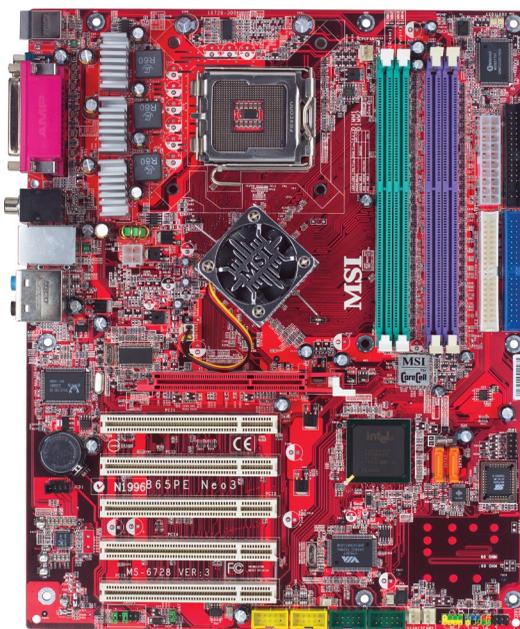




865PE/G Neo3

MS-6728 (v3.X) ATX Mainboard



G52-M6728XV

Manual Rev: 3.0

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.

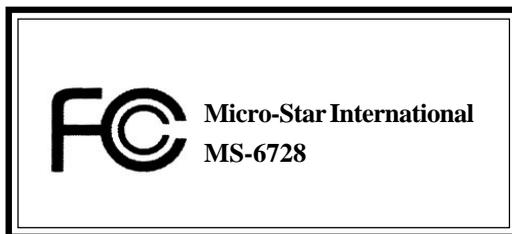
Notice 1

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.



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Revision History

| Revision | Revision History | Date |
|----------|--|-------------|
| V3.0 | First release of PCB 3.0 with chipsets Intel® 865PE/G & Intel® ICH5/ICH5R | 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 choosing the 865PE/G Neo3 (MS-6728) v3.X ATX mainboard. The 865PE/G Neo3 is based on **Intel® 865PE/G & ICH5/5R** chipsets for optimal system efficiency. Designed to fit the advanced **Intel® Pentium 4 Prescott LGA775** processor, the 865PE/G Neo3 delivers a high performance and professional desktop platform solution.

Mainboard Specifications

CPU

- Supports Intel® Pentium 4 Prescott LGA775 processors in LGA775 package.
- Supports up to Pentium 4 3XX, 5XX, 6XX & P4EE (Intel Pentium 4 Processor with HT Technology Extreme Edition) sequence processor or higher speed.

(For the latest information about CPU, please visit http://www.msi.com.tw/program/products/mainboard/mbd/pro_mbd_cpu_support.php)

Chipset

- Intel® 865PE/G chipset
 - Supports FSB 800/533MHz.
 - Supports AGP 8X interface.
 - Supports DDR 400/333/266 memory interface.
 - Integrated graphics controller (for 865G only).
- Intel® ICH5/ICH5R chipset
 - Hi-Speed USB (USB2.0) controller, 480Mb/sec, 8 ports.
 - 2 Serial ATA/150 ports.
 - 2 channel Ultra ATA 100 bus Master IDE controller.
 - PCI Master v2.3, I/O APIC.
 - Supports both ACPI and legacy APM power management.
 - Serial ATA/150 RAID 0 and RAID 1 (Optional).

Main Memory

- Supports four unbuffered DIMM of 2.5 Volt DDR SDRAM.
- Supports up to 4GB memory size without ECC.
- Supports Dual channel DDR266/333/400 MHz.

Slots

- One AGP slot supports 8x/4x.
- Five 32-bit v2.3 Master PCI bus slots (support 3.3v/5v PCI bus interface).

On-Board IDE

- Dual Ultra DMA 66/100 IDE controllers integrated in ICH5/ICH5R.
 - Supports PIO, Bus Master operation modes.
 - Can connect up to four Ultra ATA drives.
- Serial ATA/150 controller integrated in ICH5/ICH5R.
 - Up to 150MB/sec transfer speeds.
 - Can connect up to two Serial ATA drives.
 - Supports SATA RAID 0/RAID 1 (Optional).

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 VGA port (for 865G only)
 - 1 parallel port supports SPP/EPP/ECP mode
 - 8 USB 2.0 ports (Rear * 4/ Front * 4)
 - 1 Line-In / Line-Out / Mic-In / Real Speaker Out / Center-Subwoofer Speaker Out / SPDIF Out-Optical audio port
 - 1 RJ45 LAN jack (Optional)
 - 2 IEEE 1394 pinheaders (Optional)

Audio

- AC97 link controller integrated in Intel® ICH5/ICH5R chipset.
- 8-channel audio codec Realtek ALC850.
 - Compliance with AC97 v2.3 Spec.
 - Meet PC2001 audio performance requirement.

LAN

- Realtek® 8100C / 8110S (Optional)
 - Integrated Fast Ethernet MAC and PHY in one chip.
 - Supports 10Mb/s, 100Mb/s and 1000Mb/s (1000Mb/s for 8110S only).
 - Compliance with PCI 2.2.
 - Supports ACPI Power Management.

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.

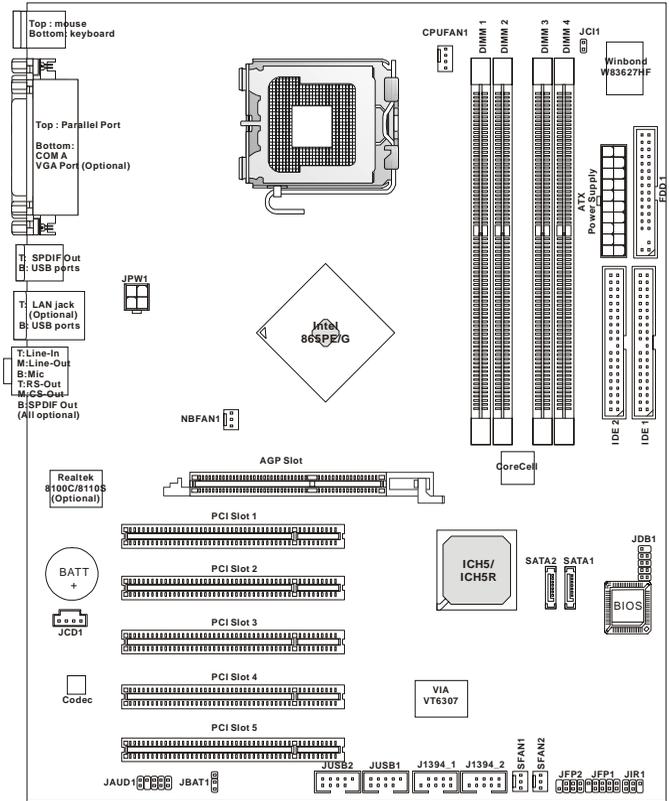
Dimension

- ATX Form Factor: 30.5 cm (L) x 24.5 cm (W).

Mounting

- 9 mounting holes.

Mainboard Layout



865PE/G Neo3 (MS-6728) v3.X ATX Mainboard

Packing Contents



MSI motherboard



MSI Driver/Utility CD



SATA Cable *2



Power Cable



D-Bracket 2
(Optional)



Standard Cable for
IDE Devices



User's Guide



Back IO Shield



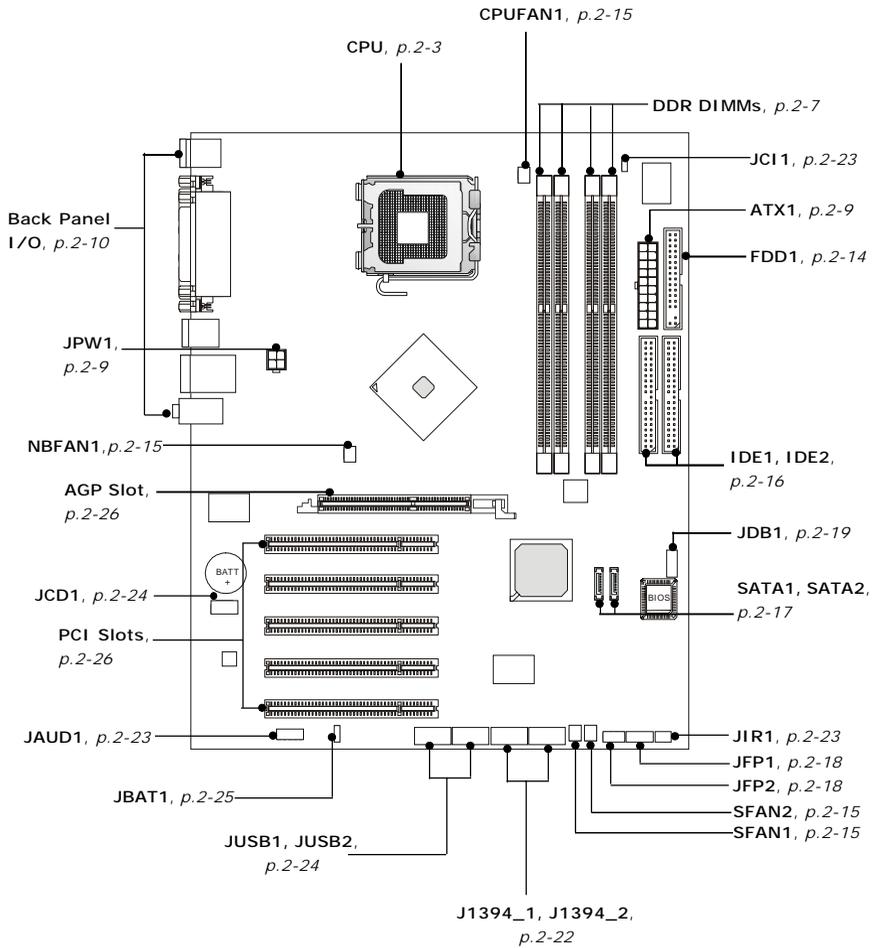
Standard Cable for
Floppy Disk

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 Intel® Pentium 4 Prescott processor. The mainboard uses a CPU socket called LGA775. When you are installing the CPU, **make sure to install the cooler to prevent overheating**. If you do not have the CPU cooler, 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.

Replacing the CPU

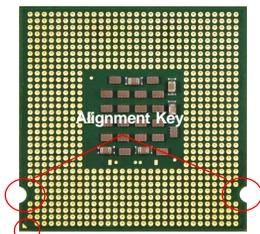
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from grounded outlet first to ensure the safety of CPU.

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.***

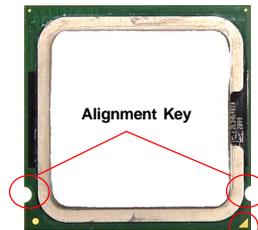
Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.



Yellow triangle is the Pin 1 indicator

The surface of LGA 775 CPU. Remember to apply some silicone heat transfer compound on it for better heat dispersion.



Yellow triangle is the Pin 1 indicator

CPU & Cooler Installation

When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** If you do not have the cooler, contact your dealer to purchase and install them before turning on the computer. Meanwhile, do not forget to apply some silicon heat transfer compound on CPU before installing the heat sink/cooler fan for better heat dispersion.

Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

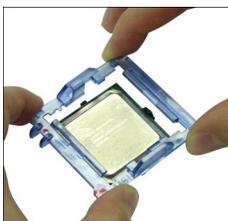
1. The CPU has a land side cover on the bottom to protect the CPU contact from damage. Rotate it to make the pin 1 indicator (yellow triangle) in the right-bottom corner.
2. Take out the accompanying CPU Clip and rotate it for the same direction as the CPU (Pin 1 indicator, the red triangle is in the left-bottom corner).



land side cover



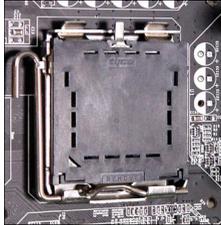
3. Align the 3 points (the Pin 1 indicator and the two alignment keys) of both the CPU and the CPU Clip, and use your 4 fingers to push the CPU Clip down to clip them (the CPU clip is up and the CPU is down) together.
4. The land side cover now is removed.



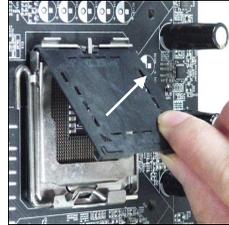
MSI Reminds You...

1. *Confirm if your CPU cooler is firmly installed before turning on your system.*
2. *Do not touch the CPU socket pins to avoid damaging.*
3. *The availability of the CPU land side cover depends on your CPU packing.*

- The CPU has a plastic cap on it to protect the contact from damage. Before you have installed the CPU, always cover it to protect the socket pin.



- Remove the cap from lever hinge side (as the arrow shows).



- The pins of socket reveal. Then lift up the load lever.



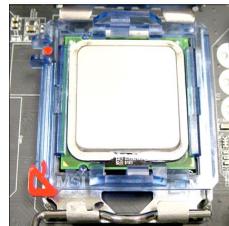
- Lift the load lever up and open the load plate.



- Correctly align the red triangle of CPU clip with the CPU chamfer, the red arrow with the left-side socket edge, and the red spot to the hook of the socket.



- Put the whole module onto the CPU socket.



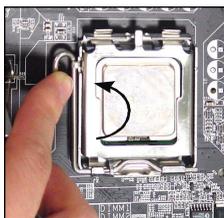
11. Push down the CPU hard to install the CPU into the socket housing frame.



12. Visually inspect if the CPU is seated well into the socket, then remove the CPU Clip with 2 fingers. Then cover the load plate onto the package.



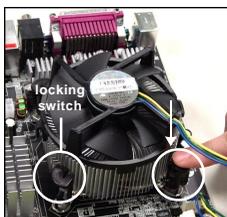
13. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.



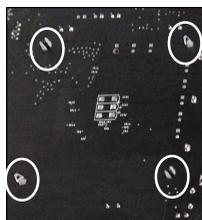
14. Align the holes on the mainboard with the cooler. Push down the cooler until its four clips get wedged into the holes of the mainboard.



15. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.



16. Turn over the mainboard to confirm that the clip-ends are correctly inserted.



MSI Reminds You...

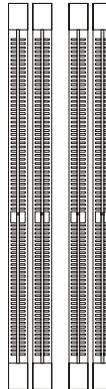
1. Check the information in **PC Health Status** in BIOS (refer to p.3-25 for details) for the CPU temperature.
2. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.
3. Please note that the mating/unmating durability of the CPU is 20 cycles. Therefore we suggest you do not plug/unplug the CPU too often.

Memory

The mainboard provides 4 slots for 184-pin, 2.5V DDR DIMM with 8 memory banks. You can install DDR266 / DDR333 / DDR400 / DDR433 / DDR466 / DDR500 / DDR533 SDRAM modules on the DDR DIMM slots (DIMM 1~4). To operate properly, at least one DIMM module must be installed. **Please note that DDR433 / DDR466 / DDR500 / DDR533 are for overclocking spec.**

DDR DIMM Slots

(DIMM 1~4, from left to right)
 Channel A: DIMM1 & DIMM2 (green)
 Channel B: DIMM3 & DIMM4 (purple)



Introduction to DDR SDRAM

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate by transferring data twice per cycle. It uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires 184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. Please note that the DDR SDRAM does not support ECC (error correcting code) and registered DIMM.

DDR Population Rules

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 on p.2-8). 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.

| DIMM1 (Ch A) | DIMM2 (Ch A) | DIMM3 (Ch B) | DIMM4 (Ch B) | System Density |
|--------------|--------------|--------------|--------------|----------------|
| 128MB~1GB | | 128MB~1GB | | 256MB~2GB |
| | 128MB~1GB | | 128MB~1GB | 256MB~2GB |
| 128MB~1GB | 128MB~1GB | 128MB~1GB | 128MB~1GB | 512MB~4GB |



MSI Reminds You...
*Dual-channel DDR works **ONLY** in the 3 combinations listed in the table above.*

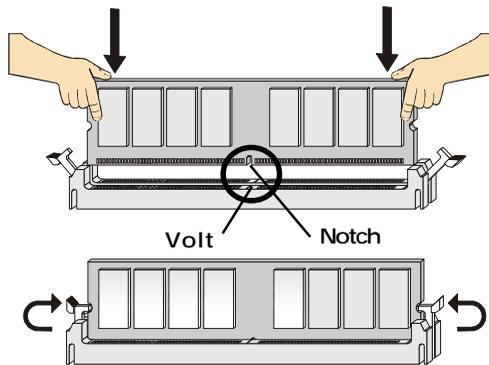
Installing DDR Modules

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



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

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



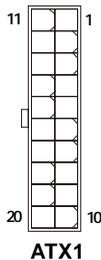
Power Supply

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

ATX 20-Pin Power Connector: ATX1

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.

ATX1 Pin Definition



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

ATX 12V Power Connector: JPW1

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

JPW1



JPW1 Pin Definition

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

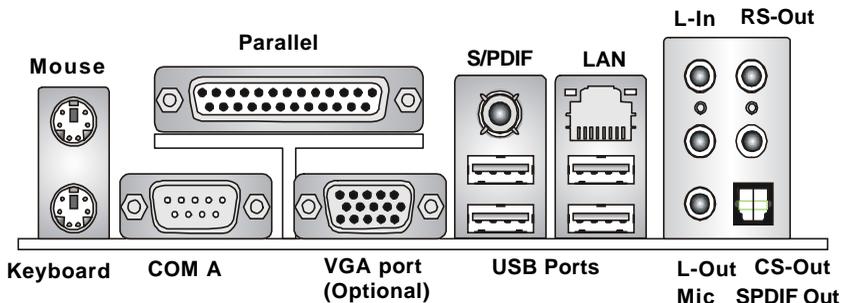


MSI Reminds You...

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 350 watts (and above) is highly recommended for system stability.
3. ATX 12V power connection should be greater than 18A.

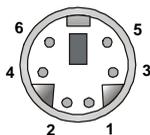
Back Panel

The back panel provides the following connectors:



Mouse/Keyboard Connector

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



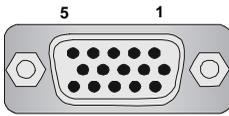
**PS/2 Mouse / Keyboard
(6-pin Female)**

Pin Definition

| PIN | SIGNAL | DESCRIPTION |
|-----|----------------------|----------------------|
| 1 | Mouse/Keyboard Data | Mouse/Keyboard data |
| 2 | NC | No connection |
| 3 | GND | Ground |
| 4 | VCC | +5V |
| 5 | Mouse/Keyboard Clock | Mouse/Keyboard clock |
| 6 | NC | No connection |

VGA Connector (Optional, for 865G only)

The mainboard provides a DB 15-pin female connector to connect a VGA monitor.



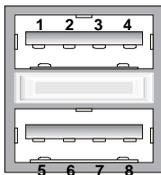
VGA Connector
(DB 15-pin)

| Pin | Signal Description | Pin | Signal Description |
|-----|--------------------|-----|--------------------|
| 1 | RED | 2 | GREEN |
| 3 | BLUE | 4 | N/C |
| 5 | GND | 6 | GND |
| 7 | GND | 8 | GND |
| 9 | +5V | 10 | GND |
| 11 | N/C | 12 | SDA |
| 13 | Horizontal Sync | 14 | Vertical Sync |
| 15 | SCL | | |

USB Connectors

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

USB Port Description

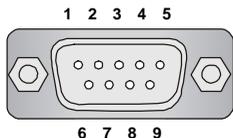


USB Ports

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

Serial Port Connector

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 |

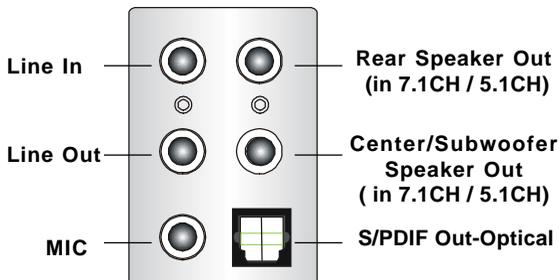
Audio Port Connectors

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-/7.1- channel audio.



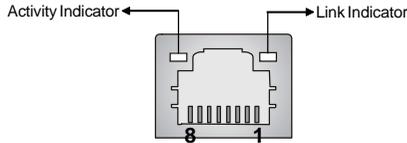
S/PDIF Out-Coaxial



MSI Reminds You...
 For the advanced functions of the audio codec, please refer to **Chapter 6: Introduction to RealTek ALC850 Audio Codec** for details.

RJ-45 LAN Jack: 10/100 LAN (8100C)/Giga-bit LAN (8110S) (Optional)

The mainboard provides two standard RJ-45 jacks 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 either LAN jack.



RJ-45 LAN Jack

| LED | Color | LED State | Condition |
|-------|--------|-------------------------|---|
| Left | Orange | 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. |

The pin assignments vary depending on the transfer rates: 10/100Mbps or 1000Mbps. Note that Pin 1/2, 3/6, 4/5, 7/8 must work in pairs. Please refer to the following for details:

10/100 LAN Pin Definition

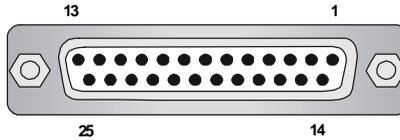
| PIN | SIGNAL | DESCRIPTION |
|-----|--------|----------------------------|
| 1 | TDP | Transmit Differential Pair |
| 2 | TDN | Transmit Differential Pair |
| 3 | RDP | Receive Differential Pair |
| 4 | NC | Not Used |
| 5 | NC | Not Used |
| 6 | RDN | Receive Differential Pair |
| 7 | NC | Not Used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

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- |

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

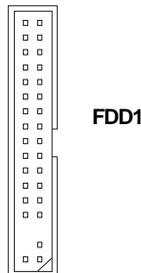
| PIN | SIGNAL | DESCRIPTION |
|-----|------------|--------------------|
| 1 | STROBE | Strobe |
| 2 | DATA0 | Data0 |
| 3 | DATA1 | Data1 |
| 4 | DATA2 | Data2 |
| 5 | DATA3 | Data3 |
| 6 | DATA4 | Data4 |
| 7 | DATA5 | Data5 |
| 8 | DATA6 | Data6 |
| 9 | DATA7 | Data7 |
| 10 | ACK# | Acknowledge |
| 11 | BUSY | Busy |
| 12 | PE | PaperEnd |
| 13 | SELECT | Select |
| 14 | AUTO FEED# | AutomaticFeed |
| 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, LAN, USB Ports, IR module and CPU/System/NB FAN.

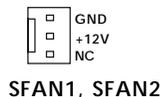
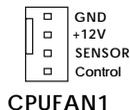
Floppy Disk Drive Connector: FDD1

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: CPUFAN1/SFAN1/SFAN2/NBFAN1

The CPUFAN1 (processor fan), SFAN1/SFAN2 (system fans) and NBFAN1 (NorthBridge Chipset fan) support system cooling fan with +12V. It supports four/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.



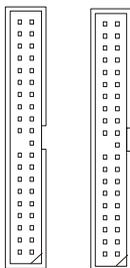
MSI Reminds You...

1. Always consult the vendors for proper CPU cooling fan.
2. CPUFAN1 supports the fan control. Fan/heatsink with 3 or 4 pins are both available.
3. Please refer to the recommended CPU fans at Intel® official website.

ATA100 Hard Disk Connectors: IDE1 & IDE2

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

The Ultra ATA100 interface boosts data transfer rates between the computer and the hard drive up to 100 megabytes (MB) per second. The new interface is one-third faster than earlier record-breaking Ultra ATA/100 technology and is backward compatible with the existing Ultra ATA interface.



IDE2 IDE1

IDE1 (Primary IDE Connector)

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

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.



MSI Reminds You...

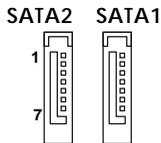
If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

Serial ATA / Serial ATA RAID Connectors controlled by ICH5 / ICH5R: SATA1, SATA2

The Southbridge of this mainboard is ICH5/ICH5R which supports two serial connectors SATA1 & 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 1 hard disk device.

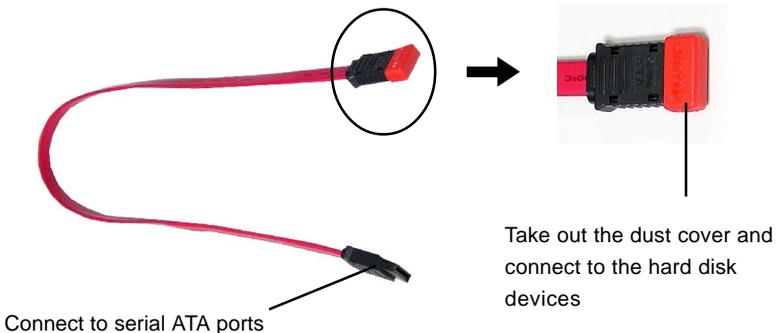
For the advanced functions of the Serial ATA RAID, please refer to **Chapter 5: Introduction to Intel ICH5R Serial ATA RAID** for details.



SATA1~ SATA2 Pin Definition

| PIN | SIGNAL | PIN | SIGNAL |
|-----|--------|-----|--------|
| 1 | GND | 2 | TXP |
| 3 | TXN | 4 | GND |
| 5 | RXN | 6 | RXP |
| 7 | GND | | |

Optional Serial ATA cable

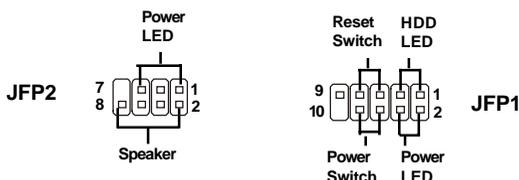


MSI Reminds You...

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

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. |

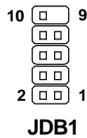
JFP2 Pin Definition

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

D-Bracket™ 2 Connector: JDB1

The mainboard comes with a JDB1 connector for you to connect to D-Bracket™ 2, which supports both USB 1.1 & 2.0 spec.

D-Bracket™ 2 is a 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 detect all problems that fail the system, such as VGA, RAM or other failures. This special feature is very useful for overclocking users. These users can use the feature to detect if there are any problems or failures.



JDB1 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 (no pin) |
| 10 | NC |

Optional D-Bracket™ 2



D-Bracket™ 2



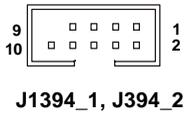
● Red ○ Green

| D-Bracket™ 2 | Description |
|---|--|
|  | System Power ON - The D-LED will hang here if the processor is damaged or not installed properly. |
|  | Early Chipset Initialization |
|  | Memory Detection Test - Testing onboard memory size. The D-LED will hang if the memory module is damaged or not installed properly. |
|  | Decompressing BIOS image to RAM for fast booting. |
|  | Initializing Keyboard Controller. |
|  | Testing VGA BIOS - This will start writing VGA sign-on message to the screen. |

| 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 initializing 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> |

IEEE 1394 Connectors: J1394_1, J1394_2 (Optional)

The mainboard provides two 1394 pin headers that allow you to connect IEEE 1394 ports via an external IEEE1394 bracket.



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 |

IEEE1394 Bracket



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 |
|-----|--------|
| 1 | NC |
| 2 | NC |
| 3 | VCC5 |
| 4 | GND |
| 5 | IRTX |
| 6 | IRRX |

Front Panel Audio Connector: JAUD1

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



JAUD1

JAUD1 Pin Definition

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



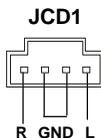
MSI Reminds You...

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



CD-In Connector: JCD1

The connector is for CD-ROM audio connector.



Chassis Intrusion Switch Connector: JCI1

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.



Front USB Connectors: JUSB1 & JUSB2

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



JUSB2, JUSB1
(USB 2.0/Intel spec)

JUSB1 & JUSB2 Pin Definition

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



MSI Reminds You...

Note that the pins of VCC and GND must be connected correctly or it may cause some damage.

Jumpers

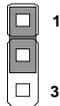
The mainboard provides the following jumpers for you to set the computer's function. This section will explain how to change your mainboard's function through the use of jumpers.

Clear CMOS Jumper: JBAT1

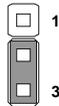
There is a CMOS RAM on board that has a power supply from external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, use the JBAT1 (Clear CMOS Jumper) to clear data. Follow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



JBAT1



Keep Data



Clear Data



MSI Reminds You...

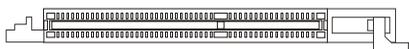
You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

Slots

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

AGP (Accelerated Graphics Port) Slot

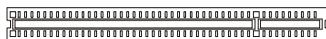
The AGP slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory. The slot supports 8x/4x AGP card.



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.



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 you are requested 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: A7058IMS V1.0BH 04/23/04
where:
1st digit refers to BIOS maker as A=AMI(R); W=AWARD(R)
2nd - 5th digit refers to the model number.
6th digit refers to the chipset vendor.
7th - 8th digit refers to the customer, MS=all standard customers.
V1.0BH refers to the BIOS version.
04/23/04 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.

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 |
| <+> | Increase the numeric value or make changes |
| <-> | Decrease the numeric value or make changes |
| <F7> | Load BIOS Setup Defaults |
| <F10> | Save all the CMOS changes and exit |

Getting Help

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

Main Menu

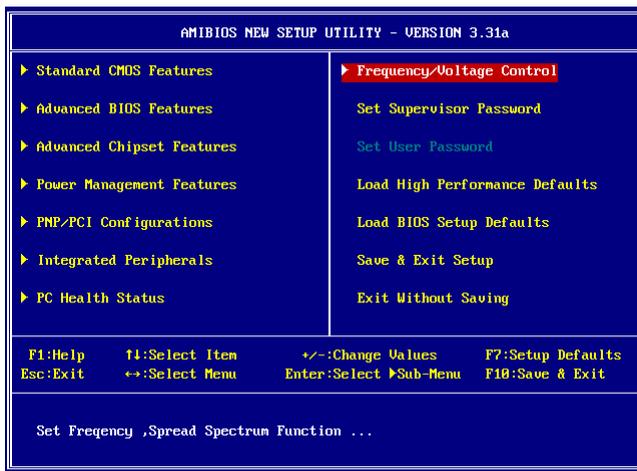
The main menu displays the setup categories the BIOS supplies. You can use the arrow keys (↑↓) to select the item. The on-line description for the selected setup category is displayed at the bottom of the screen.

Default Settings

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

The Main Menu

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



Standard CMOS Features

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

Advanced BIOS Features

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

Advanced Chipset Features

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

Power Management Features

Use this menu to specify your settings for power management.

PNP/PCI Configurations

This entry appears if your system supports PnP/PCI.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

PC Health Status

This entry shows your PC health status.

Frequency/Voltage Control

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

Set Supervisor Password

Use this menu to set Supervisor Password.

Set User Password

Use this menu to set User Password.

Load High Performance Defaults

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

Load BIOS Setup Defaults

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

Save & Exit Setup

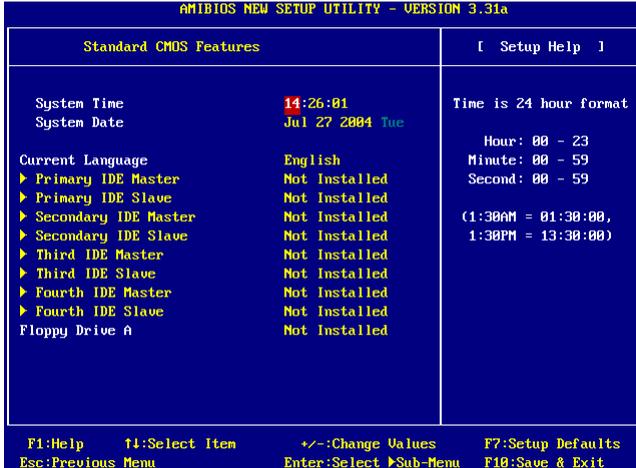
Save changes to CMOS and exit setup.

Exit Without Saving

Abandon all changes and exit setup.

Standard CMOS Features

The items inside STANDARD CMOS SETUP menu provide some category, in which include 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. |

Current Language

This allows you to set the language of BIOS.

Primary/Secondary/Third/Fourth 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.

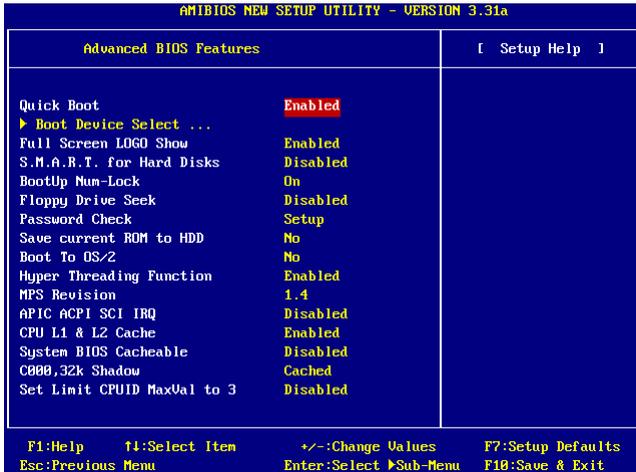
| | |
|-----------|---|
| Type | Select how to define the HDD parameters |
| Cylinders | Enter cylinder number |

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 drive installed. Available options: [Not Installed], [1.2 MB 5¼], [720 KB 3½], [1.44 MB 3½] and [2.88 MB 3½].

Advanced BIOS Features

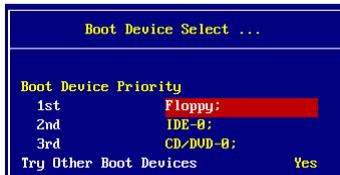


Quick Boot

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

Boot Device Select

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



Boot Device Priority: 1st/2nd/3rd

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



MSI Reminds You...

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

Try Other Boot Device

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

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.

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

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

BootUp 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].

Floppy Drive Seek

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

Password Check

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

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

Save Current ROM to HDD

This allows you to save the BIOS to your hard disk drive. Setting options: [No], [Yes].

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]. Setting options: [No], [Yes].

Hyper Threading Function

This field is used to enable or disable the Hyper Threading function. Setting to [Enabled] will increase the system performance. Settings: [Enabled], [Disabled].



MSI Reminds You...

Enabling the functionality of Hyper-Threading Technology for your computer system requires ALL of the following platform Components:

- *CPU:** An Intel® Pentium® 4 Processor with HT Technology;
- *Chipset:** An Intel® Chipset that supports HT Technology;
- *BIOS:** A BIOS that supports HT Technology and has it enabled;
- *OS:** An operating system that supports HT Technology. For more information on Hyper-threading Technology, go to: www.intel.com/info/hyperthreading

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. Settings: [1.4] and [1.1].

APIC ACPI SCI IRQ

This field allows you to specify which IRQ is used for ACPI SCI.

| Option | Description |
|----------|-----------------------------|
| Enabled | Use one IRQ from IRQ 20~23. |
| Disabled | Use one IRQ from IRQ 09~11. |

CPU L1 & L2 Cache

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

System BIOS Cacheable

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

C000, 32k Shadow

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

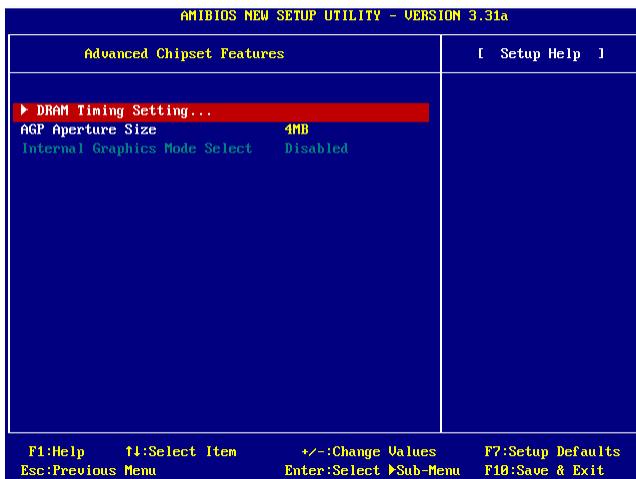
| Option | Description |
|---------------|--|
| Disabled | The specified ROM is not copied to RAM. |
| Enabled | The contents of specified ROM are copied to RAM for faster system performance. |
| Cached | The contents of specified ROM are not only copied to RAM, the contents of the ROM area can be written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

Set Limit CPUID MaxVal to 3 (only for Prescott CPU)

This item shows only when the Prescott CPU is installed.

- [Enabled] You may install the Windows NT4.0 operating system only.
- [Disabled] You may install all operating systems except Windows NT4.0.

Advanced Chipset Features

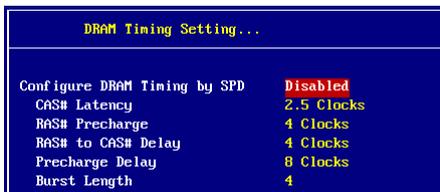


MSI Reminds You...

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

DRAM Timing Setting...

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



Configure SDRAM Timing by SPD

Selects whether DRAM timing is controlled by the SPD (Serial Presence Detect) EEPROM on the DRAM module. Setting to [Enabled] enables the following fields automatically to be determined by BIOS based on the configurations on the SPD. Selecting [Disabled] allows users to configure these fields manually.

CAS# Latency

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

RAS# Precharge

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: [2 clocks], [3 clocks], [4 clocks].

RAS# to CAS# Delay

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

Precharge Delay

This setting controls the precharge delay, which determines the timing delay for DRAM precharge. Settings: [5 clocks], [6 clocks], [7 clocks], [8 clocks].

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. Available settings: [4], [8].

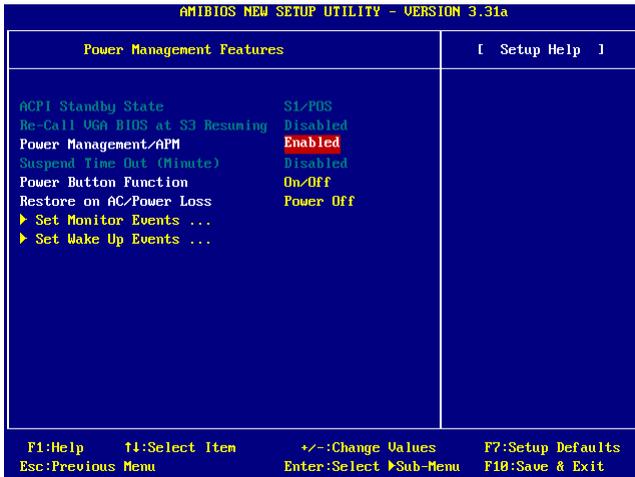
AGP Aperture Size (MB)

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].

Internal Graphics Select

The field specifies the size of system memory allocated for video memory. Settings: [512KB], [1MB], [8MB], [Disabled].

Power Management Features



ACPI Standby State

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

Re-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.

Power Management/APM

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

Suspend Time Out (Minute)

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

Power Button Function

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

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

Restore on AC/Power Loss

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

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

Set Monitor Events

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

| Set Monitor Events ... | |
|------------------------|---------|
| FDC/LPT/COM Ports | Monitor |
| Primary Master IDE | Monitor |
| Primary Slave IDE | Ignore |
| Secondary Master IDE | Monitor |
| Secondary Slave IDE | Ignore |

FDC/LPT/COM Ports, Primary/Secondary Master/Slave IDE

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

Set WakeUp Events

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

| Set Wake Up Events ... | |
|---------------------------|----------|
| USB Device Wakeup From S3 | Disabled |
| Resume On PME# | Enabled |
| Resume On RTC Alarm | Disabled |
| RTC Alarm Date | 15 |
| RTC Alarm Hour | 12 |
| RTC Alarm Minute | 38 |
| RTC Alarm Second | 30 |
| Keyboard PowerOn Function | Disabled |
| Specific Key for PowerOn | N/A |
| Mouse PowerOn Function | Disabled |

USB Device Wakeup From S3

This item allows the activity of the USB devices (keyboard and mouse) to wake up the system from S3 sleep state. Setting: [Enabled], [Disabled].

Resume On PME#

This field specifies 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].

Resume By RTC 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].

RTC 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.

Keyboard PowerOn Function

This item allows the activity of the keyboard to wake up the system from any state (S3/S4/S5 state). Settings: [Any Key], [Specific Key], [Disabled].

Specific Key for PowerOn

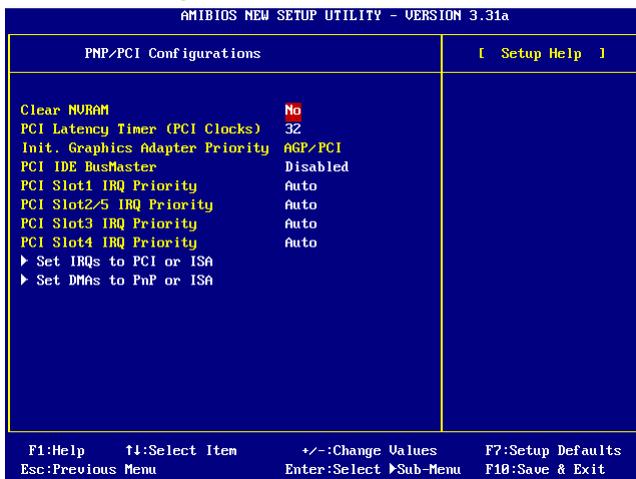
This setting allows users to set a password (max. 5 letters) for the Keyboard Wakeup function.

Mouse PowerOn Function

This item allows the activity of the mouse to wake up the system from any state (S3/S4/S5 state). Settings: [Disabled], [Any Action], [Left-button], [Right-button].

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.



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.

PCI Latency Timer (PCI Clocks)

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 are: [32], [64], [96], [128], [160], [192], [224], [248].

Init. Graphics Adapter Priority

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

- | | |
|----------------|---|
| [Internal VGA] | The system initializes the onboard VGA device. (For 865G) |
| [AGP/Int-VGA] | The system initializes the installed AGP card first. If an AGP card is not available, it will initialize the onboard VGA device. (For 865G) |

- [AGP/PCI] The system initializes the installed AGP card first. If an AGP card is not available, it will initialize the PCI VGA card.
- [PCI/AGP] The system initializes the installed PCI VGA card first. If a PCI VGA card is not available, it will initialize the AGP card.
- [PCI/Int-VGA] The system initializes the installed PCI VGA card first. If a PCI VGA card is not available, it will initialize the onboard VGA device. (For 865G)

PCI IDE BusMaster

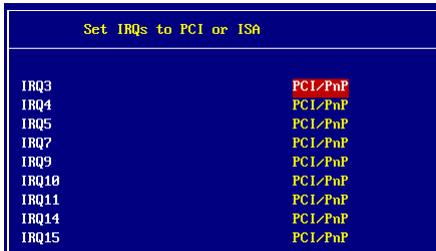
Set this option to [Enabled] to specify that the IDE controller on the PCI local bus has bus mastering capability. Setting options: [Disabled], [Enabled].

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

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

Set IRQs to PCI or ISA

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

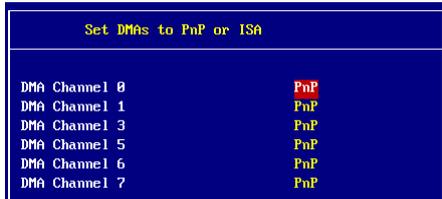


IRQ 3/4/5/7/9/10/11/14/15

These items specify the bus where the specified IRQ line is used. The settings determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the IRQ pool, the end user can use these settings to reserve the IRQ by assigning an [ISA/EISA] setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as [PCI/PnP]. If all IRQs are set to [ISA/EISA], and IRQ 14/15 are allocated to the onboard PCI IDE, IRQ 9 will still be available for PCI and PnP devices. Available settings: [ISA/EISA] and [PCI/PnP].

Set DMAs to PnP or ISA

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



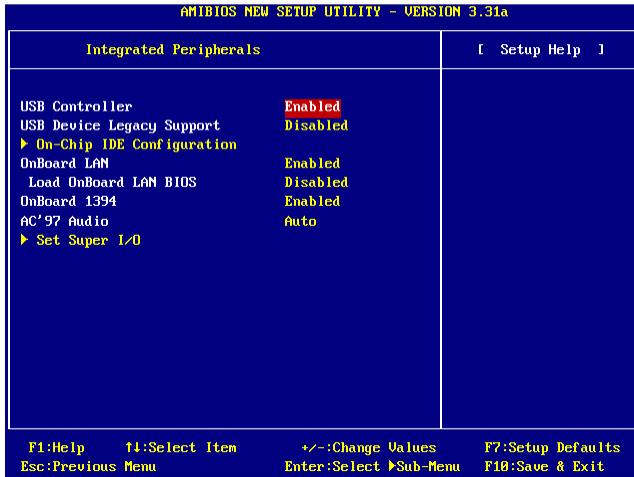
| Set DMAs to PnP or ISA | |
|------------------------|-----|
| DMA Channel 0 | PnP |
| DMA Channel 1 | PnP |
| DMA Channel 3 | PnP |
| DMA Channel 5 | PnP |
| DMA Channel 6 | PnP |
| DMA Channel 7 | PnP |

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

These items specify the bus that the system DMA (Direct Memory Access) channel is using.

The settings determine if AMIBIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can reserve the DMA by assigning an [ISA/EISA] setting to it.

Integrated Peripherals



Please note that the options showed on your BIOS might be different depending on the motherboard you buy.

USB Controller

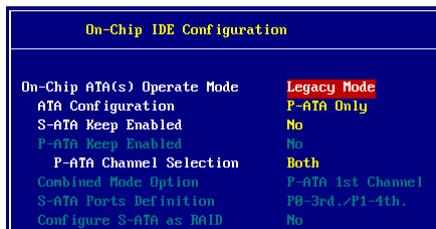
This setting is used to enable/disable the onboard USB host controller. Setting options: [Disabled], [Enabled].

USB Device Legacy Support

Set to [All Devices] if you need to use any USB 1.1/2.0 device in the operating system that does not support or have any USB 1.1/2.0 driver installed, such as DOS. Setting options: [Disabled], [All Devices].

On-Chip IDE Configuration

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



On-Chip ATA(s) Operate Mode

This setting allows you to determine how the RAID controller on the south bridge is going to switch to SATA controller. [Legacy Mode] means you may use the traditional 14 and 15 IRQs, while Native Mode means you may use all the available IRQs. Setting options: [Legacy Mode], [Native Mode].

ATA Configuration

The field lets you to configure the available ATA controller. Setting options: [Disabled], [P-ATA Only], [S-ATA Only], [P-ATA+S-ATA].

S-ATA Keep Enabled

This item is available for you to enable/disable the onboard S-ATA. Setting options: [Yes], [No].

P-ATA Keep Enabled

This item is available for you to enable/disable the onboard P-ATA. Setting options: [Yes], [No].

P-ATA Channel Selection

This item is available for you to select the parallel ATA channel. Setting options: [Primary], [Secondary], [Both].

Combined Mode Option

This item is available for you to select the combined mode which boots first. Setting options: [P-ATA 1st Channel], [S-ATA 1st Channel].

S-ATA Ports Definition

This allows you to set the boot sequence of serial ATA ports.



MSI Reminds You...

*If you wish to use S-ATA devices on your mainboard while the ATA devices connected to the IDE1 and IDE2 are also available, you **MUST** have Windows XP/2000 operating system in your computer, and configure the settings listed as following when you enter the BIOS setup program.*

However, if you are using Windows 98/Me, please also refer to the following settings for the best performance.

Configure S-ATA as RAID

This item is available for you to configure S-ATA as onboard RAID. Setting: [Yes], [No].

| On-Chip IDE Configuration | Settings in Windows XP/2000 (Maximum of 6 devices) | Settings in Windows 98/ME (Maximum of 4 devices) |
|--|---|---|
| On-Chip ATA(s) Operate Mode | Legacy Mode | (not available) |
| ATA Configuration | P-ATA Only | P-ATA+S-ATA |
| S-ATA Keep Enabled | Yes | (not available) |
| P-ATA Keep Enabled | (not available) | (not available) |
| P-ATA Channel Selection | Both | (not available) |
| Combined Mode Option | (not available) | * S-ATA 1st Channel / P-ATA 1st Channel |
| S-ATA Ports Definition | P0-3rd. / P1-4th. | P0-Master / P1-Slave |
| * When choosing S-ATA 1st Channel, you can use SATA1 & SATA2, IDE2. When choosing P-ATA 1st Channel, you can use IDE1, SATA1 & SATA2. | | |

Onboard LAN

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

Load OnBoard LAN BIOS

This item is available for you to load the onboard LAN BIOS settings. Setting options: [Disabled], [Enabled].

Onboard 1394

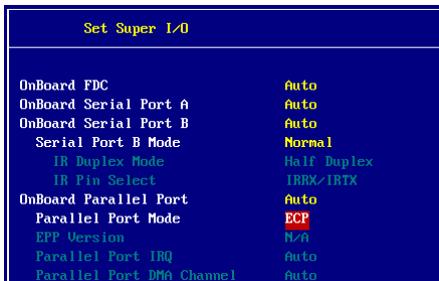
This setting controls the onboard 1394 device. Setting options: [Disabled], [Enabled].

AC'97 Audio

This item is used to enable or disable the onboard AC'97 (Audio Codec'97) feature. Selecting [Auto] allows the mainboard to detect whether an audio device is used. If an audio device is detected, the onboard AC'97 controller will be enabled; if not, the controller is disabled. Disable the function if you want to use other controller cards to connect an audio device. Settings: [Disabled] and [Auto].

Set Super I/O

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



OnBoard FDC

Select [Enabled] if your system has a floppy disk controller (FDD) installed on the system board and you wish to use it.

| 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. |

Onboard Serial Port A/B

These items specify the base I/O port addresses of the onboard Serial Port 1 (COM A)/Serial Port 2 (COM B). Please note that Serial Port B is for IR control.

Selecting [Auto] allows AMIBIOS to automatically determine the correct base I/O port address. Settings: [Auto], [3F8/COM1], [2F8/COM2], [3E8/COM3], [2E8/COM4] and [Disabled].

Serial Port B Mode

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

IR Duplex Mode

This setting controls the operating mode of IR transmission/reception. Setting options: [Full Duplex], [Half Duplex]. Under [Full Duplex] mode, synchronous, bi-directional transmission/reception is allowed. Under [Half Duplex] mode, only asynchronous, bi-directional transmission/reception is allowed.

IR Pin Select

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

Onboard Parallel Port

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

Parallel Port Mode

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

EPP Version

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

Parallel Port IRQ

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

Parallel Port DMA Channel

This feature needs to be configured only when **Parallel Port Mode** is set to the [ECP]. When **Parallel Port Mode** is set to [Normal], this 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.

| AMIBIOS NEW SETUP UTILITY - VERSION 3.31a | |
|---|-----------------------|
| PC Health Status | [Setup Help] |
| Chassis Intrusion | Disabled |
| CPU Temperature | 88°C/176°F |
| System Temperature | 88°C/176°F |
| CPU Fan Speed | |
| NB Fan Speed | |
| Vcore | |
| 3.30 | |
| + 5.00 | |
| +12.00 | |
| -12.00 | |
| Battery | |
| +5V SB | |
| F1:Help | F4:Select Item |
| Esc:Previous Menu | Enter:Select Sub-Menu |
| +/-:Change Values | F7:Setup Defaults |
| | F10:Save & Exit |

Chassis Intrusion

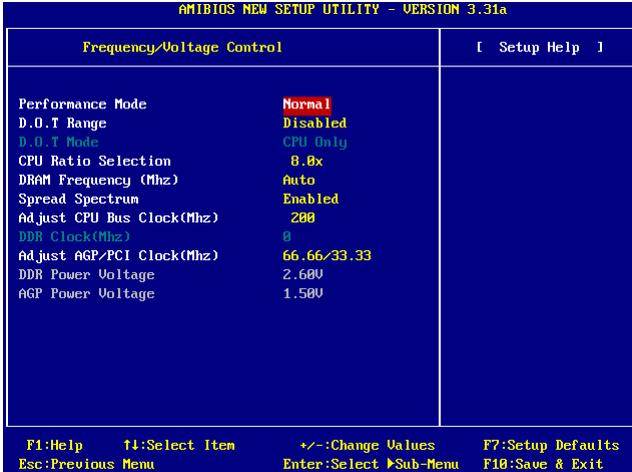
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later. Settings: [Enabled], [Reset],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

CPU/System Temperature, CPU/NB Fan Speed, Vcore, 3.3V, +5.0V, +12.0V, -12.0V, Battery, +5V SB

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

Frequency/Voltage Control

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



Performance Mode

This item allows you to control the MAT (memory acceleration technology) function of CPU. MAT is MSI™'s exclusive technology, specializing in optimizing the data transfer rate among CPU, north bridge chip and memory, and also in procuring better memory performance and bandwidth up to 10%. Selecting [Fast] will enable MAT. Please be noted that not every memory is compatible with MAT. If the system fail to reboot for four times, the BIOS will be restored to the Default value ([Normal]). Setting options: [Normal], [Fast], [Turbo (MAT)], [Ultra Turbo (MAT)].



MSI Reminds You...

1. Even though MAT is easy to use, it doesn't mean there's no risk at all. We recommend you to check if your memory is able to bear MAT setting or not before deciding to always use it. If your system will be unstable or reboot incidentally after switching to **[Fast]**, please switch back to **[Normal]**. Moreover, if you want to conduct FSB overclocking, you should set MAT as **[Normal]**.
2. Meanwhile, for security reason, there are two functions to protect BIOS and protect user's system from crashing:
 - (a) There is a safe hotkey "Ins" in BIOS. If the overclocking or/and MAT fails to run, you can press "Ins" key while rebooting system to restore to the BIOS Defaults.
 - (b) If your system reboot for four times continually, the BIOS will be restored to the Defaults (**Normal**), too.

D.O.T. Range

(D.O.T) 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. |
| [Sergeant] | 2nd level of overclocking. |
| [Captain] | 3rd level of overclocking. |
| [Colonel] | 4th level of overclocking. |
| [General] | 5th level of overclocking. |
| [Commander] | 6th level of overclocking. |

**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.

D.O.T Mode

This item allows you to decide the mode to overclock dynamically. Setting options: [CPU Only], [CPU+AGP].

CPU Ratio Selection

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.

DRAM Frequency (Mhz)

Use this field to configure the clock frequency of the installed DRAM. Settings are:

| | |
|----------|--|
| PSB 400: | [266], [Auto], [333], [400], [433], [466], [500]. |
| PSB 533: | [266], [333], [Auto], [400], [433], [450], [466], [500], [354 (3:4)]. |
| PSB 800: | [266], [333], [400], [Auto], [433], [450], [466], [500], [532], [501 (4:5)], [533 (3:4)]. |

**MSI Reminds You...**

The value plus a ratio (CPU: DDR) with parentheses means the non-synchronous overclocking.

Spread Spectrum

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

Adjust CPU Bus Clock (Mhz)

This item allows you to select the CPU Bus clock frequency (in MHz) and overclock the processor by adjusting the FSB clock to a higher frequency. Settings are:

PSB 400: 100-355MHz.

PSB 533: 133-500MHz

PSB 800: 200-500MHz

DDR Clock (Mhz)

This read-only item allows you to view the current DDR clock.

Adjust AGP/PCI Clock (Mhz)

This item allows you to select the AGP/PCI clock frequency (in MHz) by adjusting the AGP/PCI clock to a higher frequency.

DDR Power Voltage

Adjusting the DDR voltage can increase the DDR speed. Any changes made to this setting may cause a stability issue, so **changing the DDR voltage for long-term purpose is NOT recommended.**

AGP Power 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.



MSI Reminds You...

*The settings shown in different color in **CPU Voltage (V)**, **DDR Power Voltage** and **AGP Power Voltage** helps to verify if your setting is proper for your system.*

White: Safe setting.

Yellow: High performance setting.

Red: Not recommended setting and the system may be unstable.

Set Supervisor/User Password

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



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

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

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

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



MSI Reminds You...

About Supervisor Password & User Password:

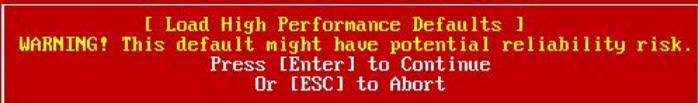
Supervisor password: Can enter and change the settings of the setup menu.

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

Load High Performance/BIOS Setup Defaults

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

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



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

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



MSI Reminds You...

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

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



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

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



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

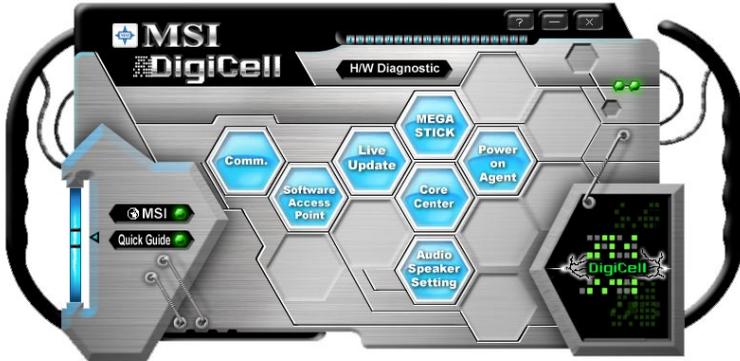


short-cut path in the start-up menu
(path: Start-->Programs-->MSI-->DigiCell)

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

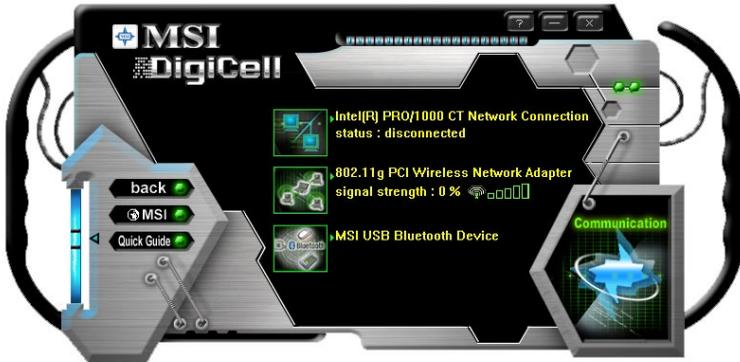
In the **H/W Diagnostic** sub-menu, you can see the information, status and note of each DigiCell. You may double check the connection and installation of the item marked as gray.



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

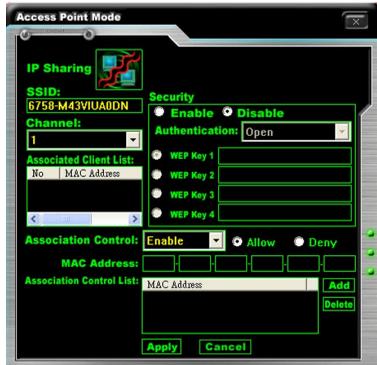
An Ad-hoc network is a local area network or other small network, especially one with wireless or temporary plug-in connections, in which some of the network devices are part of the network only for the duration of a communications session. Users in the network can share files, print to a shared printer, 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

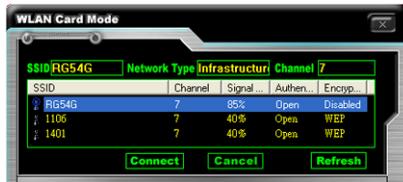
Open: Communicates the key across the network.

Shared: Devices must have identical WEP settings to communicate.

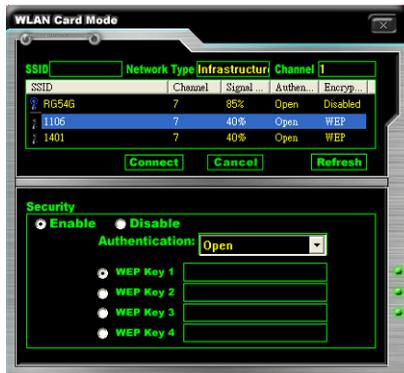
WLAN Card Mode

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.

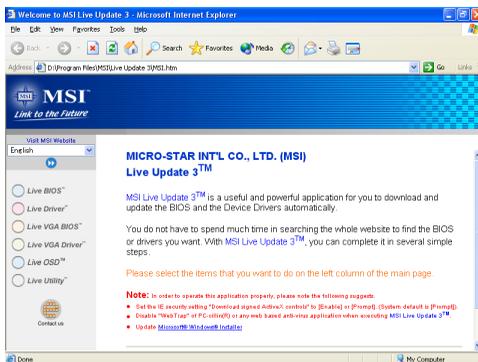


Live Update

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.

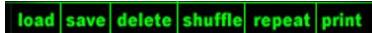
MEGA STICK

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.



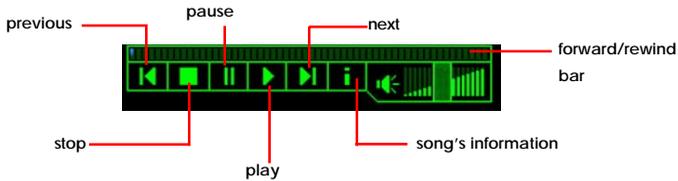
Basic Function

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

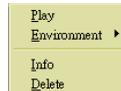


- | | |
|----------------|--|
| Load | To load media files or the playlist of mp3 files (*.m3u) on your system or on your MEGA STICK. |
| Save | To save a loaded playlist of mp3 files (*.m3u) on your system or on your MEGA STICK. |
| Delete | Click on the media files in the Play List: field and use “Delete” 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: <ol style="list-style-type: none"> 1. To print out the details of current play list through your printer with the following information: Song title --- Song length --- Singer name 2. 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 <i>MyMusic.txt</i> 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

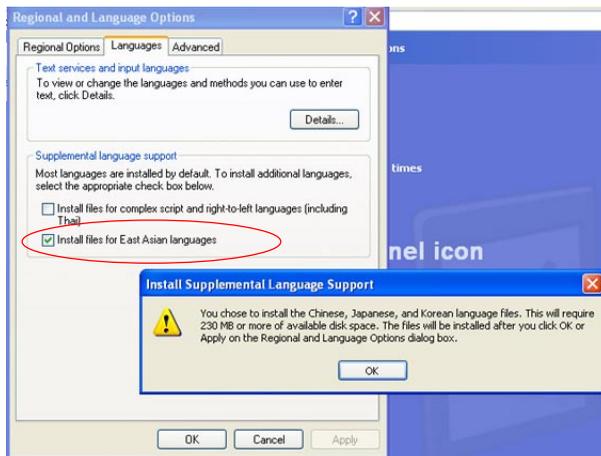
If you are using an operating system in European languages, and you'd like to play the media files in MEGA STICK with East-Asian languages (such as Chinese, Japanese... etc.), it is possible that the file names display incorrectly.

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.

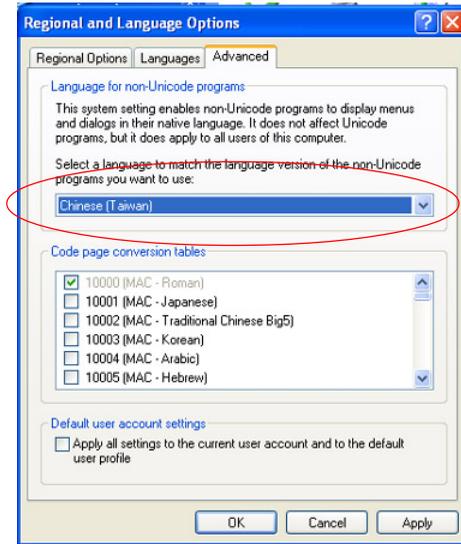
1. Go to [Control Panel] and choose [Regional and Languages Options].



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 Pentium 4 CPU)

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

CoreCenter is just like your PC doctor that can detect, view and adjust the PC hardware and system status during real time operation.

In the left side it shows the current system status including the Vcore, 3.3V, +5V and 12V. In the right side it shows the current PC hardware status such as the CPU & system temperatures and all fans speeds.



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



Left-wing: 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 next to 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 values 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-wing: PC hardware status during real time operation

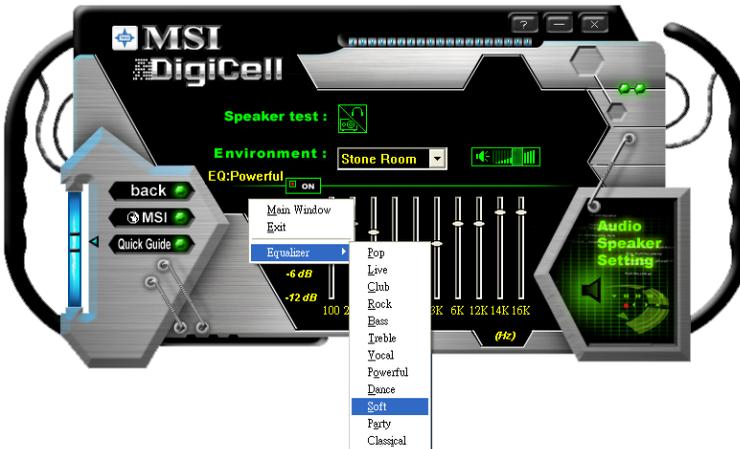
In the right sub-menu, here you can configure the PC hardware status such as CPU & system temperatures and fan speeds. You may use the scroll bars to adjust each item, then click “**OK**” to apply the changes. The values you set for the temperatures are the maximum thresholds for the system for warnings,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

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.

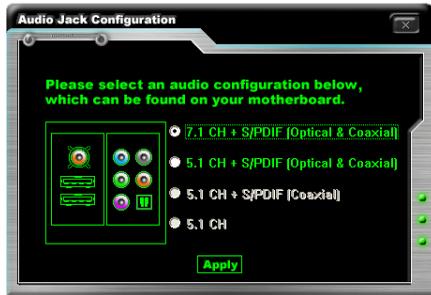


You can scroll the bar of each equalizer to regulate the current playing digital sound source. Also you may click on the “on” button to enable/disable the equalizer function. Once the equalizer function is enabled, you can choose several preset equalizers for your preference. You may also right-click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

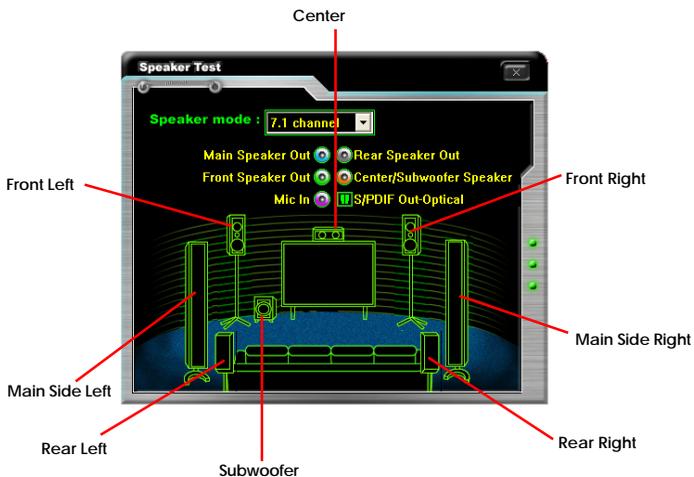


The **Environment** setting lets you select the environment you like, such as **Cave** or **Convert Hall**.

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



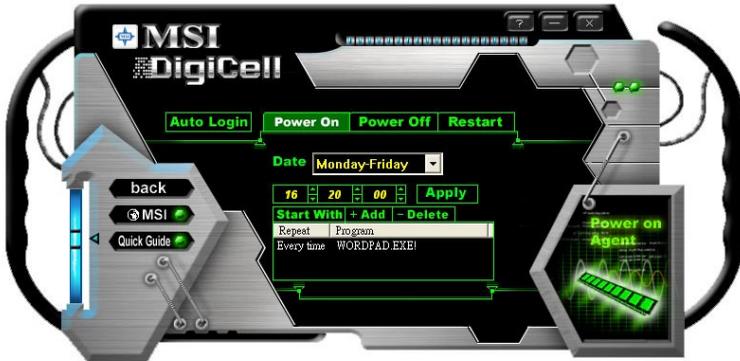
In this **Speaker Configuration** dialogue box, select the audio configuration which is identical to the audio jack on your mainboard. Once the correct audio configuration is selected, click “**Apply**” to save the changes. Then the following screen will appear. In this **Speaker Configuration** dialogue 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 with 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.



Introduction to Intel ICH5R Serial ATA RAID

The southbridge ICH5R provides a hybrid solution that combines two independent SATA ports for support of up to two Serial ATA (Serial ATA RAID) drives.

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

1. Supports 150 MB/s transfers with CRC error checking
2. Data handling optimizations including tagged command queuing, elevator seek and packet chain command



MSI Reminds You...

All the information/volumes listed in your system might differ from the illustrations in this appendix.

Introduction

Following are the Parallel ATA (P-ATA) and Serial ATA (S-ATA) device configurations supported by Intel ICH5R.

ATA Operate Mode

There are two modes to select: Legacy mode and Native mode.

Legacy Mode:

- In this mode, system BIOS just assign the traditional 14 and 15 IRQs to use for HDD.
- Older OSs that do not support switch to Native Mode (DOS, Win98/ME...) should set SATA and PATA to Legacy Mode.
- Maximum 4 ATA devices to connect.
- Combine mode and Non-Combine mode.
 - ▶Non-Combined Mode:P-ATA devices only .
Maximum of 4 devices.
 - ▶Non-Combined Mode: S-ATA devices only.
Maximum of 2 devices.
 - ▶Combined Mode: S-ATA devices
P-ATA devices
Maximum of 2 devices each, thus total 4 devices at maximum.

Native Mode:

- In this mode, system BIOS will search all available IRQs to use for HDD.
- New OS that support switch to Native Mode (WinXP, Win2K) can set SATA and PATA to Native Mode.
- Comprehend both Legacy and/or Native Modes.
- Maximum 6 ATA devices to connect (4 for P-ATA & 2 for S-ATA).



MSI Reminds You...

*BIOS provides a BIOS setup option for Native Mode or Legacy Mode user selection. Please refer to P.3-20 **On-Chip IDE Configuration** for details.*

What is RAID 0 (striping)?

RAID 0 leverages the read/write capabilities of two or more hard drives working in unison to maximize the storage performance of a computer system. Data in a RAID 0 volume is arranged into blocks that are interleaved among the disks so that reads and writes can be performed in parallel (see below diagram). This technique, known as "striping", is the fastest of all of the RAID levels, especially for reading and writing large sequential files. Real world usage models where RAID 0 can be of particular benefit include loading large files into an image editing application such as Adobe* Photoshop*, saving large movie files in a video editing application such as Adobe* Premiere*, or creating CD or DVD images with a CD/DVD authoring package such as Roxio* Easy CD Creator*.

The hard drives in a RAID 0 volume are combined to form one volume which appears as a single virtual drive to the operating system. For example, two 40 GB hard drives in a RAID 0 array will appear as a single 80 GB hard drive to the operating system.

No redundancy information is stored in a RAID 0 volume. This means that if one hard drive fails, all data on both drives is lost. This lack of redundancy is also reflected by the RAID level 0, which indicates no redundancy. RAID 0 is not recommended for use in servers or other environments where data redundancy is a primary goal.



| | |
|----------------|--|
| Minimum Disks: | 2 |
| Advantage: | Highest transfer rates |
| Redundancy: | None - if one disk fails all data will be lost |
| Application: | Typically used in desktops and workstations for maximum performance for temporary data and high I/O rate |

What is RAID 1 (mirroring)?

A RAID 1 array contains two hard drives where the data between the two is mirrored in real time. Since all of the data is duplicated, the operating system treats the usable space of a RAID 1 array as the maximum size of one hard drive in the array. For example, two 40 GB hard drives in a RAID 1 array will appear as a single 40 GB hard drive to the operating system.

The primary benefit of RAID 1 mirroring is that it provides good data reliability in the case of a single disk failure. When one disk drive fails, all data is immediately available on the other without any impact to the data integrity. In the case of a disk failure, the computer system will remain fully operational to ensure maximum productivity.

The performance of a RAID 1 array is greater than that of a single drive since data can be read from multiple disks simultaneously, although disk writes do not realize the same benefit as is the case with RAID 0.



| | |
|----------------|--|
| Minimum Disks: | 2 |
| Advantage: | 100% redundancy of data. One disk may fail, but data will continue to be accessible. A rebuild to a new disk is recommended to maintain data redundancy. |
| Redundancy: | Excellent - disk mirroring means that all data on one disk is duplicated on another disk. |
| Application: | Typically used for smaller systems where capacity of one disk is sufficient and for any application(s) requiring very high availability. |

BIOS Configuration

The Intel RAID Option ROM should be integrated with the system BIOS on all motherboards with a supported Intel chipset. The Intel RAID Option ROM is the Intel RAID implementation and provides BIOS and DOS disk services. Please use <Ctrl> + <I> keys to enter the "Intel(R) RAID for Serial ATA" status screen, which should appear early in system boot-up, during the POST (Power-On Self Test).

Using the Intel RAID Option ROM

1. Creating, Deleting and Resetting RAID Volumes:

The Serial ATA RAID volume may be configured using the RAID Configuration utility stored within the Intel RAID Option ROM. During the Power-On Self Test (POST), the following message will appear for a few seconds:



MSI Reminds You...

The "Driver Model", "Serial #" and "Size" in the following example might be different from your system.

```

Intel(R) RAID for Serial ATA - RAID BIOS v3.0.0.2307
Copyright (C) 2003 Intel Corporation. All Rights Reserved.

RAID Volumes:
None defined.

Non-RAID Disks:
Port Drive Model      Serial #      Size      Status      Bootable
0   ST3120023AS      3KA0J1ZJ     111.7GB   Normal      Yes
1   ST3120023AS      3KA0H0M0     111.7GB   Normal      Yes

Press <CTRL-I> to enter Configuration Utility...

```

After the above message shows, press <Ctrl> and <I> keys simultaneously to enter the RAID Configuration Utility.

2. Creating, Deleting and Resetting RAID Volumes:

After pressing the <Ctrl> and <I> keys simultaneously, the following window will appear:

```

Intel(R) RAID for Serial ATA - RAID Configuration Utility
Copyright(C) 2003 Intel Corporation. All Rights Reserved. v3.0.0.2307
----- [ MAIN MENU ] -----
1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

----- [ DISK/VOLUME INFORMATION ] -----

RAID Volumes:
None defined.

Non-RAID Disks:
Port Drive Model      Serial #      Size      Status      Bootable
0 ST3120023AS         3KAOJLZJ     111.7GB   Normal      Yes
1 ST3120023AS         3KAOHOMO     111.7GB   Normal      Yes

[↑] -Select      [ESC] -Exit      [ENTER] -Select Menu

```

(1) Create RAID Volume

1. Select option 1 “Create RAID Volume” and press <Enter> key. The following screen appears:

```

Intel(R) RAID for Serial ATA - RAID Configuration Utility
Copyright(C) 2003 Intel Corporation. All Rights Reserved. v3.0.0.2307
----- [ CREATE ARRAY MENU ] -----
Name: RAID Volume
RAID Level: RAID0 (Striping)
Strip Size: 128KB
Capacity: 223.5GB

Create Volume

----- [ HELP ] -----

Enter a string between 1 and 16 characters in length that can be used
to uniquely identify the RAID volume. This name is case sensitive and
can not contain special characters.

[↑] Change      [TAB] -Next      [ESC] -Previous Menu      [ENTER] -Select

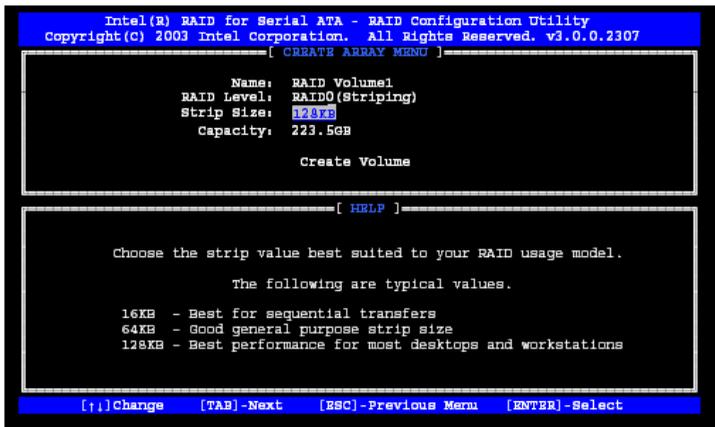
```



MSI Reminds You...

The following procedure is only available with a newly-built system or if you are reinstalling your OS. It should not be used to migrate an existing system to RAID 0.

2. Specify a RAID Volume name and then press the <TAB> or <Enter> key to go to the next field.

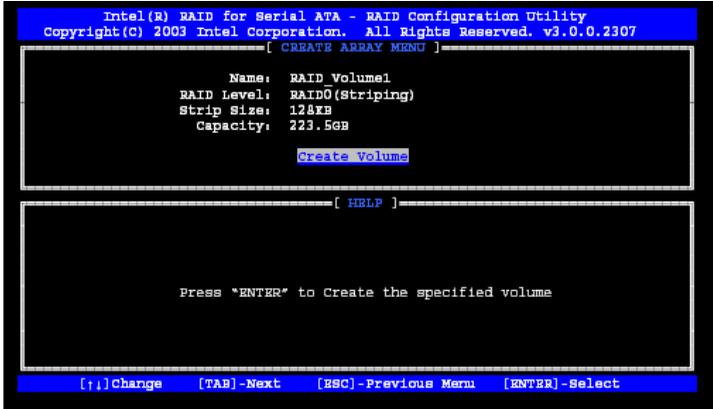


3. Select the strip value for the RAID 0 or RAID 1 array by using the “upper arrow” or “down arrow” keys to scroll through the available values, and pressing the <Enter> key to select and advance to the next field. The available values range from 4KB to 128 KB in power of 2 increments. The strip value should be chosen based on the planned drive usage. Here are some suggested selections:

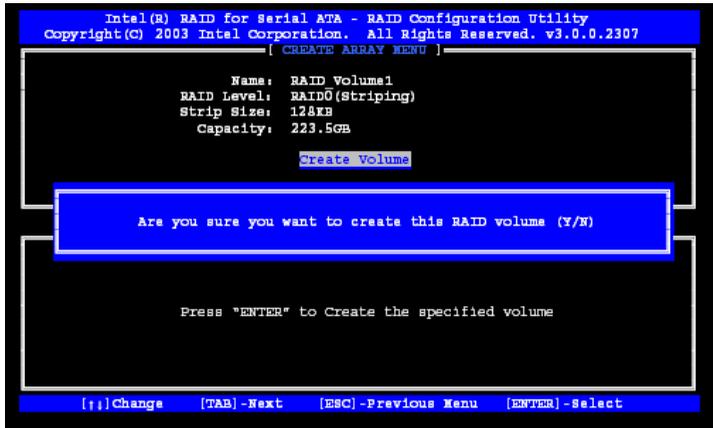
- 16 KB – Best for sequential transfers
 - 64 KB – Good general purpose strip size
 - 128 KB – Best performance for most desktops and workstations.
- The default value.

Select the RAID level (**Striping** for RAID0 and **Mirror** for RAID1) by scrolling through the available values by using the “upper arrow” or “down arrow”, and press the <Enter> key to select and advance to the next field.

- From the Strip size, press the <Tab> or <ENTER> key to advance to the **Create Volume** prompt. The window will appear as follows:



- Then press <Enter> to create the specified volume and the following prompt will show:



6. Press <Y> to confirm the selection or press <N> to create the RAID volume again. Then you will return to the main menu with an updated status as follows:

```

Intel(R) RAID for Serial ATA - RAID Configuration Utility
Copyright(C) 2003 Intel Corporation. All Rights Reserved. v3.0.0.2307
[ MAIN MENU ]

1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

[ DISK/VOLUME INFORMATION ]

RAID Volumes:
ID Name          Level          Strip   Size   Status   Bootable
0 RAID_Volume1  RAID0(Stripe) 128KB   223.5GB Normal   Yes
├── ST3120023AS  3KAOJ1ZJ      Port0   111.7GB Normal
└── ST3120023AS  3KAOHOM0      Port1   111.7GB Normal

Non-RAID Disks:
None defined.

[↑]-Select      [ESC]-Exit      [ENTER]-Select Menu
    
```

7. Scroll to option 4 **Exit** and press <Enter> to exit the RAID Configuration utility. The following prompt appears:

```

Intel(R) RAID for Serial ATA - RAID Configuration Utility
Copyright(C) 2003 Intel Corporation. All Rights Reserved. v3.0.0.2307
[ MAIN MENU ]

1. Create RAID Volume
2. Delete RAID Volume
3. Reset Disks to Non-RAID
4. Exit

[ CONFIRM EXIT ]
Are you sure you want to exit? (Y/N):

RAID Volumes:
ID Name          Level          Strip   Size   Status   Bootable
0 RAID_Volume1  RAID0(Stripe) 128KB   223.5GB Normal   Yes
├── ST3120023AS  3KAOJ1ZJ      Port0   111.7GB Normal
└── ST3120023AS  3KAOHOM0      Port1   111.7GB Normal

Non-RAID Disks:
None defined.

[↑]-Select      [ESC]-Exit      [ENTER]-Select Menu
    
```

8. Click <Y> to confirm the exit.

(2) Delete RAID Volume

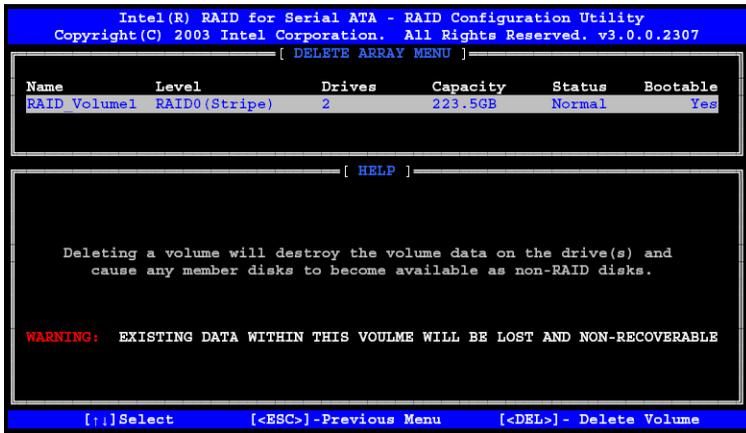
Here you can delete the RAID volume, but please be noted that all data on RAID drives will be lost.



MSI Reminds You...

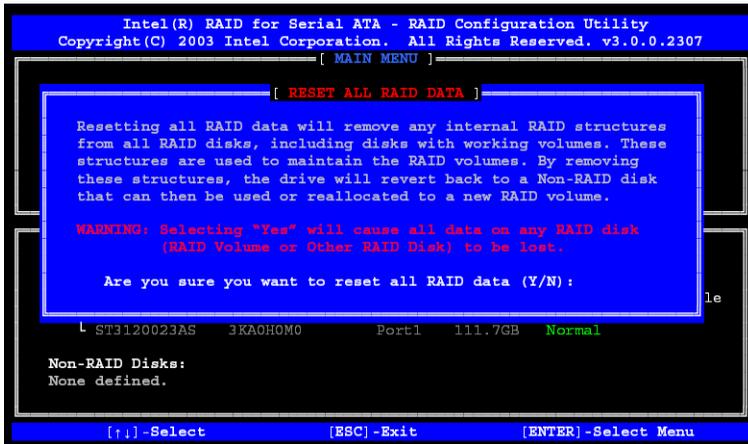
If your system currently boots to RAID and you delete the RAID volume in the Intel RAID Option ROM, your system will become unbootable.

Select option 2 **Delete RAID Volume** from the main menu window and press <Enter> key to select a RAID volume for deletion. The following window will appear:



(3) Reset Disks to Non-RAID

Select option 3 **Reset Disks to Non-RAID** and press <Enter> to delete the RAID volume and remove any RAID structures from the drives. The following screen appears:



Press <Y> key to accept the selection.



MSI Reminds You...

1. You will lost all data on the RAID drives and any internal RAID structures when you perform this operation.
2. Possible reasons to 'Reset Disks to Non-RAID' could include issues such as incompatible RAID configurations or a failed volume or failed disk.

Installing Software

Install Driver in Windows XP / 2000

► New Windows XP / 2000 Installation

The following details the installation of the drivers while installing Windows XP / 2000.

1. Start the installation:
Boot from the CD-ROM. Press F6 when the message "Press F6 if you need to install third party SCSI or RAID driver" appears.
2. When the Windows XP Setup window is generated, press S to specify an Additional Device(s).
3. Insert the driver diskette **Intel IAA RAID XP Driver For ICH5R (FW82801ER)** into drive A: and press <Enter>.
4. Choose **Intel(R) 82801ER SATA RAID Controller** from the list that appears on Windows XP Setup screen, press the <Enter> key.
5. Press <Enter> to continue with installation or if you need to specify any additional devices to be installed, do so at this time. Once all devices are specified, press <Enter> to continue with installation.
6. From the Windows XP Setup screen, press the <Enter> key. Setup will now load all device files and then continue the Windows XP installation.

► Existing Windows XP / 2000 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 **Intel IAA RAID Edition**.
4. The drivers will be automatically installed.

► Confirming Windows XP / 2000 Driver Installation

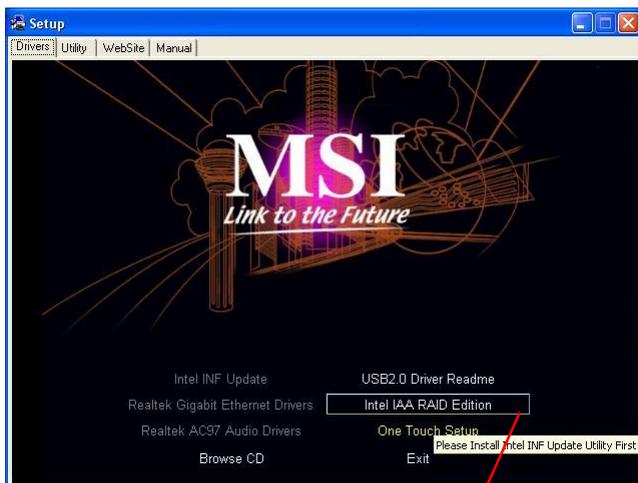
1. From Windows XP / 2000, open the **Control Panel** from **My Computer** followed by the System icon.
2. Choose the **Hardware** tab, then click the **Device Manager** tab.
3. Click the "+" in front of the **SCSI and RAID Controllers** hardware type. The driver **Intel(R) 82801ER SATA RAID Controller** should appear.

Installation of Intel Application Accelerator RAID Edition

The Intel Application Accelerator RAID Edition driver may be used to operate the hard drive from which the system is booting or a hard drive that contains important data. For this reason, you cannot remove or un-install this driver from the system after installation; however, you will have the ability to un-install all other non-driver components. The following non-driver components can be un-installed:

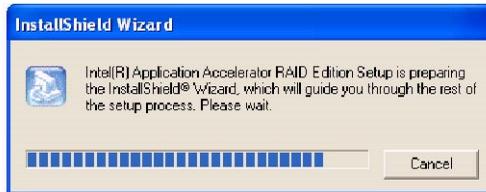
- Intel Application Accelerator RAID Edition utility
- Help documentation
- Start menu shortcuts and system tray icon service
- RAID Monitor service

Insert the MSI CD and click on the **Intel IAA RAID Edition** to install the software.

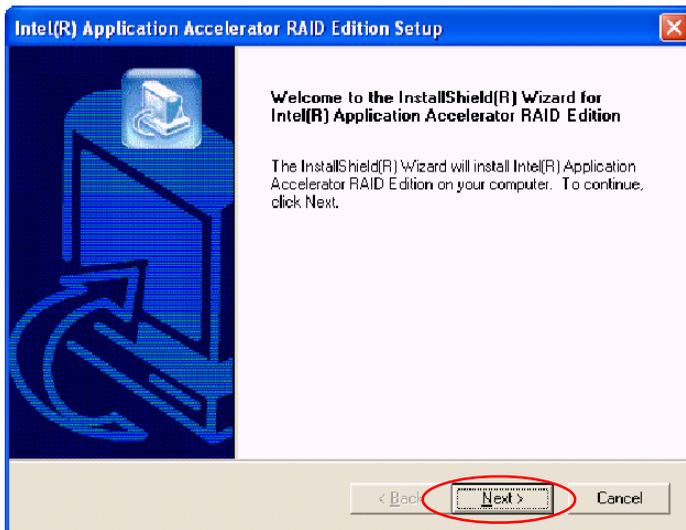


Click the **Intel IAA RAID Edition**

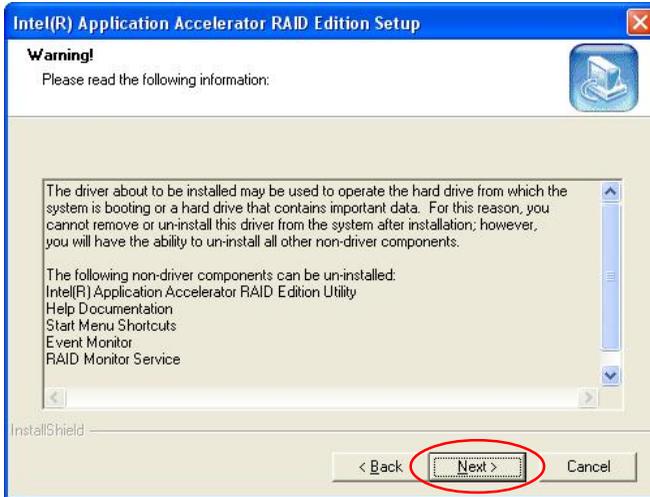
The **InstallShield Wizard** will begin automatically for installation showed as following:



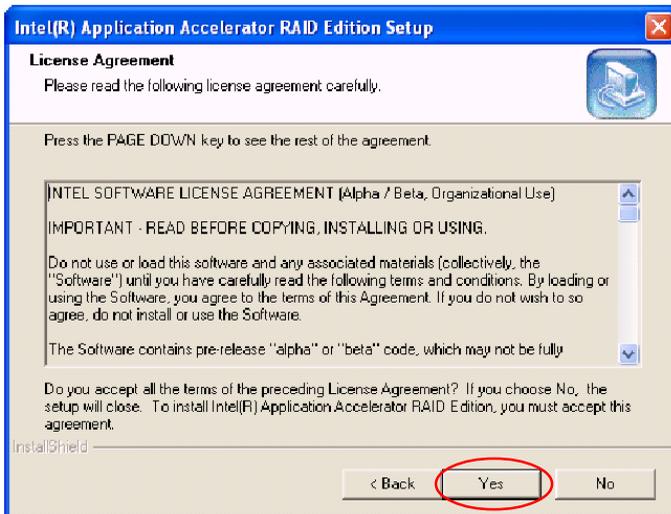
Click on the **Next** button to proceed the installation in the welcoming window.



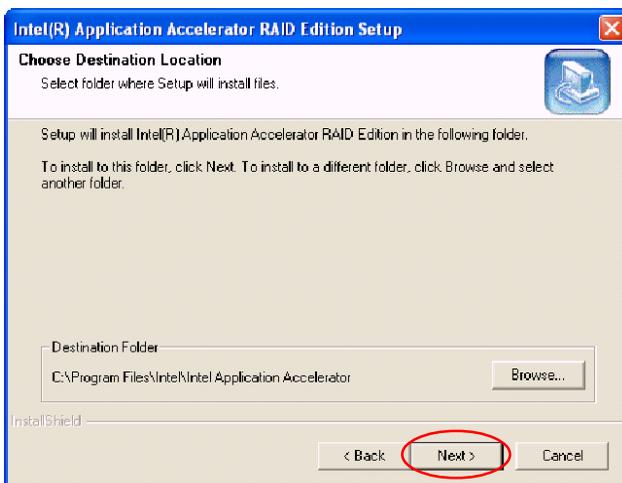
The window shows the components to be installed. Click **Next** button to continue.



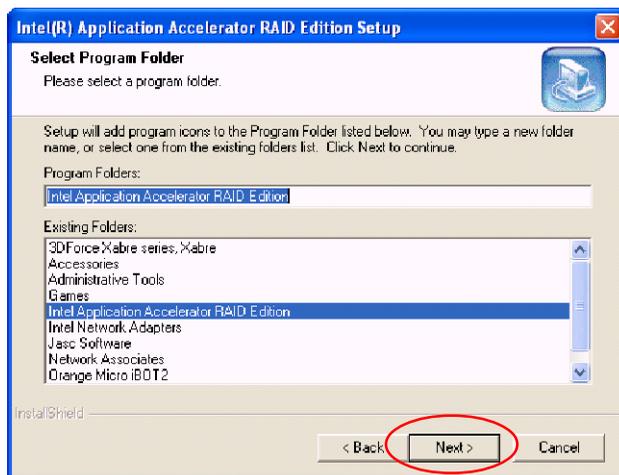
After reading the license agreement in the following window, click **Yes** button to continue.



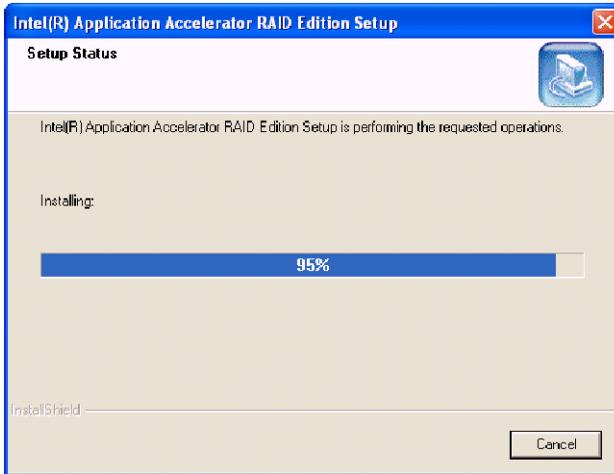
Select the folder in which you want the program to be installed in the following window, and click **Next** button to start installation.



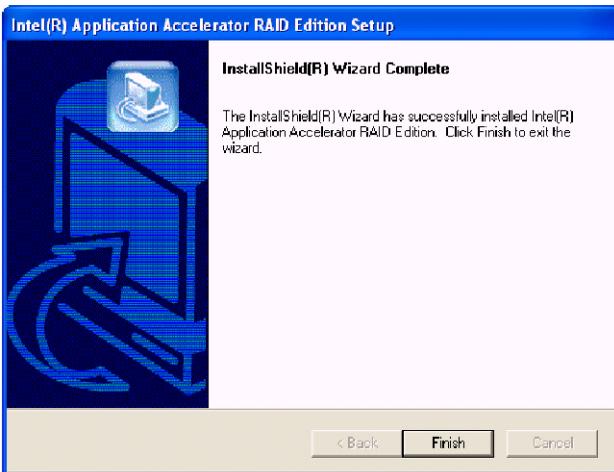
Select a program folder in the following window where you want Setup to add the program icon.



The following window appears to show the Intel Application Accelerator RAID Edition Setup installation status.



Once the installation is complete, the following window appears.



RAID Migration Instructions

The Intel Application Accelerator RAID Edition offers the flexibility to upgrade from a single Serial ATA (SATA) hard drive to a two drive RAID 0 or RAID 1 configuration when an additional SATA hard drive is added to the system. This process will create a new RAID volume from an existing disk. However, several important steps must be followed at the time the system is first configured in order to take advantage of RAID when upgrading to a second SATA hard drive:

1. BIOS must be configured for RAID before installing Windows* XP on the single SATA hard drive. Refer to P.B-5 **BIOS Configuration** for properly setting of the BIOS.
2. Install the Intel Application Accelerator RAID Driver during Windows Setup. Refer to P.5-13 **Installing Software** for instructions on installing the driver during Windows Setup.
3. Install the Intel Application Accelerator RAID Edition after the operating system is installed.

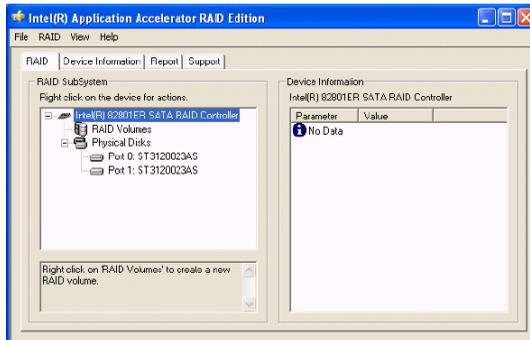
To create a volume from an existing disk, complete the following steps:



MSI Reminds You...

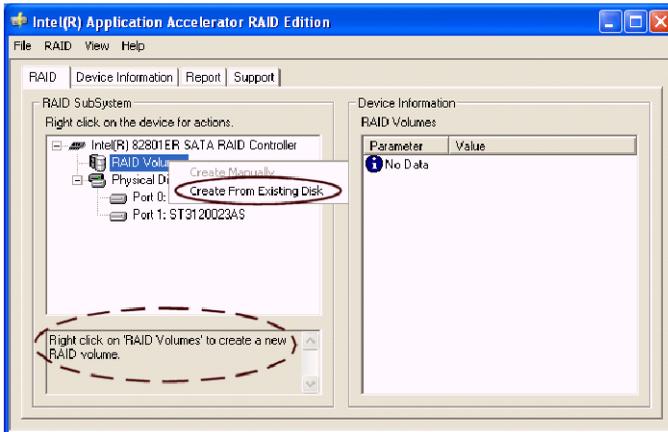
*A **Create from Existing Disk** operation will delete all existing data from the added disk and the data cannot be recovered. It is critical to backup all important data on the added disk before proceeding. However, during the migration process, the data on the source disk is preserved.*

After the Intel Application Accelerator RAID Edition has been successfully installed and the system has rebooted, click on the Intel Application Accelerator shortcut link and the following window will appear:



Create RAID Volume from Existing Disk

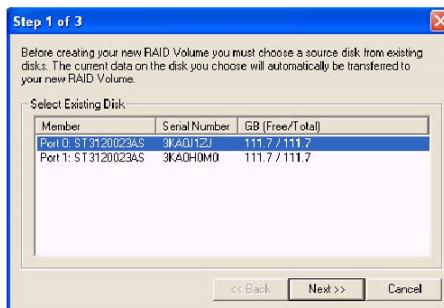
To create a RAID volume from an existing disk, right-mouse click on **RAID Volume** and select **Create From Existing Disk** to create a new RAID volume as the screen below. You may also use the **RAID** drop-down menu and click on **Create Volume from Existing Disk**.



(1) Step 1 of 3: Select the source disk

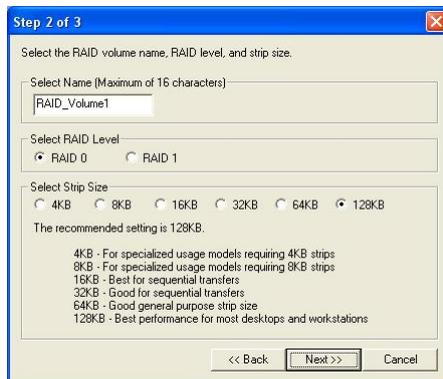
For Step 1, select the source disk that you wish to use and then click **Next**. It is very important to note which disk is the source disk (the one containing all of the information to be migrated) and which one is the target disk. On a RAID Ready system, this can be determined by making a note during POST of which port (e.g. Port 0 or Port 1) the single disk is attached to.

You can also use the Intel Application Accelerator RAID Edition utility before the second disk is installed to verify the Port and serial number of the drive that contains all the data.



(2) Step 2 of 3: Select the RAID Volume Name and Strip Size

In Step 2, select the RAID volume name and strip size, and click **Next**:



► RAID Volume Name:

A desired RAID volume name needs to be typed in where the 'RAID_Volume1' text currently appears above. The RAID volume name has a maximum limit of 16 characters. The RAID volume name must also be in English alphanumeric ASCII characters.

RAID Level:

Select the desired RAID level:

RAID 0 (Performance) –

A volume optimized for performance will allow you to access your data more quickly.

RAID 1 (Redundancy) –

A volume optimized for data redundancy will provide you with a realtime duplicate copy of your data. Note: Only half of the available volume space will be available for data storage.

► Strip Sizes:

Select the desired strip size setting. As indicated, the optimal setting is 128KB. Selecting any other option may result in performance degradation. Even though 128KB is the recommended setting for most users, you should choose the strip size value which is best suited to your specific RAID usage model. The most typical strip size settings are:

4KB: For specialized usage models requiring 4KB strips

8KB: For specialized usage models requiring 8KB strips

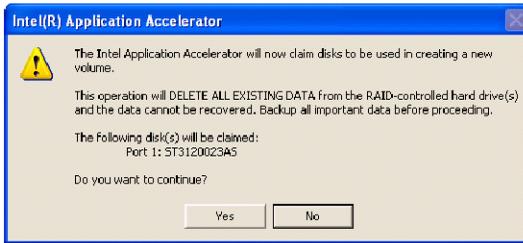
16KB: Best for sequential transfers

32KB: Good for sequential transfers

64KB: Good general purpose strip size

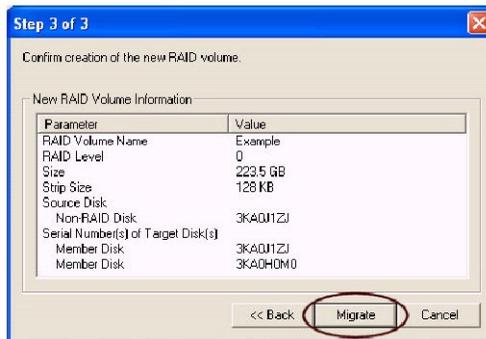
128KB: Best performance for most desktops and workstations

Before you continue to Step 3 of 3 by clicking **Next** in Step 2 of 3, read the next 2 dialogue boxes carefully. Please note that once you have selected **Migrate** on Step 3 of 3, the Intel Application Accelerator RAID Edition will have claimed the disks to be used in creating a new volume and this operation cannot be undone. It is critical that you backup all important data before selecting **Yes** to these dialogue boxes:



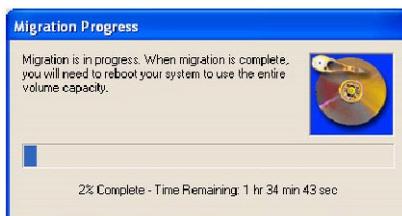
(2) Step 3 of 3: Confirm the creation of new RAID volume

In Step 3, confirm the creation of the new RAID volume and then click **Migrate**:



Migration Process

The migration process may take up to two hours to complete depending on the size of the disks being used and the strip size selected. A dialog window will appear stating that the migration process may take considerable time to complete and you must click **Yes** in order to start the migration. While you can still continue using your computer during the migration process, once the migration process starts, it cannot be stopped. If the migration process gets interrupted and your system is rebooted for any reason, it will pick up the migration process where it left off. You will be provided with an estimated completion time (the remaining time will depend on your system) once the migration process starts as illustrated in the following example:



The following screen appears if the migration process is completed successfully. Then you have to reboot your system to use the full capacity of the new volume.





Introduction to Realtek ALC850

The mainboard is equipped with Realtek ALC850 chip, which provides support for 8-channel audio output, including 2 Front, 2 Rear, 1 Center and 1 Subwoofer channel. ALC850 allows the board to attach 2, 4, 6 or 8 speakers for better surround sound effect. The section will tell you how to install and use 2-, 4-, 6- or 8-channel audio function on the board.

Installing the Audio Driver

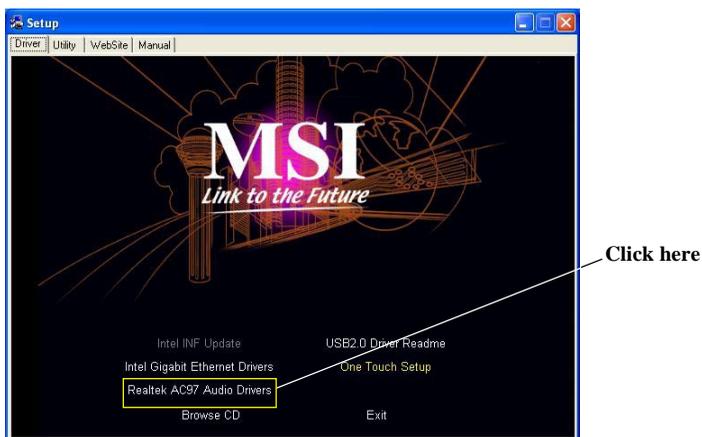
You need to install the driver for Realtek ALC850 codec to function properly before you can get access to 2-, 4-, 6- or 8- channel audio operations. Follow the procedures described below to install the drivers for different operating systems.

Installation for Windows 98SE/ME/2000/XP

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

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

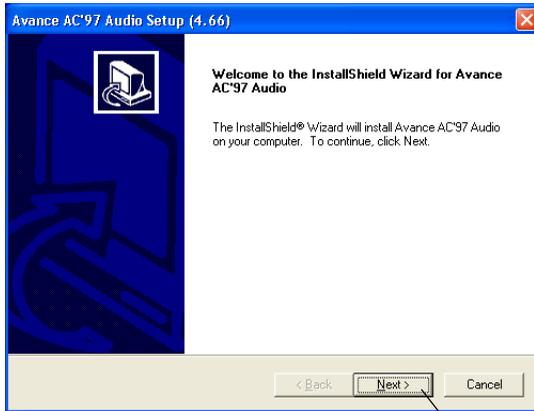
1. Insert the companion CD into the CD-ROM drive. The setup screen will automatically appear.
2. Click **Realtek AC97 Audio Drivers**.



MSI Reminds You...

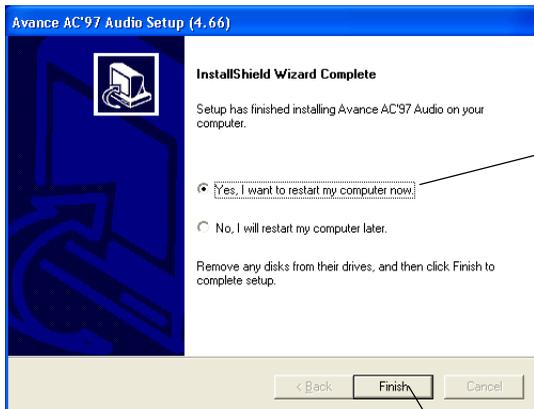
The **AC97 Audio Configuration**  software utility is under continuous update to enhance audio applications. Hence, the program screens shown here in this appendix may be slightly different from the latest software utility and shall be held for reference only.

3. Click **Next** to install the AC'97 Audio software.



Click here

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

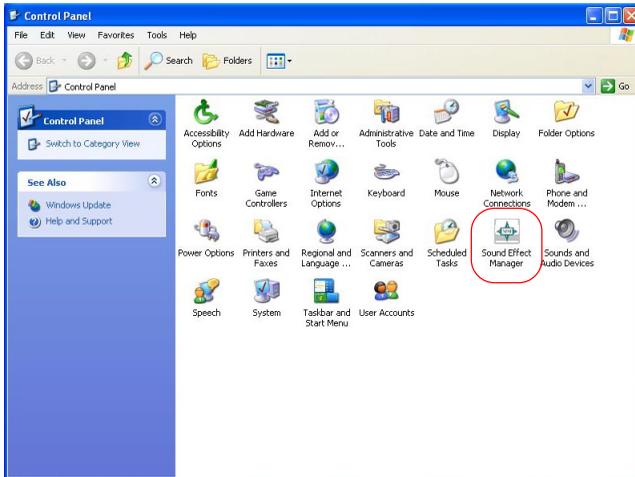


Select this option

Click here

Software Configuration

After installing the audio driver, you are able to use the 2-, 4-, 6- or 8- channel audio feature now. Click the audio icon  from the system tray at the lower-right corner of the screen to activate the **AC97 Audio Configuration**. It is also available to enable the audio driver by clicking the **Sound Effect Manager** from the **Control Panel**.

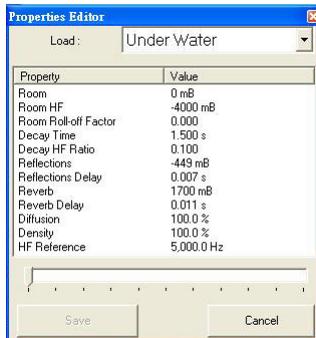


Sound Effect

Here you can select a sound effect you like from the **Environment** list.

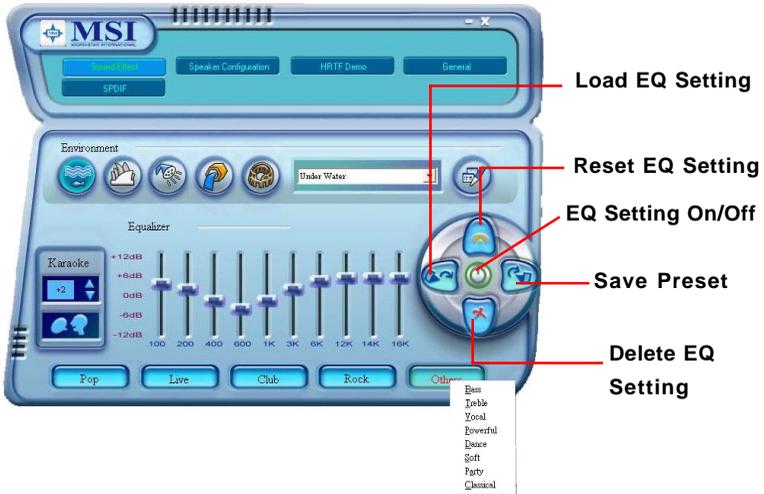


You may also edit the properties for an environment as you wish by clicking the “**Edit**” button, then just scroll the bar in the bottom for each property to adjust.



You may choose the provided sound effects, and the equalizer will adjust automatically. If you like, you may also load an equalizer setting or make an new equalizer setting to save as an new one by using the “**Load EQ Setting**” and “**Save Preset**” button, click “**Reset EQ Setting**” button to use the default value, or click “**Delete EQ Setting**” button to remove a preset EQ setting.

There are also other pre-set equalizer models for you to choose by clicking “**Others**” under the **Equalizer** part.



Here it provides the Karaoke function which will automatically remove human voice (lyrics) and leave melody for you to sing the song. You may use the “up arrow” and “down arrow” button to raise/lower the key, and press the lower button to remove the human voice.



Speaker Configuration

In this tab, you can easily configure your multi-channel audio function and speakers.

1. First you have to select the audio configuration below which is identical to the audio jack on your mainboard. In this model it uses Realtek ALC850 codec which supports 8-channel S/PDIF, therefore you should choose **8CH-S/PDIF (Optical & Coaxial)**.

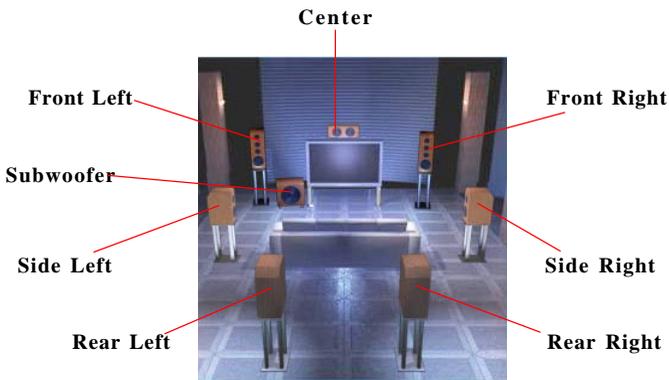


2. Select a desired multi-channel operation here.
 - a. **Headphone** for the common headphone
 - b. **2CH Speaker** for Stereo-Speaker Output
 - c. **4CH Speaker** for 4-Speaker Output
 - d. **6CH Speaker** for 5.1-Speaker Output
 - e. **8CH Speaker** for 8-Speaker Output

Select the speaker by clicking to test its functionality. The one you select will light up and make testing sound. 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. Or you may click the **“Auto Test”** button to test the sounds of each speaker automatically.



3. While you are testing the speakers in 8-Channel / 6-Channel Mode, if the sound coming from the center speaker and subwoofer is swapped, you should select **Swap Center/Subwoofer Output** to re-adjust these two channels.



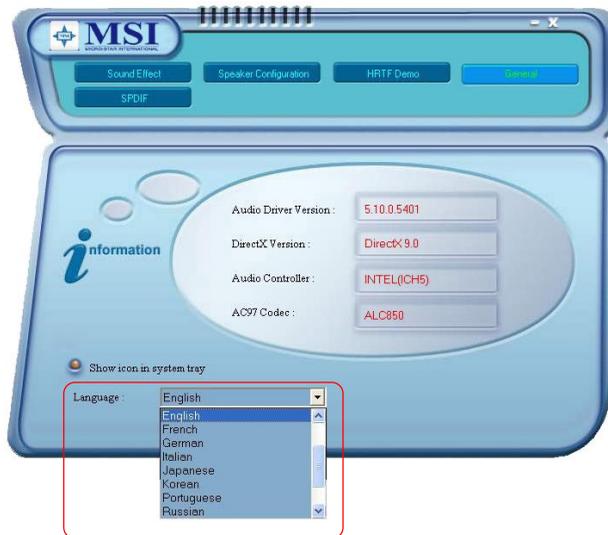
HRTF Demo

In this tab you may adjust your HRTF (Head Related Transfer Functions) 3D positional audio before playing 3D audio applications like gaming. You may also select different environment to choose the most suitable environment you like.



General

In this tab it provides some information about this AC97 Audio Configuration utility, including Audio Driver Version, DirectX Version, Audio Controller & AC97 Codec. You may also select the language of this utility by choosing from the **Language** list.



Also there is a selection **Show icon in system tray**. Switch it on and an icon  will show in the system tray. Right-click on the icon and the **Audio Accessories** dialogue box will appear which provides several multimedia features for you to take advantage of.



SPDIF

In this tab it provides options about SPDIF-Out for you to configure.



- **No Output:** With this option, there is no S/PDIF output signal while playing analog and digital audio.
- **Output digital only:** With this option, only digital audio will be allowed to play via SPDIF out while playing analog and digital audio.
- **Output digital and analog:** With this option, both digital and analog audio will be allowed to play via SPDIF out while playing analog and digital audio.

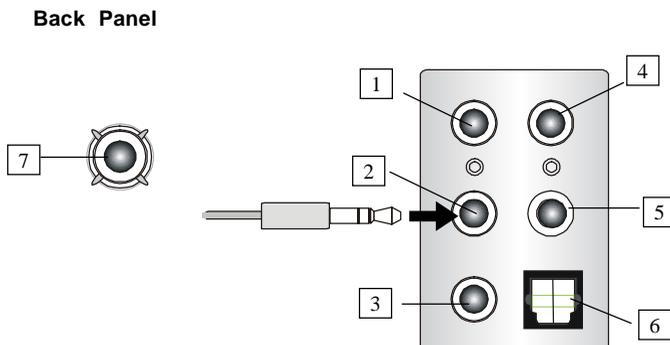
Using 2-, 4-, 6- & 8- Channel Audio Function

Connecting the Speakers

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

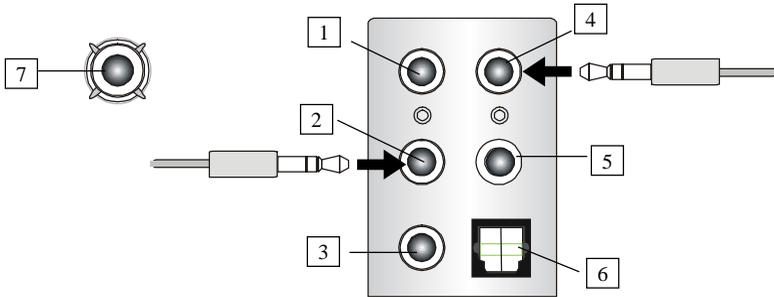
■ 2-Channel Mode for Stereo-Speaker Output

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



- 1 Line In
- 2 Line Out (*Front channels*)
- 3 MIC
- 4 Line Out (*Rear channels, but no functioning in this mode*)
- 5 Line Out (*Center and Subwoofer channel, but no functioning in this mode*)
- 6 SPDIF Out Optical jack
- 7 SPDIF Out Coaxial jack

■ 4-Channel Mode for 4-Speaker Output



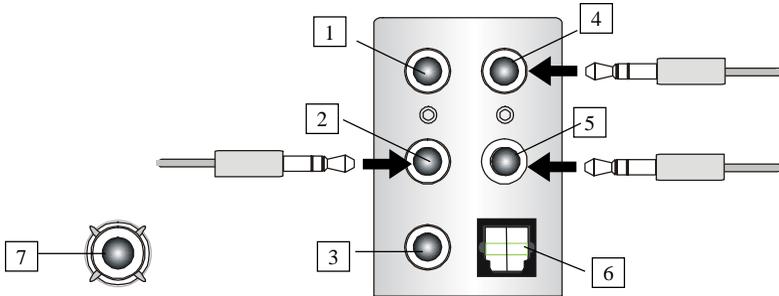
Description:

Connect two speakers to back panel's Line Out connector and two speakers to the real-channel Line Out connector.

4-Channel Analog Audio Output

- 1 Line In
- 2 Line Out (*Front channels*)
- 3 MIC
- 4 Line Out (*Rear channels*)
- 5 Line Out (*Center and Subwoofer channel, but no functioning in this mode*)
- 6 Optical SPDIF jack
- 7 Coaxial SPDIF jack

■ 6-Channel Mode for 6-Speaker Output



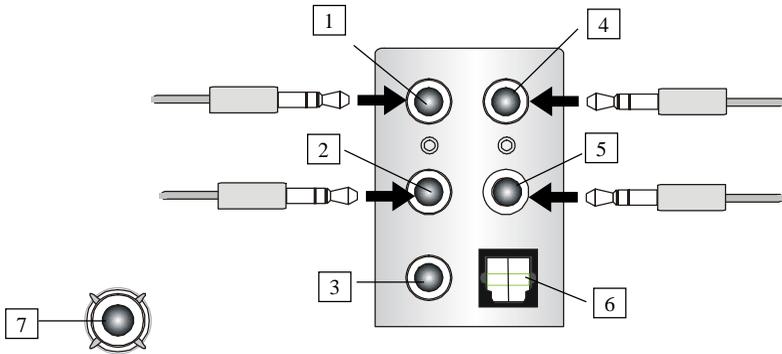
6-Channel Analog Audio Output

- 1 Line In
- 2 Line Out (*Front channels*)
- 3 MIC
- 4 Line Out (*Rear channels*)
- 5 Line Out (*Center and Subwoofer channel*)
- 6 Optical SPDIF jack
- 7 Coaxial SPDIF jack

Description:

Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel and two speakers to the center/subwoofer-channel Line Out connectors.

■ 8-Channel Mode for 8-Speaker Output



8-Channel Analog Audio Output

- 1 Line Out (*Side channels*)
- 2 Line Out (*Front channels*)
- 3 MIC
- 4 Line Out (*Rear channels*)
- 5 Line Out (*Center and Subwoofer channel*)
- 6 Optical SPDIF jack
- 7 Coaxial SPDIF jack

Description:

Connect two speakers to back panel's Line Out connector, two speakers to the rear-channel, two speakers to the center/subwoofer-channel Line Out connectors, and two speakers to the side-channel Line Out connectors.