Enabled] 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. Setting options: [Disabled], [Enabled].

OnBoard PCI Controller

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



LAN Controller, 1394 Controller, P20579 S.ATA Controller, Audio Controller

Set these options to [Enabled] or [Auto] (set [SATA] or [RAID] for P20579 S.ATA Controller) to enable the controllers of these four PCI devices.

Set Super I/O

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



Floppy 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 A

These items specify the base I/O port addresses of the onboard Serial Port A (COM A). Selecting [Auto] allows AMIBIOS to automatically determine the correct base I/O port address. Settings: [Auto], [3F8/COM1], [3E8/COM3], [2E8/COM4] and [Disabled].

IR Function

This is used to enable or disable the operation mode for serial port 2. Setting options: [Enabled], [Disabled].

IR Mode

When **IR Function** is set to [Enabled], this setting allows you to specify the operation mode for serial port 2. Setting options: [1.6uS], [3/16 Baud], [ASKIR].

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], [Disabled], [378], [278], [3BC].

Parallel Port Mode

This item selects the operation mode for the parallel port. Settings: [Normal], [Bi-Dir], [EPP], or [ECP].

EPP Version

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

IRQ

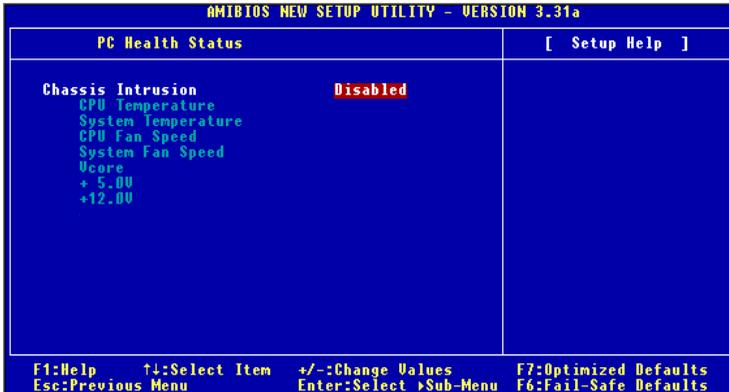
When **Parallel Port** is set to [Auto], the item shows **Auto** indicating that BIOS determines the IRQ for the parallel port automatically.

DMA Channel

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.

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

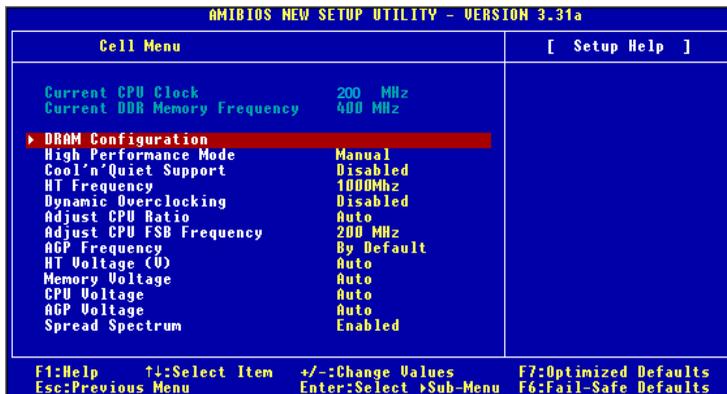
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Settings: [Enabled], [Reset],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

CPU Temperature, System Temperature, CPU Fan Speed, System Fan Speed, Vcore, +5.0V, +12.0V

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

Cell Menu

The items in Cell Menu includes some important settings of CPU, AGP, DRAM and overclocking functions.



MSI Reminds You...

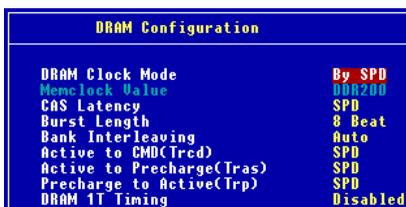
Change these settings only if you are familiar with the chipset.

Current CPU / DDR Clock

These two items show the current clocks of CPU & DDR. Read-only.

DRAM Configuration

Press <Enter> to enter the sub-menu and the following screen appears:



DRAM Clock Mode

Use this field to configure the clock frequency of the installed DRAM. Settings: [By SPD], [Manual].

Memclock Value (Mhz)

When it is set to [Manual] in "DRAM Clock Mode", user can place an artificial memory clock limit on the system. Please note that memory is prevented from running faster than this frequency. Setting options: [DDR200], [DDR266], [DDR300], [DDR333], [DDR400].

CAS Latency

This controls the CAS latency, which determines the timing delay (in clock cycles) before SDRAM starts a read command after receiving it. Settings: [SPD], [2], [3], and [2.5]. [2] increases the system performance the most while [3] provides the most stable performance.

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: [8 beat] and [4 beat].

Bank Interleaving

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

Active to CMD (Trcd)

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: [SPD], [2 CLK], [3 CLK], [4 CLK], [5 CLK], and [6 CLK].

Active to Precharge (Tras)

This setting determines the time RAS takes to read from and write to a memory cell. Setting options: [SPD], [5 CLK], [6 CLK], [7 CLK], [8 CLK], [9 CLK], [10 CLK], [11 CLK], [12 CLK], [13 CLK], [14 CLK], [15 CLK].

Precharge to Active (Trp)

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: [SPD], [2 CLK], [3 CLK], [4 CLK], [5 CLK], [6 CLK].

DRAM 1T Timing

This setting is to enable/disable the SDRAM signal controller run at 1T (T=clock cycles) rate. Selecting [1T] makes SDRAM signal controller run at 2T rate. 1T is faster than 2T. Setting options: [Enabled], [Disabled].

High Performance Mode

This field allows you to select the DDR timing setting. Setting to [Optimized] enables **Adjust DDR Memory Frequency** automatically to be determined by SPD. Selecting [Manual] allows users to configure these fields manually. Setting options: [Optimized], [Manual].

Cool'n'Quiet Support

This item enables or disables the Cool'n' Quiet Function. Setting options: [Enabled], [Disabled].

**MSI Reminds You...**

For the purpose of ensuring the stability of Cool'n'Quiet function, it is always recommended to have the memories plugged in DIMM2.

For more information about Cool'n'Quiet in Chapter4, or please visit MSI's website at www.msi.com.tw.

HT Frequency Select

This item allows you to select the Hyper Transfer frequency. Setting options: [200Mhz], [400Mhz], [600Mhz], [800Mhz], [1000Mhz].

Dynamic Overclocking

Dynamic Overclocking Technology is the automatic overclocking function, included in the MSI™'s newly developed CoreCell™ Technology. It is designed to detect the load balance of CPU while running programs, and to adjust the best CPU frequency automatically. When the motherboard detects CPU is running programs, it will speed up CPU automatically to make the program run smoothly and faster. When the CPU is temporarily suspending or staying in the low load balance, it will restore the default settings instead. Usually the Dynamic Overclocking Technology will be powered only when users' PC need to run huge amount of data like 3D games or the video process, and the CPU frequency need to be boosted up to enhance the overall performance. Setting options:

[Disabled]	Disable Dynamic Overclocking.
[Private]	1st level of overclocking, increasing the CPU frequency by 1%.
[Sergeant]	2nd level of overclocking increasing the CPU frequency by 3%.
[Captain]	3rd level of overclocking, increasing the CPU frequency by 5%.
[Colonel]	4th level of overclocking, increasing the CPU frequency by 7%.

**MSI Reminds You...**

- Even though the Dynamic Overclocking Technology is more stable than manual overclocking, basically, it is still risky. We suggest user to make sure that your CPU can afford to overclocking regularly first. If you find the PC appears to be unstable or reboot incidentally, it's better to disable the Dynamic Overclocking or to lower the level of overclocking options. By the way, if you need to conduct overclocking manually, you also need to disable the Dynamic OverClocking first.*
- Meanwhile, there are two functions to protect user's system from crash.*
 - There is a safe key "Ins" in BIOS. In case the overclocking fails, you can press "Ins" key while system rebooting to restore to the BIOS defaults.*
 - If the system incidentally reboot for four times, the BIOS will also be restored to the defaults.*

Adjust CPU Ratio

This setting controls the multiplier that is used to determine the internal clock speed of the processor relative to the external or motherboard clock speed. It is available only when the processor supports this function.

Adjust CPU FSB Frequency

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 200–280 for needed frequency.

AGP Frequency

This item allows you to select the AGP frequency. Setting options: [Sync with CPU], [66MHz], [75.4MHz].

HT Voltage

Adjusting the Hyper Transfer voltage can increase the Hyper Transfer speed. Setting options: [Auto], [1.26V], [1.32V], [1.38V]. Any changes made to this setting may cause a stability issue, so **changing the HT voltage for long-term purpose is NOT recommended.**

Memory Voltage

Adjusting the DRAM voltage can increase the DRAM speed. Setting options: [Auto], [2.55V], [2.60V], [2.65V], [2.70V], [2.75V], [2.80V], [2.85V]. Any changes made to this setting may cause a stability issue, so **changing the DRAM voltage for long-term purpose is NOT recommended.**

CPU Voltage

The settings are used to adjust the CPU clock multiplier (ratio) and CPU corevoltage (Vcore). These settings offer users a tool to overclock the system. Setting options: [Auto], [+3.3%], [+5.0%], [+6.6%], [+8.0%], [+10.0%], [+11.0%], [+15.0%]. Any changes made to this setting may cause a stability issue, so **changing the CPU voltage for long-term purpose is NOT recommended.**

AGP Voltage

AGP voltage is adjustable in the field, allowing you to increase the performance of your AGP display card when overclocking, but the stability may be affected. Setting options: [Auto], [1.55V], [1.60V], [1.65V], [1.70V], [1.75V], [1.80V], [1.85V]. Any changes made to this setting may cause a stability issue, so **changing the AGP voltage for long-term purpose is NOT recommended.**

Spread Spectrum

This setting is used to enable or disable the FSB clock generator's Spread Spectrum feature. When overclocking the FSB, always set it to [Disabled]. Setting options: [Enabled], [Disabled].

Load Fail-Safe/Optimized Defaults

The two options on the main menu allow users to restore all of the BIOS settings to the Fail-Safe or Optimized Defaults. The Optimized Defaults are the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard. The Fail-Safe Defaults are the default values set by the BIOS vendor for stable system performance.

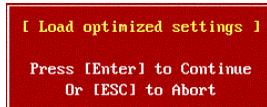
When you select Load Fail-Safe Defaults, a message as below appears:

A red rectangular box with a black border containing yellow text. The text is centered and reads: "[Load fail safe settings]", "Press [Enter] to Continue", and "Or [ESC] to Abort".

```
[ Load fail safe settings ]  
Press [Enter] to Continue  
Or [ESC] to Abort
```

Pressing Y loads the BIOS default values for the most stable, minimal system performance.

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

A red rectangular box with a black border containing yellow text. The text is centered and reads: "[Load optimized settings]", "Press [Enter] to Continue", and "Or [ESC] to Abort".

```
[ Load optimized settings ]  
Press [Enter] to Continue  
Or [ESC] to Abort
```

Pressing Y loads the default factory settings for optimal system performance.

Set Supervisor/User Password

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

Enter Password:

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 AMI BIOS 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 *Security Option* of the *ADVANCED BIOS FEATURES* menu. If the *Security Option* is set to *System*, 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.



Introduction to DigiCell

DigiCell, the most useful and powerful utility that MSI has spent much research and efforts to develop, helps users to monitor and configure all the integrated peripherals of the system, such as audio program, power management, MP3 files management and communication / 802.11g WLAN settings. Moreover, with this unique utility, you will be able to activate the MSI well-known features, Live Update and Core Center, which makes it easier to update the BIOS/drivers online, and to monitor the system hardware status (CPU/Fan temperature and speed) or to overclock the CPU/memory.

Once you have your DigiCell installed (locate the setup source file in the setup CD accompanying with your mainboard, path: **Utility --> MSI Utility --> MSI DigiCell**), it will have an icon  in the system tray, a short cut icon on the desktop, and a short cut path in your "Start-up" menu. You may double-click on each icon to enable DigiCell.



short-cut icon in the system tray



**short-cut path in the start-up menu
(path: Start-->Programs-->MSI-->DigiCell)**

Main

Before using this utility, it is required to have all the integrated peripherals/cards (LAN card, Wireless LAN card, MegaStick... etc.) and all the necessary drivers (onboard LAN driver, audio driver, CoreCenter, Live Update... etc.) installed correctly.

The icon representing each item will be lit up if it is inserted/installed correctly and properly. Otherwise, the icon will remain gray and user is not able to view the functionality/connection of that item.



Introduction:

Click on each icon appearing above to enter the sub-menu to make further configuration.

MSI

Click on this button to link to MSI website:

<http://www.msi.com.tw>.

Quick Guide

Click on this button and the quick guide of **DigiCell** will be displayed for you to review.

H/W Diagnostic

In this sub-menu, it provides the information of each DigiCell button for you to check if the representing peripherals/cards/drivers are correctly installed.

Comm.

In this sub-menu, you can see the configuration details for communication products, including the status, strength, speed and channel of the connection of the Ethernet LAN & Wireless LAN.

Software Access Point

In this sub-menu, you can change your connection mode to different ones, and configure the advanced settings for each mode, such as the authentication encryption... etc.

Live Update

You can take advantage of **Live Update** to detect and update BIOS and drivers online.

Core Center

You can take advantage of **Core Center** to monitor the health status of your system and to overclock under Windows OS if your system supports overclocking function.

MEGA STICK

If you have your MEGA STICK connected to your system, this icon will be lit up. Click this blue icon to turn DigiCell into a MP3 player, and then you can load media files from your MEGA STICK or the system, and edit the preferred playlist.

Audio Speaker Setting

In this sub-menu, you can configure and test the multi-channel audio function, speakers, sound effect and environment.

Power on Agent

In this sub-menu, you can configure date, time and auto-executed programs of the power-on, power-off and restarting features.



MSI Reminds You...

*Click on **back** button in every sub-menu and it will bring you back to the main menu.*

H/W Diagnostic

In the **H/W Diagnostic** sub-menu, you can see the information, status and note of each DigiCell. You may double check the connection and installation of the item marked as gray.



You may also click on the **Mail to MSI** button to send your questions or suggestions to MSI's technical support staff.

Communication

In the **Communication** sub-menu, you can see the status of all the LAN / WLAN / Bluetooth on the screen if the hardware is installed. The first icon indicates the onboard LAN on your system, the second icon indicates the wireless LAN status, and the third one is the information about the bluetooth on your system. Click on each item for details.



This icon indicates the information and connection status of onboard LAN, which is read-only.



The second icon indicates the wireless connection. You may click this icon to configure the advanced settings in the **WLAN Card Mode** dialogue box (see the image on p.4-8). Please note that it is only available when the **Software Access Point** is set to **WLAN Card Mode**.



The third icon indicates the connection using bluetooth devices. If your system is connected to the bluetooth device, the icon will light up.

Software Access Point

In the **Software Access Point** sub-menu, you can see the communication status on your system and choose the desired software access point mode by clicking on the desired icon, in which the default settings are configured for your usage. The default software access point mode is set to **WLAN Card Mode**. For more advanced security settings and channels switching, click on **“Setting”** button to enter its sub-menu.



Terminology

Here are the introduction of WLAN / AP communication terminology.

WEP Key

In the wireless network environment, the administrator can set up password (Network Key) to protect the network from being attacked or unauthorized access. When building the network, you can set up 4 sets of WEP keys, which can be 5 characters (10 hex-adecimal digital) or 13 characters (26 hex-adecimal digital) and specify one of them to use.

Ad-hoc Mode

An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, and access the Internet with a shared modem. In this kind of network, new devices can be quickly added; however, users can only communicate with other wireless LAN computers that are in this wireless LAN workgroup, and are within range.

Infrastructure Mode

The difference between Infrastructure network and Ad-hoc network is that the former one includes an Access Point. In an Infrastructure network, the Access Point can manage the bandwidth to maximize bandwidth utilization. Additionally, the Access Point enables users on a wireless LAN to access an existing wired network, allowing wireless users to take advantage of the wired networks resources, such as Internet, email, file transfer, and printer sharing. The scale and range of the Infrastructure networking are larger and wider than that of the Ad-hoc networking.

Access Point Mode

Click on “**Setting**” button of the **Access Point Mode** and the following screen will display.



IP Sharing

Click on this icon to enable/disable the IP sharing. The default of this setting is disabled.



Disabled.



Enabled.

Enabling/disabling IP sharing depends on the different situation. For example:

1. If your family and you are getting on Internet at home with multi computers, and your ISP only provides one IP for you, you may need to enable **IP Sharing** function in order to use this one IP to get on Internet with multi computers simultaneously.
2. If you are getting on Internet in office, usually the LAN card will automatically get the IP this computer uses. In this case you don't have to enable this function.

SSID

Means Service Set Identifier, a **unique** name shared among all points in a wireless network. It must be **identical** for all points in the network. Then the card will be able to connect to an access point with the same SSID.

Channel

Specifies the operating radio frequency channel in **Infrastructure mode**, which should be set to an available one (ex: with less traffic to ensure the stable and better connection).

Associated Client List

This option is to display information of stations that are currently associated to your wireless gateway.

Association Control

This option allows you to control which PC can connect to the wireless LAN. If you

enable this feature, only PCs with MAC address located in Association Control List can connect to the wireless LAN.

MAC Address

MAC stands for Media Access Control. A MAC address is the hardware address of a device connected to a network.

Security

This option allows you to enable/disable the authentication function.

Authentication

Open: Communicates the key across the network.

Shared: Devices must have identical WEP settings to communicate.

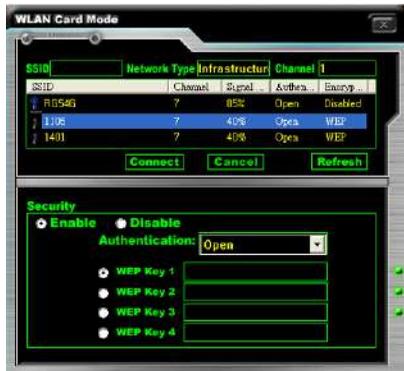
WLAN Card Mode

Click on “**Setting**” button of the **WLAN Card Mode** for the WEP status of your APs.

If the AP you are selecting (the highlighted one) is not encrypted (**Disabled** shown in the **Encryption** column), the screen will display as below. You can click “**Connect**” to make connection to that AP, click “**Cancel**” to close this dialogue box, or click “**Refresh**” button to update the available WLAN connections.



If the network you are selecting is encrypted (**WEP** shown in the **Encryption** column), the screen will display as below. You need to enter the correct WEP key defined by AP in the specified **WEP Key 1~4** fields to make the connection.

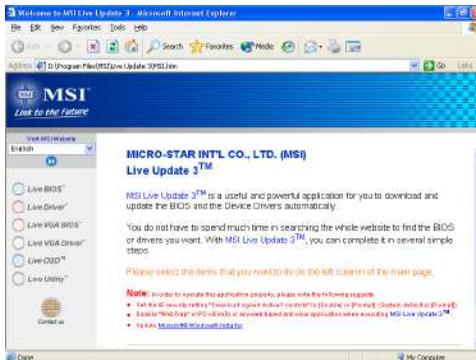


Live Update

Click on the **Live Update** icon in the main menu and the **Live Update** program will be enabled.

The Live Update 3™ is a tool used to detect and update your BIOS/drivers/VGA BIOS/VGA Driver/OSD/Utility online so that you don't need to search for the correct BIOS/driver version throughout the whole Web site. To use the function, you need to install the “MSI Live Update 3” application. After the installation, the “MSI Live Update 3” icon (as shown on the right) will appear on the screen.

Double click the “MSI Live Update 3” icon, and the following screen will appear:



Six buttons are placed on the left column 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 OSD – Updates the firmware of the OSD products 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.

MEGA STICK

In the **MEGA STICK** sub-menu, you can configure the settings of MSI MEGA STICK and the media files (*.m3u, *.mp3, *.wav, *.cda, *.wma) on your system.



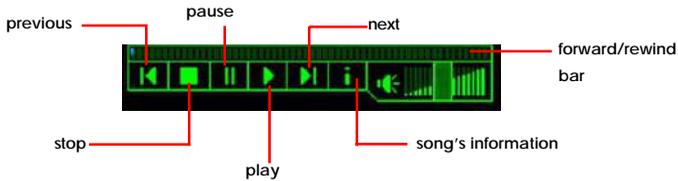
Basic Function

Here you can edit your own play list with the buttons “load”, “save”, “delete”, “shuttle”, “repeat” & “print”.

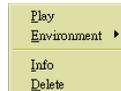
load save delete shuffle repeat print

- Load** To load media files or the playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.
- Save** To save a loaded playlist of mp3 files (*.m3u) on your system or on your MEGA STICK.
- Delete** Click on the media files in the **Play List:** field and use “Delete” button to remove the media file from the play list. You may remove multi media files simultaneously by using “Ctrl” to select multi files.
- Shuffle** To play the media file in the **Play List:** in a random order.
- Repeat** To repeat the selected files in the **Play List:**.
- Print** This button has 2 functions:
- To print out the details of current play list through your printer with the following information:
Song title --- Song length --- Singer name
 - To save the details of current play list and save the file in the plain text file format in the \\Program files\MSI\DigiCell\MyMusic.txt for your reference. The *MyMusic.txt* file is with the following information:
Song title --- Song length --- Singer name

There is also a toolbar for you to execute some basic function, like play, stop, pause, previous/next song, song info and volume adjust. There is also a scroll bar on the top for you to forward/rewind.



Right-click on the MP3 file and choose “Info”, a **MP3 Info** dialogue will pop up to show the information of the file, including the title, artist, album, release year and others. You may also add your own comment in the **comment** field. Then click “Save” to save the change, click “Cancel” to discard the change, or click “Remove” to remove all this information.



Non-Unicode programs supported

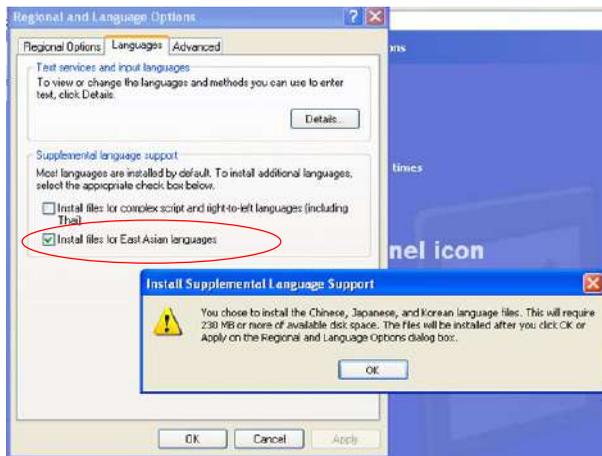
If you are using an operating system in European languages, and you'd like to play the media files in MEGA STICK with East-Asian languages (such as Chinese, Japanese... etc.), it is possible that the file names display incorrectly.

However, you can install the **Supplemental Language Support** provided by Microsoft to solve this problem. You need to have your Microsoft Setup CD prepared in the CD-ROM. The system will start to install the necessary components after the settings are configured here. Follow the steps described below.

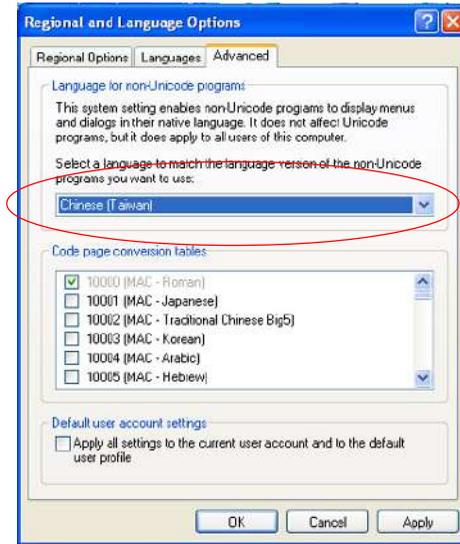
1. Go to [Control Panel] and choose [Regional and Languages Options].



2. Go to the [Languages] tab and enable the check box of [Install files for East Asian languages]. A dialogue box will pop up to remind you the above selection is chosen.



- Then go to the [Advanced] tab and select **the language you want to be supported** (the language of the filename in the MegaStick) from the drop-down list in the [Language for non-Unicode programs], then click [Apply]. The system will install the necessary components from your Microsoft Setup CD immediately.



Core Center (for AMD K8 Processor)

Click on the **Core Center** icon in the main menu and the **Core Center** program will be enabled.

Cool'n'Quiet

This utility provides a CPU temperature detection function called **Cool'n'Quiet**. **Cool'n'Quiet** is a special feature designed only for AMD® Athlon64 processor, and with **Cool'n'Quiet**, the system will be capable of detecting the temperature of the CPU according to the CPU's working loading. When the CPU temperature climbs up to a certain degree, the speed of the system cooling fan will be risen automatically. On the other hand, the speed of the system cooling fan will slow down instantly when the CPU temperature descends to its normal degree.



Here the current system status (including Vcore, 3.3V, +5V and 12V) and the current PC hardware status (such as the CPU & system temperatures and all fans speeds) are shown on the left and right sides for you to monitor.

When you click the red triangles in the left and right sides, two sub-menus will open for users to overclock, overspec or to adjust the thresholds of system to send out the warning messages.



Left-side: Current system status

In the left sub-menu, you can configure the settings of FSB, Vcore, Memory Voltage and AGP Voltage by clicking the radio button in front of each item and make it available (the radio button will be lighted as yellow when selected), use the “+” and “-” buttons to adjust, then click “OK” to apply the changes. Then you can click “Save” to save the desired FSB you just configured.

Also you may click “Auto” to start testing the maximum CPU overclocking value. The CPU FSB will automatically increase the testing value until the PC reboots. Or you may click “Default” to restore the default values.

Right-side: PC hardware status during real time operation

In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click “OK” to apply the changes. The values you set for the temperatures are the maximum thresholds for the system warnings, and the values for fan speeds are the minimum thresholds.

Center-side: Cool’n’Quiet / User mode

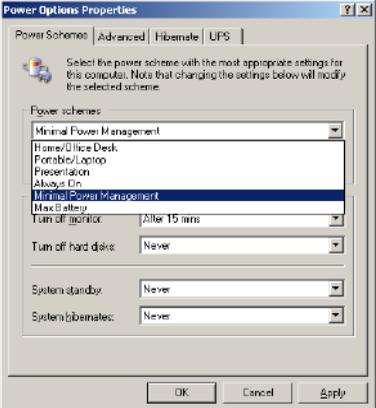
Here you may adjust the CPU fan speed. If you choose **User mode**, you may adjust the CPU fan speed in 8 different modes, from **High Speed** to **Low speed**. If you choose **Cool’n’Quiet**, the system will automatically configure an optimal setting for you.



MSI Reminds You...

To ensure that Cool’n’Quiet function is activated and will be working properly, it is required to double confirm that:

1. Run BIOS Setup, and select **Cell Menu**. Under **Cell Menu**, find **Cool’n’Quiet Support**, and set this item to “Enable.”
2. Enter Windows, and select [Start]->[Settings]->[Control Panel]->[Power Options]. Enter **Power Options Properties** tag, and select **Minimal Power Management** under **Power schemes**.



The screenshot shows the 'Power Options Properties' dialog box with the 'Advanced' tab selected. Under the 'Power schemes' section, 'Minimal Power Management' is selected. Other settings include 'Max battery' set to 'Always On', 'Turn off monitor' set to 'After 15 mins', 'Turn off hard disks' set to 'Never', 'System standby' set to 'Never', and 'System hibernates' set to 'Never'.

Audio Speaker Setting

In the **Audio Speaker Setting** sub-menu, you can configure the multi-channel audio operation, perform speaker test, and choose the environment you prefer while enjoying the music.



You can scroll the bar of each equalizer to regulate the current playing digital sound source. Also you may click on the “on” button to enable/disable the equalizer function. Once the equalizer function is enabled, you can choose several preset equalizers for your preference. You may also right-click anywhere to execute this function. After you have chosen one equalizer, it will be indicated next to the “on” button in yellow.

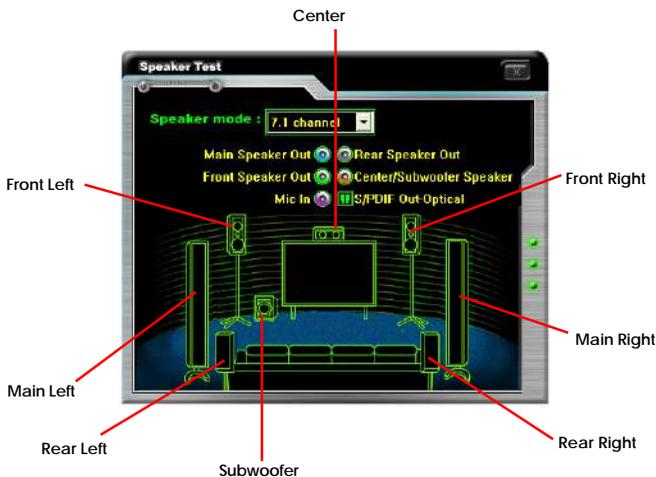


The **Environment** setting lets you select the environment you like, such as **Cave** or **Convert Hall**.

Click on the “**Speaker test**” button and the following dialogue box will appear:



In this **Speaker Configuration** dialogue box, select the audio configuration which is identical to the audio jack on your mainboard. Once the correct audio configuration is selected, click “**Apply**” to save the changes. Then the following screen will appear. In this **Speaker Configuration** dialogue box, first select the correct item from the **Speaker mode** drop-down list, and then click on each connected speaker to ensure if Headphone, 2-, 4-, 5.1-, or 7.1- channel audio operation is working 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.



Power on Agent

In the **Power on Agent** sub-menu, you can configure setting of power-on, power-off and restarting status.

In the screen below, you can set the date, time, start-up programs respectively for power-on, power-off and restarting.



Power On

Here are the available settings for **Power On** function:

- Date** Use the drop-down list to select the date for power-on.
- Time** Use the arrow keys to select the hour/minute/second for power-on, power-off and restarting. Then click **“Apply”** to save the changes. As you click **“Apply”**, the following dialogue will appear to show you the next power-on schedule, and the system will start to count down to restart. Click **“OK”** to restart the computer right away or click **“Later”** to restart your computer later.



MSI Reminds You...

Please note that the new setting will not take effect until you restart your computer.

Power Off / Restart

You may configure the time (in the format hh:mm:ss) for the next power-off / restart.

Start With

Use the button “+Add” to add the start-up programs as DigiCell is activated next time. For example, you may like to have Outlook activated or a specified website linked when you get to the office every morning.

Step 1: Click on the **Program:** field and click “>>” button to browse for the path of Outlook or Internet Explorer.

Step 2: Click on “**OK**” to apply the setting.

Step 3: For specified file or specified website, you may enter the file name with the complete path or the website link in the **Parameters:** field.



add the desired start-up program



To activate Outlook as DigiCell is enabled next time



To activate a specified website as DigiCell is enabled next time

Of course you may use the button “-Delete” to remove the added programs, or you can right-click on the selected program and click **Delete**.



delete the added program



MSI Reminds You...

You can also enable the **Every turn on** function, which will enable the specified program(s) and file(s) every time the Digi Cell utility runs.

Auto Login



Since the **Power On** function allows the system to power on automatically, you may have to enable this **Auto Login** function in the following situations:

1. If you are using a computer belonging to a domain in office, and you need to enter your user name & password everytime when you boot up your computer.
2. If there are multi users using the same computer and you'd like to power on the computer automatically with one specific user.

Enable Auto Login

Enable this setting if you want to use the **Auto Login** feature. It supports the following operating systems: Win9X, Windows ME, Windows 2000 & Windows XP.

Default User Name

It is only available for Windows 2000 & Windows XP.

- If you are using a computer belonging to a domain in office, please enter your login user name in this field.
- If you are using a computer with multi users (for Windows XP operating system), please enter the user name you'd like to auto power-on in this field.

Default Password

It is only available for Windows 2000 & Windows XP.

- If you are using a computer belonging to a domain in office, please enter your login password in this field.
- If you are using a computer with multi-users (for Windows XP operating system), please enter the password for the user name you'd like to auto power-on in this field.



VIA VT8237 Serial ATA RAID & Promise FastTrak 579 Parallel ATA / Serial ATA RAID (Optional) Introduction

This mainboard has VIA VT8237 Serial ATA RAID & Promise FastTrak 579 Parallel ATA/Serial ATA RAID (optional). Serial ATA (SATA) is the latest generation of the ATA interface. 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. Dual independent ATA channels and maximum connection of two SATA hard disk drives allowed.
2. Supports RAID 0 or RAID 1.
3. 4 KB to 64 KB striping block size support.
4. Bootable disk or disk array support.
5. Windows-based RAID configure and management software tool. (Compatible with BIOS)
6. Supports hot-swap failed disk drive in RAID 1 array.
7. Microsoft Windows 98, Me, NT4.0, 2000, XP operating systems support.

The key features of Promise FastTrak 579 Parallel ATA / Serial ATA RAID are:

1. RAID function work with ATA133+SATA H/D or two SATA H/D
2. Supports ATA 133 high performance hard disk drive.
3. Supports RAID 0 , RAID 1 or RAID 0+1.
4. Windows-based RAID configure and management software tool. (Compatible with BIOS)
5. Microsoft Windows 2000, 2003, XP operating systems support.
6. Connect up to two SATA devices (such as SATA HDD, CD-ROM, DVD-ROM) and two ATA133 devices.

Introduction

This section gives a brief introduction on the RAID-related background knowledge and a brief introduction on VIA SATA RAID Host Controller and the onboard Promise FastTrak 579 controller. For users wishing to install their 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; and Promise FastTrak 579 SATA RAID Host Controller supports are RAID 0, RAID 1 and RAID 0+1. The table below briefly introduced these RAID levels.

RAID Level	No. of Drives	Capacity	Benefits	Provided by	Benefits
RAID 0 (Striping)	2	Number drives * Smallest size	Highest performance without data protection	VT8237/ 20579	Highest performance without data protection
RAID 1 (Mirroring)	2	Smallest size	Data protection	VT8237/ 20579	Data protection
RAID 0+1 (Striping/Mirroring) * Only for Promise FastTrak 579 Serial	4	2*smallest size	Highest performance with data protection	FastTrak 20579	Highest performance with data protection



MSI Reminds You...

If you wish to include your current bootable Serial ATA drive using the Windows NT 4.0, 2000, XP or Server 2003 operating system as part of a bootable disk array on your RAID controller. You MUST install the Windows NT4, 2000, XP or Server 2003 driver software first onto this drive while it is still attached to your existing disk drive controller.

System BIOS Setup

Before you configure the RAID, power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key to enter Setup.

For AMI BIOS:

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

Once you enter BIOS Setup Utility, the Main Menu will appear on the screen. Use arrow keys to move among the configurable functions on the Main Menu and press <Enter> to enter **Integrated Peripherals**. As to VIA VT8237 Serial ATA RAID, Under **Integrated Peripherals**, select OnChip SATA IDE Controller, and select **[Enabled]** or **[Disabled]**. For Promise FastTrak 579 Serial ATA/Serial ATA RAID, under **Integrated Peripherals**, select OnBoard PCI Controller, and set the **P20579 S.ATA Controller** to **[SATA]** or **[RAID]** or **[Disabled]**.

Select this option and **[Enabled]** or **[Disabled]** it.



Go to *Creating Your Disk Array* if you set the controller **[SATA]** or **[RAID]** proceed to *Installing Software Drivers*.

VIA VT8237 Serial ATA RAID

Create Your RAID Disk Array Under DOS



MSI Reminds You...

The BIOS Configuration pictures shown below is for your reference only, and may vary from actual ones.

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 VT6420 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
```

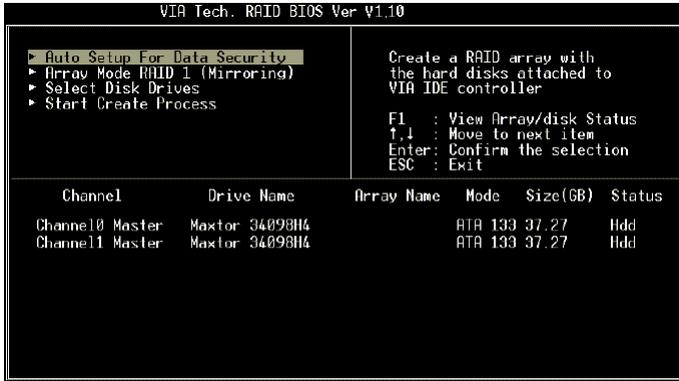
The Serial ATA RAID volume may be configured using the VIA Tech. RAID BIOS. Always use the arrow keys to navigate the main menu, use up and down arrow key to select the each item and press <Enter> to call out the list of creation steps. The main interface of BIOS configuration utility is as below:

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

<ul style="list-style-type: none"> ▶ Create Array ▶ Delete Array ▶ Create/Delete Spare ▶ Select Boot Array ▶ Serial Number View 	<p>Create a RAID array with the hard disks attached to VIA IDE controller</p> <p>F1 : View Array/disk Status ↑,↓ : Move to next item Enter: Confirm the selection ESC : Exit</p>																		
<table border="1"> <thead> <tr> <th>Channel</th> <th>Drive Name</th> <th>Array Name</th> <th>Mode</th> <th>Size(GB)</th> <th>Status</th> </tr> </thead> <tbody> <tr> <td>Channel0 Master</td> <td>Maxtor 34098H4</td> <td></td> <td>ATA 133</td> <td>37.27</td> <td>Hdd</td> </tr> <tr> <td>Channel1 Master</td> <td>Maxtor 34098H4</td> <td></td> <td>ATA 133</td> <td>37.27</td> <td>Hdd</td> </tr> </tbody> </table>		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
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>.



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 is selected, an option list will popup and enable the users to select **Create and duplicate** which allows BIOS copy the data from the source to the mirroring drive.



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.





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.



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

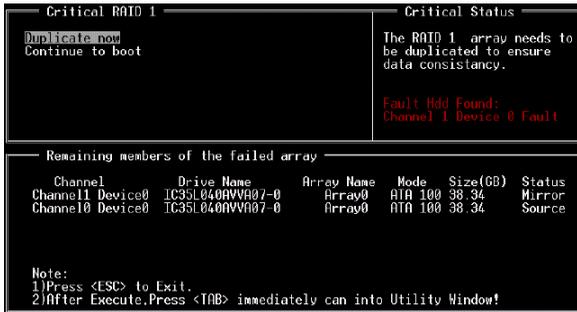
Highlight **Serial Number View** and press <Enter>. Use arrow key to select a drive, the selected drive's serial number can be viewed in the last column. The serial number is assigned by the disk drive manufacturer.

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.



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:

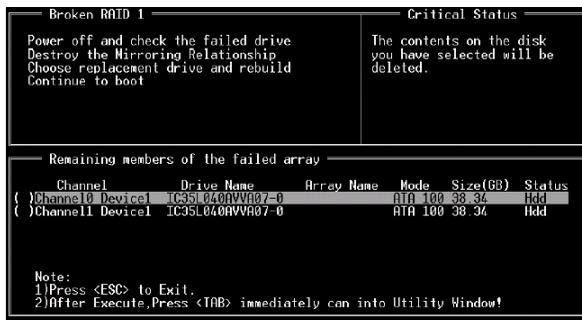
This item turns off the computer and replaces the failed hard drive with a good one. If your computer does not support APM, you must turn off your computer manually. After replacing the hard drive, boot into BIOS and select **Choose replacement drive and rebuild** to rebuild the broken array.

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 recommend 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 Operating System & 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:
 - If your driver disk is damaged or lost, make a new driver disk by copying all the necessary files from the provided MSI CD: [**IDEVIA\Floppy**]
 - 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 operating system, choose **VIA RAID Controller(Windows XP)**, **VIA RAID Controller(Windows 2000)** or **VIA RAID Controller(Windows NT4)** from the list that appears on the 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 Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP installation. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.

➤ 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 Drivers**.
4. The drivers and VIA RAID Tool 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 SATA RAID Controller** should appear.

VIA SATA RAID Drivers

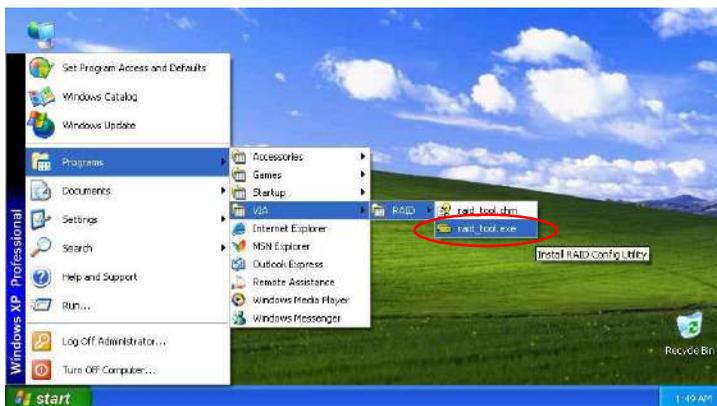
In the companion utility CD are VIA SATA drivers and application programs for Serial ATA or RAID. Under normal conditions, users can easily install the driver & software following the steps below:

1. Insert the companion CD disk 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 Drivers**
4. The VIA drivers and RAID Tool will be automatically installed.
5. Follow the on-screen instructions to complete the software installation.



Using VIA RAID Tool

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



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

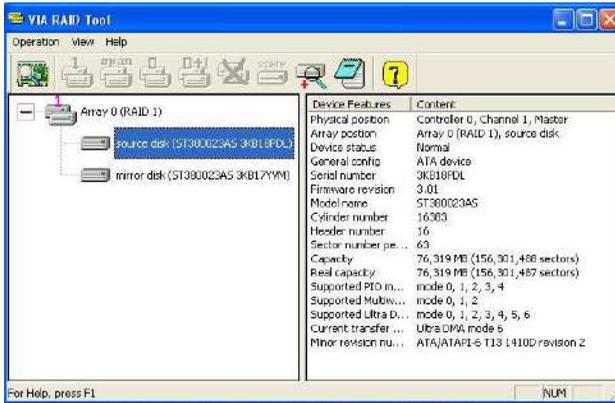


The main interface is divided into two windows and the toolbar above contain the main functions. Click on these toolbar buttons to execute their specific functions. The left windowpane displays the controller and disk drives and the right windowpane displays the details of the controller or disk drives.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

-  View by Controller
-  View by Devices
-  View Event log
-  Help Topics

It means that VT8237 SATA RAID only has the feature of monitoring the status of RAID 0 or RAID 1.

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



Promise FastTrak 579 Parallel ATA / Serial ATA RAID (Optional)



MSI Reminds You...

The FastTrak 579 RAID controller is a PCI Plug-n-Play (PnP) device. No changes are necessary in the Motherboard CMOS Setup for resources or drive types in most applications.

Create Your RAID Disk Array Under DOS



MSI Reminds You...

- Before installing the driver into an existing system, backup any necessary data. Failure to follow this accepted PC practice could result in data loss.
- The BIOS Configuration pictures shown below is for your reference only, and may vary from actual ones.

1. Boot your system. If this is the first time you have booted with the FastTrak 579 RAID controller and drives installed, the Promise onboard BIOS will display the following screen.

```
FastTrak 579(tm) BIOS Version 2.0.00.xx
(c) 2003-2005 Promise Technology, Inc. All Rights Reserved

No array defined . . .

Press <Ctrl-F> to enter FastBuild (tm) Utility
Or press <ESC> key to continue booting the system
```

2. Press the Ctrl-F keys to display the FastBuild Utility Main Menu.
3. Press 1 to display the Auto Setup Menu below. This is the fastest and easiest method to creating your first array.

```
FastBuild (tm) Utility 2.xx (c) 2004 Promise Technology, Inc.
[Auto Setup Options Menu]

Optimize Array for:           Performance

[ Auto Setup Configuration ]

Mode . . . . . Stripe
Spare Drive . . . . . 0
Drives used in Array . . . . . 2
Array Disk Capacity . . . . . 240068

[ Keys Available ]

[←,→, Space] Change Option [ESC] Exit [Ctrl-Y] Save
```

Performance Array (Striped, RAID0)

Use this setting to create a Striped (RAID 0) array. These arrays have no fault tolerance but a two-drive array has better read/write performance.

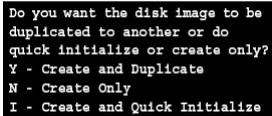
To create an array for best performance, follow these steps:

1. Press the Spacebar to choose Performance under the Optimize Array for section.
2. Press Ctrl-Y to Save and create the array. When the array is created, the screen will return to the Main Menu.
3. Exit the FastBuild Utility.
4. Once the array has been created, you must partition and format the array, using your operating system, as if it were a new single disk drive.
5. Once the arrayed drives have been formatted, proceed to **Install Software Drivers** to install your operating system and/or FastTrak driver.

Security Array (Mirrored, RAID1) with New Drives

To create an array for data protection using new disk drives, follow these steps:

1. Press the Spacebar to choose *Security* under the Optimize Array section.
2. Press Ctrl-Y to Save your selection. The window below will appear.



```
Do you want the disk image to be
duplicated to another or do
quick initialize or create only?
Y - Create and Duplicate
N - Create Only
I - Create and Quick Initialize
```

3. Press N for the Create Only option. When the array is created, the screen will return to the Main Menu.
4. Press Esc to exit the FastBuild Utility.
5. Partition and format the array, using your operating system, as if it were a new single disk drive.
6. Proceed to **Install Software Drivers** to install your operating system and/or FastTrak driver.

Security Array (Mirrored, RAID1) with an Existing Data Drive

Use this setting to create a Mirrored (RAID 1) array with a new disk drive and an existing drive with data and/or the bootable drive in your system. Use a new drive of identical or larger storage capacity as the existing drive.

Under the Security setting in Auto Setup, FastTrak assigns two drives for a single Mirrored array.

Choose this method if you wish to use a drive that already contains data and/or is the bootable drive from your system. Obtain a second disk drive of equal or larger storage capacity.

To create an array for data protection using an existing data drive, follow these steps:

1. Press the Spacebar to choose *Security* in the Optimize Array field.
2. Press Ctrl-Y to Save your selection. The window below will appear.

```
Do you want the disk image to be
duplicated to another or do
quick initialize or create only?
Y - Create and Duplicate
N - Create Only
I - Create and Quick Initialize
```

3. Press Y for the Create and Duplicate option. The window below will appear asking you to select the Source drive to use. FastBuild will copy all data from the Source drive to the Target drive.

```
          [ Source Disk ]
Channel:ID      Drive Model      Capacity (MB)
-----
          [ Target Disk ]
Channel:ID      Drive Model      Capacity (MB)
-----

          [ Please Select A Source Disk ]
Channel:ID      Drive Model      Capacity (MB)
 1 : WDC WD1200-JD00FYBO          120034
 2 : WDC WD1200-JD00FYBO          120034

          [ Keys Available ]

[↑] Up [↓] Down [ESC] Exit [Enter] Select
```


Installing Operation System

For special occasions, users can refer to the following section with details on the FastTrak 579 driver installation when used with various operating systems.

Windows Server 2003

New Installation

The following details the installation of the FastTrak Serial ATA RAID or SATAII 150 Controller drivers while installing Windows Server 2003.

1. Start the installation:
 - If your driver disk is damaged or lost, make a new driver disk by copying all the necessary files from the provided MSI CD: [**\\IDE\Promise\S-ATA\PDC20579\Driver\RAID**] (For RAID) or [**\\IDE\Promise\S-ATA\PDC20579\Driver\Ultra**] (For S-ATA)
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows Server 2003 Setup window is generated, press S to specify an Additional Device(s).
3. Insert the driver disk and press Enter.
4. Choose **Win Server 2003 Promise FastTrak 579 (tm) Controller** or **Win2003 Promise SATAII 150 579/518 (tm) Controller** from the list that appears on screen, and then press Enter.
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 Server 2003 Setup screen, press the Enter. Setup will now load all device files and then continue the Windows Server 2003 installation. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.

Confirm Installation

1. Right-click on the My Computer icon and select Manage from the popup menu.
2. From the left panel, select Device Manager.
3. Click the "+" in front of SCSI and RAID controllers. "**Win Server 2003 Promise FastTrak 579 (tm) Controller**" and "**Win Server 2003 Promise RAID Console SCSI Processor Device**" or "**Promise SATA Console SCSI Processor**" and "**Win Server 2003 Promise SATAII 150 579 (tm) IDE Controller**" should appear.

Windows XP

New Installation

The following details the installation the FastTrak Serial ATA RAID Controller drivers while installing Windows XP.

1. Start the installation:
 - If your driver disk is damaged or lost, make a new driver disk by copying all the necessary files from the provided MSI CD: [\IDE\Promise\S-ATA\PDC20579\Driver\RAID] (For RAID) or [\IDE\Promise\S-ATA\PDC20579\Driver\Ultra] (For S-ATA)
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP Setup window is generated, press S to specify an Additional Device(s).
3. Insert the driver disk and press Enter.
4. Choose **Win XP Promise FastTrak 579 (tm) Controller** or **Win XP Promise SATAII 150 579/518 (tm) Controller** from the list that appears on screen, and then press the Enter.
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. Setup will now load all device files and then continue the Windows XP installation. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.

Confirm Installation

1. Right-click on the My Computer icon and select Manage from the popup menu.
2. From the left panel, select Device Manager.
3. Click the "+" in front of SCSI and RAID controllers. "**Win XP Promise FastTrak 579 (tm) Controller**" and "**Win XP Promise RAID Console SCSI Processor Device**" or "**Promise SATA Console SCSI Processor**" and "**Win XP Promise SATAII 150 579 (tm) IDE Controller**" should appear.

Windows 2000

New Installation

The following details the installation of the FastTrak Serial ATA RAID Controller drivers while installing Windows 2000.

1. Start the installation:
 - If your driver disk is damaged or lost, make a new driver disk by copying all the necessary files from the provided MSI CD: [**\\IDE\Promise\S-ATA\PDC20579\Driver\RAID**] (For RAID) or [**\\IDE\Promise\S-ATA\PDC20579\Driver\Ultra**] (For S-ATA)
 - CD-ROM Install: Boot from the CD-ROM. Press F6 after the message “Press F6 if you need to install third party SCSI or RAID driver” appears.
2. When the Windows 2000 Setup window is generated, press S to specify an Additional Device(s).
3. Insert the driver disk and press Enter.
4. Choose **Win 2000 Promise FastTrak 579 (tm) Controller** or **Win 2000 Promise SATAII 150 579 (tm) Controller** from the list that appears on screen then press Enter.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows 2000 Setup screen, press Enter. Setup will now load all device files and then continue the Windows 2000 installation. During the GUI portion of the install you might be prompted to click **Yes** to install the RAID driver. Click **Yes** as many times as needed in order to finish the installation. This will not be an issue with a signed driver.

Confirm Installation

1. Right-click on the My Computer icon and select Manage from the popup menu.
2. From the left panel, select Device Manager.
3. Click the “+” in front of SCSI controllers. **“Win 2000 Promise FastTrak 579 (tm) Controller”** and **“Win 2000 Promise RAID Console SCSI Processor Device”** or **“Promise SATA Console SCSI Processor”** and **“Win 2000 Promise SATAII 150 579 (tm) IDE Controller”** should appear.

Installing Drivers and Utility

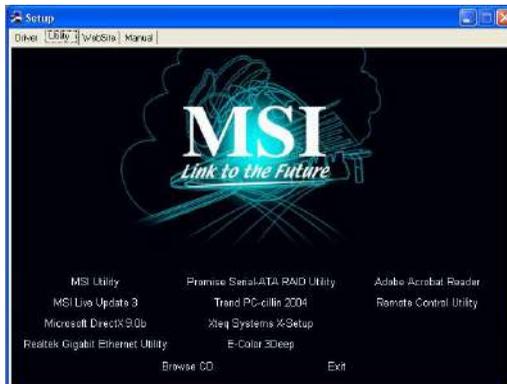
Promise 579 S-ATA RAID

In the companion utility CD are FastTrak 579 drivers and application programs for Serial ATA or RAID. Under normal conditions, users can easily install the driver & software following the steps below:

1. Insert the companion CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the **Driver** tab, click on **Promise 579 S-ATA RAID Drivers** (for RAID)



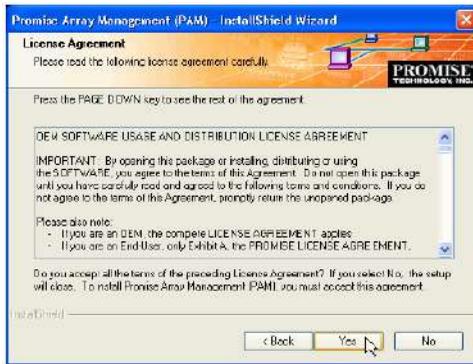
4. The drivers will be automatically installed.
5. Click the **Utility** tab and click on **Promise Serial-ATA RAID Utility**



6. Follow the on-screen instructions to complete the software installation.



7. Click Next or press Enter to continue.



- When the License Agreement appears, click the Yes button to agree to the terms and continue the installation. If you click No, PAM Setup will exit.



- In the Setup Type dialog box, make your choice between Typical (Recommended) and Custom installation.

Use the Custom installation to change install locations or to deselect individual components. For example, use Custom to install only the Message Server onto your network fileserver.

Click Next or press Enter to continue.



10. In the Ready to Install dialog box, click Install or press Enter to continue.

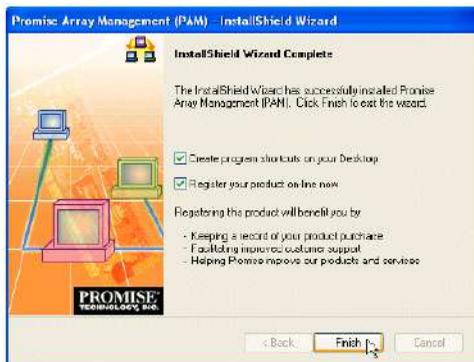


11. When the Add User Account dialog box appears, you may accept the default name or enter a new one in the Name field.

Enter your password in the Password and Confirm Password fields. A password is not required.

When you are done, click Next or press Enter to continue.

Note that if you are only installing the Message Server, this dialog box does not appear.



12. When the Install Complete dialog box appears, you have the option to:

- Create PAM shortcuts on your Desktop
- Register PAM online

Launch PAM and Log-in

To start PAM:

1. Click on a Desktop icon or go to Start > Programs > Promise Array Management and select Local PAM. When the PAM user interface appears:



2. Right-click on the RAID Machine icon in Tree View. Select Login from the popup menu. The Login dialog box appears.



3. In the Login dialog box, enter your Username and Password, and click OK. Initially, administrator is the only user. Use the administrator's password selected during installation.

Access the Online Help for information how to use PAM.

The PAM software performs the same functions as the FastBuild utility but with a graphic user interface. PAM also performs these additional functions:

- Pop-up and email event notification
- User accounts with assigned rights and passwords
- Array expansion (add drives to an existing array)
- Array conversion (change RAID level of an existing array)

Promise 579 S-ATA

In the companion utility CD are FastTrak 579 drivers and application programs for Serial ATA or RAID. Under normal conditions, users can easily install the driver & software following the steps below:

1. Insert the companion CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Under the **Driver** tab, click on **Promise 579 S-ATA Drivers**



4. The drivers will be automatically installed.
5. Click the **Utility** tab and click on **Promise Serial-ATA Utility**



6. Follow the on-screen instructions to complete the software installation.

Arrays Under Windows

Create an Array

The available RAID selection depends on the number of disk drives available. The table below lists the RAID Levels available with FastTrak 579 Controller and the number of drives required.

RAID Level	Name	Minimum drives	Maximum drives
0	Striping	1	4
1	Mirroring	2	2
10	Mirroring + Striping	4	4

- In Tree View, click the + to the left of the Controller  icon to see the Disk View  icon. Look under the Disk View icon to see the unassigned disk drives. Unassigned drives have this  icon.
- Right-click on the Array View  icon and select New Array from the popup menu. A Create Array icon appears.
- Select the Create Array  icon and go to the Create Array Settings in Information View.

Array Creation Setting

Array Name:

RAID Level:

Block Size(KB):

Select Free Disk(s):

-  Ch1:WDC WD1200JD-00FYB0
-  Ch2:WDC WD1200JD-00FYB0

Enable Gigabyte Boundary

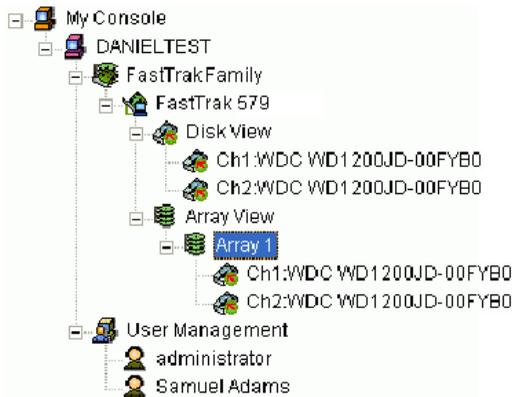
4. In the Array Creation Settings box:

- Type in a name for your array
- Select the RAID Mode (Level) from the dropdown menu
- Set the Stripe Block Size (see the figure in the previous page)
- Highlight the disk drives to add to the array
- Check to enable Gigabyte Boundary, as desired (see the figure in the previous page)

Stripe Block Size – For RAID 0 and RAID 0+1 arrays, you can manually select the stripe block size. The size selected affects how FastTrak send and receives data blocks to and from the drives. In general, a larger block size is better when handling large data transfers (such as A/V editing and graphics) while a smaller size is better when handling email and other common server data. The default is 64KB. When in doubt, use the default value.

Gigabyte Boundary – For RAID 1 and RAID 0+1 arrays. It rounds the size of the array down to the nearest whole gigabyte. It allows you to install a slightly smaller (within 1 GB) replacement drive, should the need arise. To enable Gigabyte Boundary, check the box.

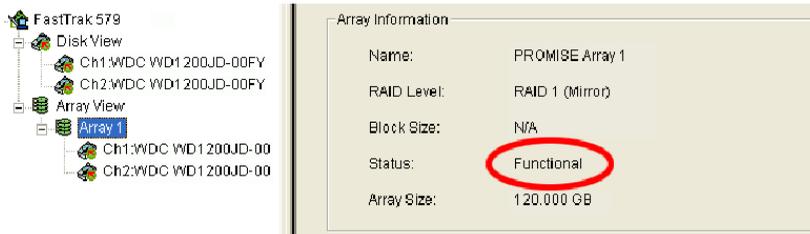
5. Click the Create button when you are done.



The new array appears in Tree View.

Array Functional

When your array is first created, it will display Functional status.



If you have enabled Scheduled Synchronization, you will occasionally notice that your array is Synchronizing. Then it returns again to Functional.

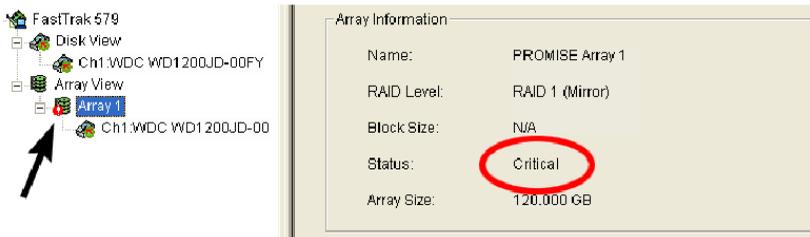
If your array encounters a problem with a disk drive, it will display Critical status. This indicates that your array requires your attention in order to return to Functional.

When a disk drive fails on a non-fault-tolerant (RAID 0) array, the result is an Offline status.

Array Critical

When a disk drive fails on a fault-tolerant array (RAID 1 and 0+1) for any reason, the Array goes Critical. The array can still read and write data but fault tolerance has been lost.

An Array Critical  icon displays in Tree View and the alarm (if enabled) beeps quickly to call your attention to the condition.



Your first action is to identify which disk drive has failed.

1. Click on the Controller  icon to expand it.
2. Click on the Array  icon to expand it.
3. Observe and compare the disk drives currently displayed with those originally assigned to the Array.

In the example above, there are two disk drives attached to the FastTrak Controller and both are assigned to a RAID 1 array.

The disk drive on Channel 2 does not appear. This is the failed drive.

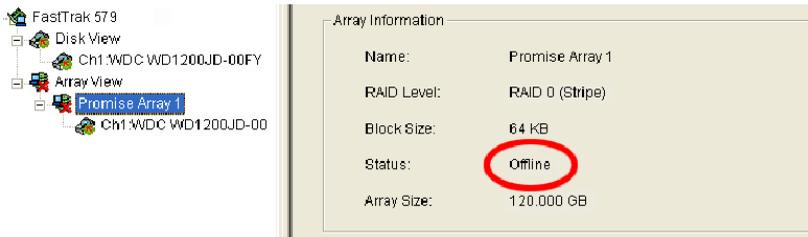
- If you have a Hot Spare drive installed and enabled, the array will begin to Rebuild automatically.
- If you do not have a Hot Spare drive, you must replace the failed drive before a Rebuild of the array can begin

Array Offline

When a disk drive fails on a non-fault-tolerant array (RAID 0) for any reason, the Array goes Offline. The array cannot read or write data. All of the data on the array will be lost unless the failed drive is restored to operation.

A fault-tolerant array (RAID 1 or 0+1) will go Offline if two disk drives fail.

An Array Offline  icon displays in Tree View and the alarm (if enabled) beeps quickly to call your attention to the condition.



Your first action is to identify which disk drive has failed.

1. Click on the Disk View  icon to expand it.
2. Click on the Array View  icon to expand it.
3. Look for the drive that was part of this Array but is now missing. Observe and compare the disk drives under the Controller with those under the Array. In the example above, two disk drives attached to the FastTrak Controller were assigned to a RAID 0 array. The disk drive on Channel 1 is present, but the second drive is not. The second is the failed drive.
4. When you have identified the failed drive, check its connections and run the drive manufacturer's diagnostic program in an effort to restore the drive to operation.

There is no Rebuild function for a non-fault-tolerant array.

Rebuild an Array

To Rebuild is to restore redundancy to a RAID 1 or 0+1 after one of its drives has failed. Unlike Synchronization, a Rebuild is a repair operation.

When a drive fails for any reason, the Array goes Critical. An Array Critical  icon displays in Tree View.

To obtain the desired result, you must make these settings before the rebuild operation begins.

Automatic Rebuild

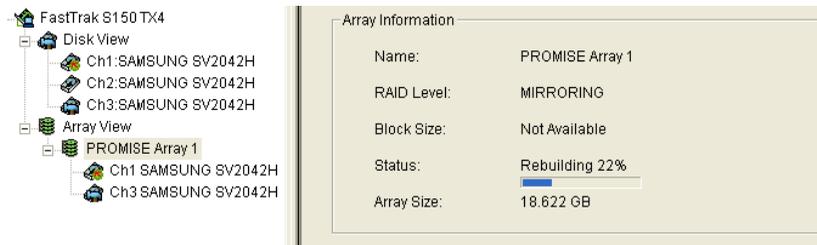
Normally, the rebuild process begins automatically when you replace the faulty disk drive. The Controller recognizes the new drive and begins the process a few moments later.

If your array has a Hot Spare drive, the rebuild begins without waiting for a replacement drive.

Be sure to replace the faulty drive as soon as possible.

If the popup messages are enabled, one will notify you when the rebuild is successfully completed. The array will return to Functional status.

Tree View and Information View display the progress (below).



The screenshot displays the RAID management interface. On the left, the Tree View shows the hierarchy: FastTrak S150 TX4 > Disk View > Ch1: SAMSUNG SV2042H, Ch2: SAMSUNG SV2042H, Ch3: SAMSUNG SV2042H; and Array View > PROMISE Array 1 > Ch1 SAMSUNG SV2042H, Ch3 SAMSUNG SV2042H. The 'PROMISE Array 1' icon is highlighted with a green border and a red 'X' icon, indicating a critical status. On the right, the 'Array Information' window shows the following details:

Array Information	
Name:	PROMISE Array 1
RAID Level:	MIRRORING
Block Size:	Not Available
Status:	Rebuilding 22%
Array Size:	18.622 GB

During the Rebuild process, the array will be available for use but it may run noticeably slower. If the popup messages are enabled, one will notify you when the Rebuild is successfully completed. The array will return to Functional status.

Synchronize an Array

Promise uses the term synchronization to mean an automated process of checking and correcting data and parity. Unlike a Rebuild, Synchronization is a maintenance operation.

Synchronization applies to RAID 1 and 0+1. It takes place when an array is first created and then, optionally, on a regularly scheduled basis to maintain content integrity.

Scheduled Synchronization

Schedule a time for synchronization when the RAID is least busy reading and writing data. The early morning hours are often a convenient time.

To enable scheduled synchronization:

1. In Tree View, select the RAID Machine  icon. In Information View, scroll down to the bottom.



2. Check the Enabled box.
3. Click on the radio button beside the time interval (by day, week or month) you want.
4. Based on the time interval you selected, enter the clock time, day of the week or day of the month for the synchronization process to begin.
5. When you are done, click the Change button.

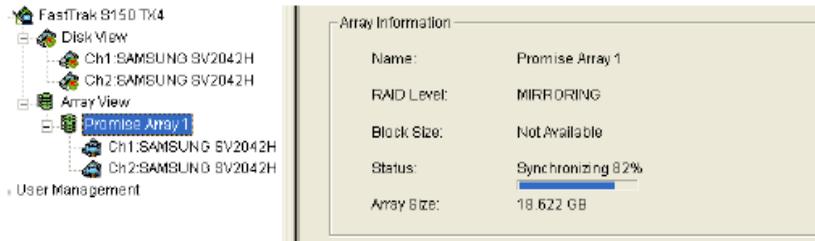
The Synchronization Schedule is set. If the Schedule is disabled, it will remember its current settings.

On Demand Synchronization

In addition to schedule Synchronization, you can direct FastTrak to begin the Synchronization process immediately. To access this feature:

1. Right-click on the Array  icon and select Synchronize from the popup menu.
2. Click OK to the confirmation message.

Information View displays the progress (below).



During the Synchronization, the array will be available for use but it may run noticeably slower.

If the popup messages are enabled, one will notify you when the Synchronization is successfully completed. The array will return to Functional status.

Stop, Pause, Continue

Promise recommends that you let your rebuild run to completion. If you need to pause the process:

1. Right-click on the icon  of the Array that is rebuilding and select Pause from the popup menu.
2. To continue, right-click on the same icon again and select Continue from the popup menu.

Array Conversion / Expansion

PAM includes a feature called RAID Smart to provide online Array conversion and expansion. That means your Array is available to read and write data during the time it undergoes conversion and/or expansion.

To convert or expand an Array:

1. Click on the icon  of the Array you want to convert or expand.
2. In the Information window, under RAID Smart Wizard, click the Start button.



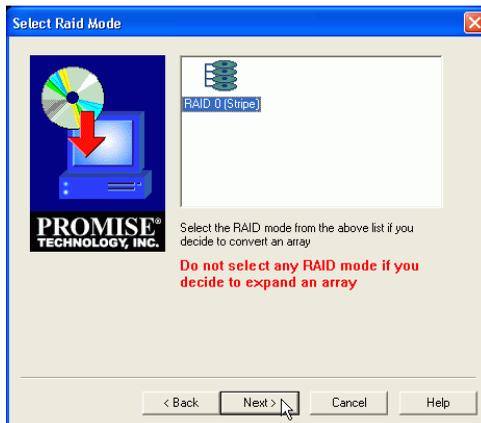
3. In the RAID Smart window, click Next.



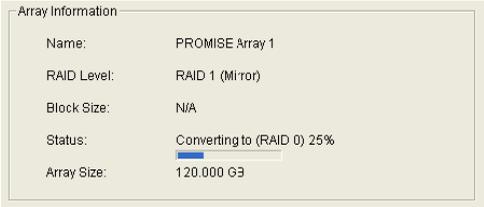
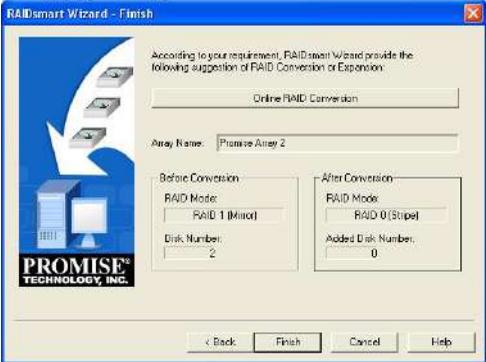
4. In the following configuration window, you can select Wizard mode or Manual mode, the default setting is Wizard mode. If you select Wizard mode, click Next will skip to the last step and finish. Here we choose Manual mode for example, then click Next to continue the process.



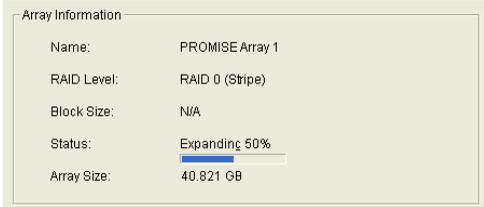
5. If you are Converting (changing RAID level), click on the new RAID level you want and click Next. If you are only Expanding (not changing RAID level), click Next.



6. Verify the name of the Array and the operation you want to perform. If these are correct, click Finish. If not, click Back or Cancel.



Watch the progress of the Conversion or Expansion in the Array Information window. Above, a RAID 1 Array is converting to a RAID 0. Below, a RAID 0 Array is expanding with the addition of more disk drives.



Delete An Array

To delete an array:

1. Right-click on the icon  of the Array you want to delete.
2. Select Delete from the popup menu.
3. Click OK in the confirmation dialog box.