P45A Series

Motherboard

User's Manual

FOXCONN®

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Version:

User's Manual V1.1 for P45A Series motherboard.
P/N: 3A2213P00-000-G

Symbol description:

Caution: refers to important information that can help you to use motherboard better, and tells you how to avoid problems.

Warning: indicating a potential risk of hardware damage or physical injury may exist.

WEEE:

The use of this symbol indicates that this product may not be treated as household waste. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences for the environment and human health, which could otherwise be caused by inappropriate waste handling of this product. For more detailed information about recycling of this product, please contact your local city office, your household waste disposal service or the shop where you purchased this product.

More information:

If you want more information about our products, please visit Foxconn's website: http://www.foxconnchannel.com

Declaration of conformity

CE

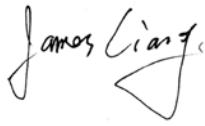
HON HAI PRECISION INDUSTRY COMPANY LTD
66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT,
TAIPEI HSIEN, TAIWAN, R.O.C.

declares that the product

Motherboard P45A/P45A-S

is in conformity with
(reference to the specification under which conformity is declared in accordance with 89/336 EEC-EMC Directive)

- EN 55022: 1998/A2: 2003 Limits and methods of measurements of radio disturbance characteristics of information technology equipment
- EN 61000-3-2/:2000 Electromagnetic compatibility (EMC)
  Part 3: Limits
  Section 2: Limits for harmonic current emissions (equipment input current <= 16A per phase)
- EN 61000-3-3/A1:2001 Electromagnetic compatibility (EMC)
  Part 3: Limits
  Section 2: Limits of voltage fluctuations and flicker in low voltage supply systems for equipment with rated current <= 16A
- EN 55024/A2:2003 Information technology equipment-Immunity characteristics limits and methods of measurement

Signature : 

Place / Date : TAIPEI/2008

Printed Name : James Liang

Declaration of conformity

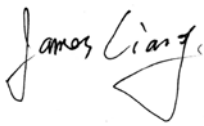
Trade Name:	FOXCONN
Model Name:	P45A/P45A-S
Responsible Party:	PCE Industry Inc.
Address:	458 E. Lambert Rd.
	Fullerton, CA 92835
Telephone:	714-738-8868
Facsimile:	714-738-8838

Equipment Classification:	FCC Class B Subassembly
Type of Product:	Motherboard
Manufacturer:	HON HAI PRECISION INDUSTRY COMPANY LTD
Address:	66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT, TAIPEI HSIEN, TAIWAN, R.O.C.

Supplementary Information:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Tested to comply with FCC standards.

Signature :  Date : 2008

Installation Precautions

- Electrostatic discharge (ESD) is the sudden and momentary electric current that flows between two objects at different electrical potentials. Normally it comes out as a spark which will quickly damage your electronic equipment. Please wear an electrostatic discharge (ESD) wrist strap when handling components such as a motherboard, CPU or memory.
- Ensure that the DC power supply is turned off before installing or removing CPU, memory, expansion cards or other peripherals. It is recommended to unplug the AC power cord from the power supply outlet. Failure to unplug the power supply cord may result in serious damage to your system.

Please carefully read the following procedures to install your computer :

- It is suggested to select high-quality, certified fans in order to avoid damage to the motherboard and CPU due to high temperature. Never turn on the computer if the CPU fan is not properly installed.
- We cannot guarantee that your system can operate normally when your CPU is overclocked. Normal operation depends on the overclocking capacity of your device.
- If there is any, when connecting USB, audio, 1394a, RS232 COM, IrDA or S/PDIF cables to the internal connectors on the motherboard, make sure their pinouts are matching with the connectors on the motherboard. Incorrect connections might damage the motherboard.
- When handling the motherboard, avoid touching any metal leads or connectors.
- If there is a PCI Express x16 graphics card installed in your system, we recommend using a 24-pin ATX power supply to get the best performance.
- Before turning on the power, please make sure the power supply AC input voltage setting has been configured to the local standard.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components. Also, make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

TABLE OF CONTENTS

Technical Support :

Support

Website :
http://www.foxconnchannel.com

Support Website :
http://www.foxconnsupport.com

Worldwide online contact Support :
http://www.foxconnchannel.com/support/online.aspx

CPU, Memory, VGA Compatibility Supporting Website :
http://www.foxconnchannel.com/product/Motherboards/compatibility.aspx

Thank you for buying Foxconn P45A Series motherboard. Foxconn products are engineered to maximize computing power, providing only what you need for break-through performance.

With advanced overclocking capability and a range of connectivity features for today multi-media computing requirements, P45A/P45A-S enables you to unleash more power from your computer.

This chapter includes the following information:

- Product Specifications
- Layout
- Back Panel Connectors

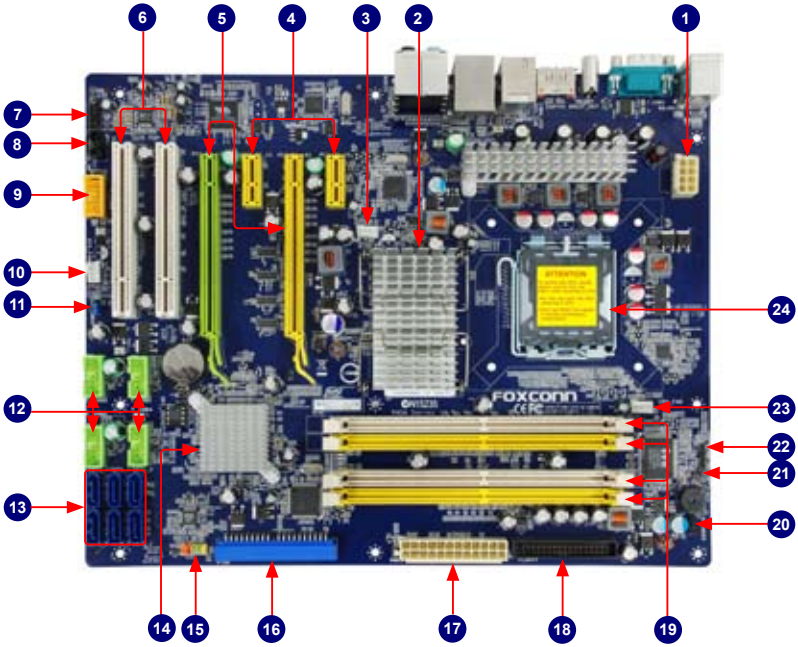
1-1 Product Specifications

CPU	Support LGA775 socket Intel® CPU: Intel® Core™2 Quad, Core™2 Extreme, Core™2 Duo, Pentium® Dual-Core, Celeron Dual-core, Celeron processors
Front Side Bus	1333/1066/800MHz FSB
Chipset	North Bridge: Intel® P45 South Bridge: Intel® ICH10R (P45A-S) Intel® ICH10 (P45A)
Memory	4 x 240-pin DDR2 DIMM sockets Support up to 8GB of system memory Dual channel DDR2 1066(oc*)/800/667MHz architecture (oc*: Overclocking)
Audio	Realtek 8-channel audio chip High Definition Audio 2/4/5.1/7.1-channel Support for S/PDIF out Support Jack-Sensing function
LAN	Realtek 10/100/1000Mb/s LAN chip
Expansion Slots	2 x PCI Express x16 slots 2 x PCI Express x1 slots 2 x PCI slots
Onboard Serial ATA	6 x SATA connectors (Controlled by ICH10R/ICH10) 300MB/s data transfer rate Support hot plug and NCQ (Native Command Queuing)
USB	Support hot plug Support up to 12 x USB 2.0 ports (4 rear panel ports, 4 onboard USB headers supporting 8 extra ports) Supports USB 2.0 protocol up to 480Mb/s
Internal Connectors	1 x 24-pin ATX main power connector 1 x 8-pin ATX 12V power connector 1 x Floppy disk drive connector 1 x IDE connector (Controlled by Jmicron361) 1 x CPU fan header (4-pin) 1 x System fan header (4-pin) 1 x NB fan header (4-pin) 1 x CD_IN connector 1 x Front Audio connector 1 x 1394a connector (P45A-S) 4 x USB 2.0 connectors (supporting 8 x USB devices) 6 x SATA connectors 1 x Front Panel connector 1 x IrDA connector 1 x Chassis intrusion alarm header 1 x Speaker connector

Back Panel Connectors	1 x PS/2 keyboard port 1 x PS/2 mouse port 1 x ESATA port (Controlled by Jmicron361) 1 x Coaxial S/PDIF out port 1 x Serial port 1 x 1394a port (P45A-S) 4 x USB 2.0 ports 1 x RJ-45 LAN port 8-channel audio ports
Hardware Monitor	System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU/System overheating shutdown CPU/System fan speed control
PCI Express x1	Support 250MB/s (500MB/s concurrent) bandwidth Low power consumption and power management features
PCI Express x16 Gen1.0	Support 4GB/s (8GB/s concurrent) bandwidth Low power consumption and power management features
PCI Express x16 Gen2.0	Support 8GB/s (16GB/s concurrent) bandwidth Low power consumption and power management features
Green Function	Support ACPI (Advanced Configuration and Power Interface) Support S0 (normal), S1 (power on suspend), S3 (suspend to RAM), S4 (suspend to disk), and S5 (soft - off)
Bundled Software	FOX ONE FOX LiveUpdate FOX LOGO FOX DMI
Operating System	Support for Microsoft® Windows® Vista/XP/2000
Form Factor	ATX Form Factor, 12 inches x 9.6 inches (30.5cm x 24.4cm)

If you select a FSB 1600MHz CPU for overclock, you only can use 800MHz DDR2 memory to work with it.

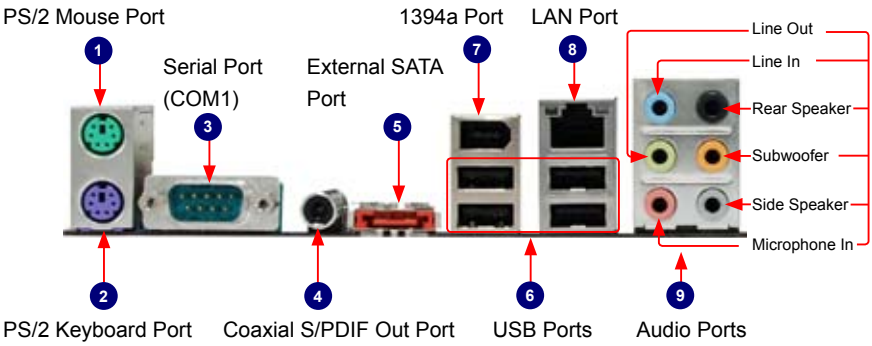
1-2 Layout



1. 8-pin ATX 12V Power Connector
2. North Bridge: Intel ® P45
3. NB_FAN Header
4. PCI Express x1 Slots
5. PCI Express x16 Slots
6. PCI Slots
7. Front Audio Connector
8. CD_IN Connector
9. 1394a Connector(P45A-S)
10. SYS_FAN Header
11. Clear CMOS Jumper
12. Front USB Connectors
13. SATA Connectors
14. South Bridge: Intel ® ICH10R(P45A-S)
    Intel ® ICH10(P45A)
15. Front Panel Connector
16. IDE Connector
17. 24-pin ATX Power Connector
18. Floppy Connector
19. DDR2 DIMM Slots
20. Speaker Connector
21. Chassis Intrusion Alarm Header
22. IrDA Connector
23. CPU_FAN Header
24. LGA 775 CPU Socket

Note : The above motherboard layout is for reference only, please refer to the physical motherboard for detail.

1-3 Back Panel Connectors



1. PS/2 Mouse Port

Use the upper port (green) to connect a PS/2 mouse.

2. PS/2 Keyboard Port

Use the lower port (purple) to connect a PS/2 keyboard.

3. Serial Port

This is output of RS232 COM1 port.

4. Coaxial S/PDIF Out Port

This port provides digital audio out to an external audio system that supports digital coaxial audio. Before using this feature, ensure that your audio system provides a coaxial digital audio in connector.

5. External SATA Port

To connect external SATA device(s) to your system by expanding the internal SATA port(s) to the chassis back panel. External SATA device shall provide power by its own.

6. USB Ports

The USB port supports the USB 2.0/1.1 specification. Use this port for USB devices such as an USB keyboard/mouse, USB printer, USB flash drive and etc.

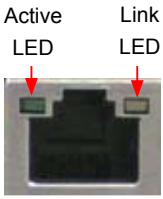
7. 1394a Port (P45A-S)

This port is used to connect a 1394a device.

8. RJ-45 LAN Port

The Ethernet LAN port provides Internet connection at up to 10/100/1000Mb/s data rate.

LAN Type	Left: Active		Right: Link	
	Status	Description	Status	Description
1000M	Off	No Link	Off	No Link
	Green Blinking	Data Activity	Off	10Mb/s Connection
			Green	100Mb/s Connection
			Orange	1000Mb/s Connection



9. Audio Ports

For the definition of each audio port, please refer to the table below :

Port	2-channel	4-channel	5.1-channel	7.1-channel
Blue	Line In	Line In	Line In	Line In
Green	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Microphone In	Microphone In	Microphone In	Microphone In
Orange	-	-	Center/Subwoofer Out	Center/Subwoofer Out
Black	-	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Grey	-	-	-	Side Speaker Out

* : Please refer to Chapter 4, and install the Realtek audio driver (in CD) to assign the audio output ports for different applications of 2/4/5.1/7.1 channels. The fundamental audio outputs are depicted in the table above.

This chapter introduces the hardware installation process, including the installation of the CPU, memory, power supply, slots, pin headers and the mounting of jumpers. Caution should be exercised during the installation of these modules. Please refer to the motherboard layout prior to any installation and read the contents in this chapter carefully.

This chapter includes the following information :

- Install the CPU and CPU Cooler
- Install the Memory
- Install an Expansion Card
- Install other Internal Connectors
- Jumpers

Please visit this website for more supporting information about CPU, Memory and VGA for your motherboard :
http://www.foxconnchannel.com/product/Motherboards/compatibility.aspx

2-1 Install the CPU and CPU Cooler

CAUTION

Read the following guidelines before you begin to install the CPU :

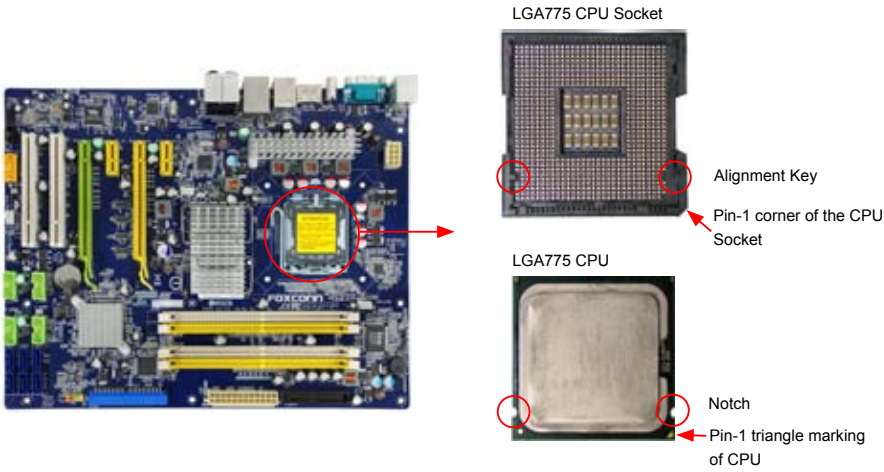
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power supply before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on both sides of the CPU and alignment keys on the CPU socket.)
- Apply an even and thin layer of thermal grease on the surface of the CPU.
- Do not turn on the computer if the CPU cooler is not installed, otherwise overheating and damage of the CPU may occur.
- Set the CPU host frequency in accordance with the CPU specifications. It is not recommended that the system bus frequency be set beyond hardware specifications since it does not meet the standard requirements for the peripherals. If you wish to set the frequency beyond the standard specifications, please do so according to your hardware specifications including the CPU, graphics card, memory, hard drive, etc.

Hyper-Threading Technology System Requirements:
(Go to Intel's website for more information about the Hyper-Threading Technology)

- An Intel® CPU that supports HT Technology
- A chipset that supports HT Technology
- An operating system that is optimized for HT Technology
- A BIOS that supports HT Technology and has it enabled

Install the CPU

Locate the alignment keys on the motherboard CPU socket and the notches on the CPU.

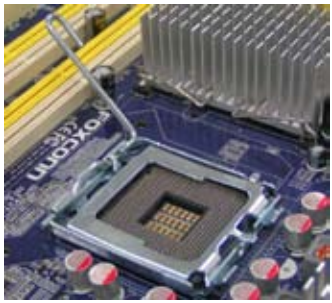


Follow the steps to install the CPU onto the CPU socket :

CAUTION

Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.

1. Remove protective socket cover.



2. Release the CPU socket lever.

3. Lift the metal cover on the CPU socket.

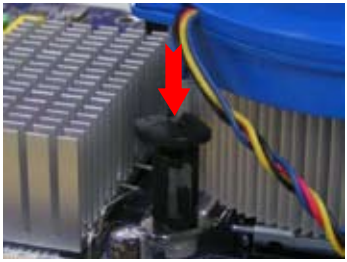
4. Check pin one marking (triangle) with the pin one corner of the CPU socket, align the CPU notches with the socket alignment keys and gently put the CPU onto the socket.

5. When CPU is properly seated, replace the metal cover and push the CPU socket lever back to its locked position.

Install the CPU Cooler

Follow the steps below to correctly install the CPU cooler on the motherboard. (The following procedures use Foxconn cooler as the example.)

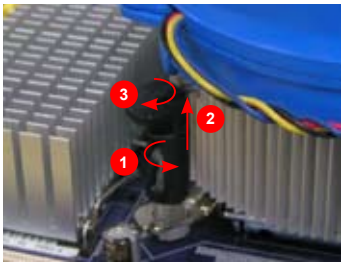
1. Apply and spread an even thermal grease on the surface of CPU.



2. Place the four bolts of the CPU cooler to the holes of the motherboard, push them straight down from the top, and the bolts will be fastened on the motherboard. That's it.

3. Check the solder side of the motherboard, the push pin should be fixed as depicted in the picture.

4. Attach the 4-wire CPU cooler connector to the CPU FAN header on the motherboard .



Release bolts of CPU cooler from motherboard :

1. Turning the push pin (bolt) along with the direction of arrow (counterclockwise).
2. Pull the push pin straight up.
3. Turning push pin clockwise to its default position.

CAUTION

Use extreme care when removing the CPU cooler because the thermal grease may adhere to the CPU. Inadequately removing the CPU cooler may damage the CPU.

2-2 Install the Memory

CAUTION

Read the following guidelines before you begin to install the memory :

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

Dual Channel Memory Configuration

This motherboard provides four DDR2 memory sockets and supports Dual Channel Technology. When memory is installed, the BIOS will automatically check the memory in your system.

Four DDR2 memory sockets are divided into two channels and each channel has two memory sockets as following:
Channel 0 : DIMM1, DIMM2
Channel 1 : DIMM3, DIMM4

The combinations of DIMM modules are :

	DIMM1	DIMM2	DIMM3	DIMM4
Single Channel	DS/SS	-	-	-
Single Channel	DS/SS	DS/SS		-
Single Channel	-	-	DS/SS	-
Single Channel	-	-	DS/SS	DS/SS
Dual Channel	DS/SS	-	DS/SS	-
Dual Channel	-	DS/SS	-	DS/SS
Dual Channel	DS/SS	DS/SS	DS/SS	DS/SS

(DS : Double Side, SS : Single Side, - : No Memory)

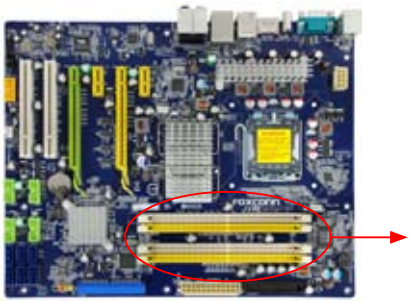
CAUTION

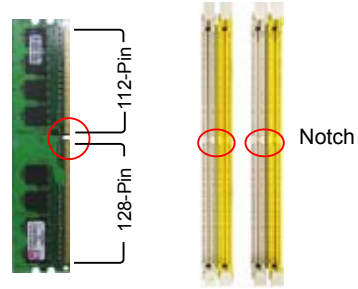
It is recommended that memory of the same capacity, brand, speed, and chips be used and please select dual channel first to achieve optimum performance.

Installing a Memory

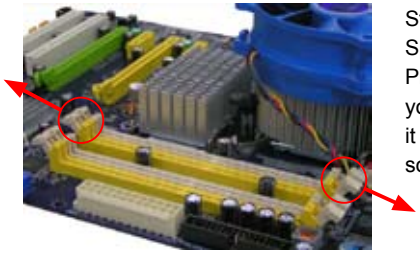
CAUTION

Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. Be sure to install DDR2 DIMMs on this motherboard.

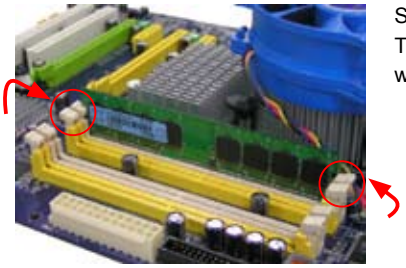




If you take a look at front side of memory module, it has asymmetric pin counts on both sides separated by a notch in the middle, so it can only fit in one direction. Follow the steps below to correctly install your memory modules into the sockets.



Step 1:
Spread the clips at both ends of the memory socket. Place the memory module onto the socket, then put your fingers on top edge of the module, and push it down firmly and seat it vertically into the memory socket.

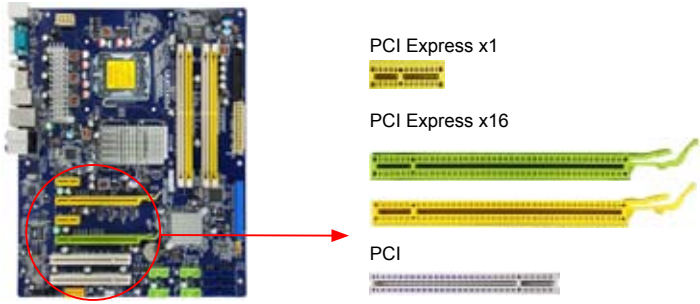


Step 2:
The clips at both ends of the socket will snap into place when the memory module is securely inserted.

2-3 Install an Expansion Card

CAUTION

- Make sure the motherboard supports the expansion card. Carefully read the manual that came with your expansion card.
- Always turn off the computer and unplug the power cord from the power outlet before installing an expansion card to prevent hardware damage.



Follow the steps below to correctly install your expansion card in the expansion slot.

1. Locate an expansion slot that supports your card. Remove the metal slot cover from the chassis back panel.
2. Align the card with the slot, and press down on the card until it is fully seated in the slot.
3. Make sure the metal contacts on the card are completely inserted into the slot.
4. Secure the card's metal bracket to the chassis back panel with a screw.
5. After installing all expansion cards, replace the chassis cover.
6. Turn on your computer. If necessary, go to BIOS Setup to make any required BIOS changes for your expansion card(s).
7. Install the driver provided with the expansion card in your operating system.

Installing and Removing a PCI Express x16 Graphics Card :

• Installing a Graphics Card:
Gently insert the graphics card into the PCI Express x16 slot. Make sure the graphics card is locked by the latch at the end of the PCI Express x16 slot.

• Removing the Card:
Push the latch at the end of the PCI Express x16 slot to release the card and then pull the card straight up from the slot.

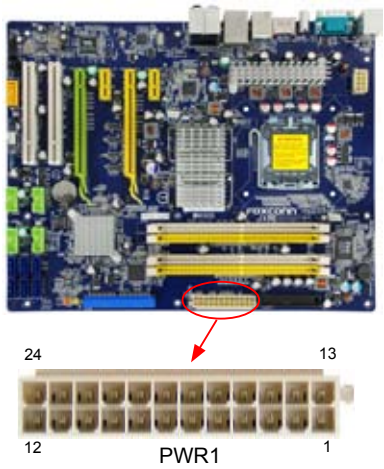
2-4 Install other Internal Connectors

Power Connectors

This motherboard uses an ATX power supply. In order not to damage any device, make sure all the devices have been installed properly before applying the power supply.

24-pin ATX Power Connector : PWR1

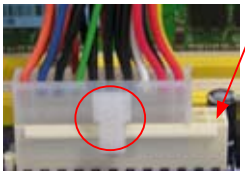
PWR1 is the ATX power supply connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.



Pin #	Definition	Pin #	Definition
1	3.3V	13	3.3V
2	3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PS_ON(Soft On/Off)
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	Power Good	20	NC
9	+5V SB(Stand by +5V)	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	3.3V	24	GND

CAUTION

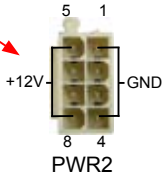
We recommend you using a 24-pin power supply. If you are using a 20-pin power supply, you need to align the ATX power connector according to the picture.



20-Pin Power

8-pin ATX 12 V Power Connector : PWR2

Connect the 8-pin ATX 12V power supply to PWR2 and provides power to the CPU.



Pin #	Definition	Pin #	Definition
1	GND	5	+12V
2	GND	6	+12V
3	GND	7	+12V
4	GND	8	+12V

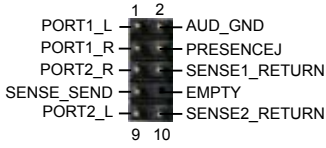
Connect a 4-pin power plug

CAUTION

We recommend you using an 8-pin ATX 12V power supply. If you are using a 4-pin power supply, you need to align the ATX power connector according to the picture on the right.

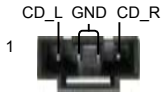
Audio Connector : F_AUDIO

The audio connector supports HD Audio standard. It provides the Front Audio output choice.



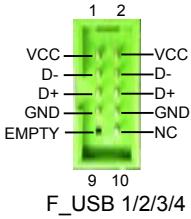
Audio Connector : CD_IN

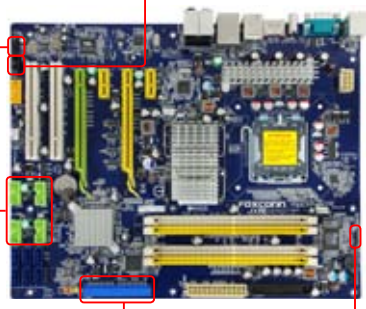
CD_IN is a Sony standard audio connector, it can be connected to a CD/DVD-ROM drive through a CD/DVD audio cable.



USB Connectors : F_USB1/2/3/4

In addition to the four USB ports on the rear panel, this product also provides four 10-pin USB headers on its motherboard. By connecting through USB cables with them, user can quickly expand another eight USB ports on the front panel.



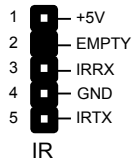


IDE Connector : PIDE

With the provided Ultra DMA IDE ribbon cable, you can connect to any IDE type of hard disk and CD/DVD ROM/RW drive.

IrDA Connector : IR

This connector supports infrared wireless transmitting and receiving device.



Front Panel Connector : FP1

This motherboard includes one connector for connecting the front panel switch and LED Indicators.

Hard Disk LED Connector (HDD-LED)

Connect to the chassis front panel IDE indicator LED. It indicates the active status of the hard disks. This 2-pin connector is directional with +/- sign.

Reset Switch (RESET-SW)

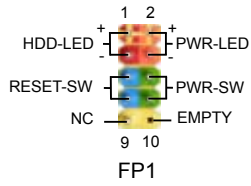
Attach the connector to the Reset switch on the front panel of the case; the system will restart when the switch is pressed.

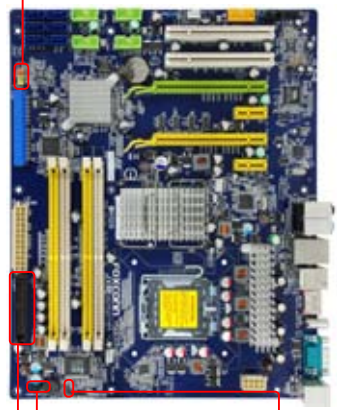
Power LED Connector (PWR-LED)

Connect to the power LED indicator on the front panel of the chassis. The Power LED indicates the system's status. When the system is in operation (S0 status), the LED is on. When the system gets into sleep mode (S1) , the LED is blinking; When the system is in S3/S4 sleep state or power off mode (S5), the LED is off. This 2-pin connector is directional with +/- sign.

Power Switch Connector (PWR-SW)

Connect to the power button on the front panel of the chassis. Push this switch allows the system to be turned on and off rather than using the power supply button.





Floppy Disk Drive Connector : FLOPPY

This motherboard includes a standard floppy disk drive (FDD) connector, supporting 360KB, 720KB, 1.2MB, 1.44MB, and 2.88MB FDDs.

Speaker Connector : SPEAKER

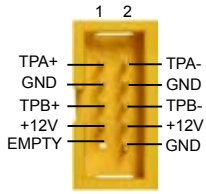
The speaker connector is used to connect speaker of the chassis.

Chassis Intruder Connector : INTR

The connector can be connected to a security switch on the chassis. The system can detect the chassis intrusion through the function of this connector. If eventually the chassis is closed, the system will send a message out.

1394a Connector : F_1394 (P45A-S)

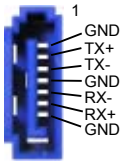
The 1394a expansion cable can be connected to either the front (provided that the front panel of your chassis is equipped with the appropriate interface) or real panel of the chassis.



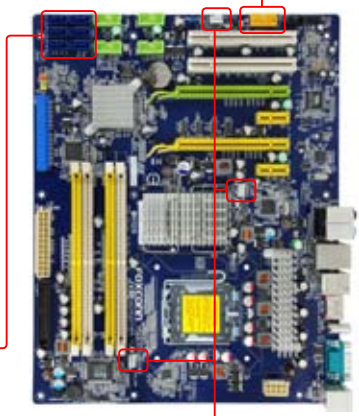
F_1394

Serial ATA Connectors : SATA_1/2/3/4/5/6

The Serial ATA connector is used to connect with SATA Hard Disk or CD devices which support this feature. The current Serial ATA II interface allows up to 300MB/s data transfer rate.



SATA_1/2/3/4/5/6



Fan Connectors : CPU_FAN, SYS_FAN, NB_FAN

There are three main fan headers on this motherboard. The fan speed can be controlled and monitored in “PC Health Status” section of the BIOS Setup. These fans can be automatically turned off after the system enters S3, S4 and S5 sleeping states.

CPU_FAN/ SYS_FAN/ NB_FAN

2-5 Jumpers

For some features needed, users can change the jumper settings on this motherboard to modify them. This section explains how to use the various functions of this motherboard by changing the jumper settings. Users should read the following content carefully prior to modifying any jumper setting.

Description of Jumpers

1. For any jumper on this motherboard, pin 1 can be identified by the bold silkscreen next to it. However, in this manual, pin 1 is simply labeled as “1”.
2. The following table explains different types of the jumper settings. "Closed" means placing a jumper cap on the two pins to temporarily short them. The shorting can also be done by touching two pins by a screwdriver for a few seconds, but using jumper cap is recommended. It can prevent hazardous ESD (Electrical Static Discharge) problem.

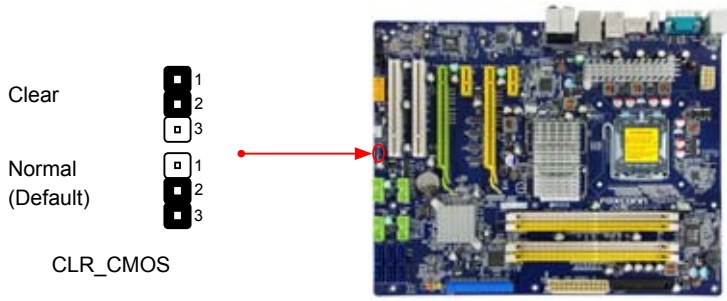
Jumper	Diagram	Definition	Description
1	1	1-2	Set Pin 1 and Pin 2 closed
	1	2-3	Set Pin 2 and Pin 3 closed

ClearCMOS Jumper: CLR_CMOS

The motherboard uses CMOS RAM to store the basic hardware information (such as BIOS data, date, time information, hardware password...etc.). Clear CMOS data is the fast way to go back to factory default when the BIOS settings were mistakenly modified.

The steps to clear CMOS data are :

1. Turn off the computer, unplug the power cord from the power outlet.
2. Remove jumper cap from pins 2-3, put it onto pins 1-2 to short them. This will clear CMOS data.
3. Return the setting to its original with pins 2-3 closed.
4. Plug in the power cord to your computer and turn it on.
5. Go to BIOS Setup to configure new system as described in next chapter.



WARNING!

- Disconnect the power cable before adjusting the jumper settings.
- Do not clear the CMOS while the system is turned on.

3

This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

You have to run the Setup Program when the following cases occur :

1. An error message appears on the screen during the system Power On Self Test (POST) process.
2. You want to change the default CMOS settings.

This chapter includes the following information :

- Enter BIOS Setup
- Main Menu
- System Information
- Advanced BIOS Features
- Central Control Unit
- Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PnP/PCI Configuration
- PC Health Status
- BIOS Security Features
- Load Optimal Defaults
- Save Changes and Exit
- Discard Changes and Exit

Since BIOS could be updated some other times, the BIOS information described in this manual is for reference only. We do not guarantee the content of this manual will remain consistent with the newly released BIOS at any given time in the future. Please visit our website for updated manual if it is available.

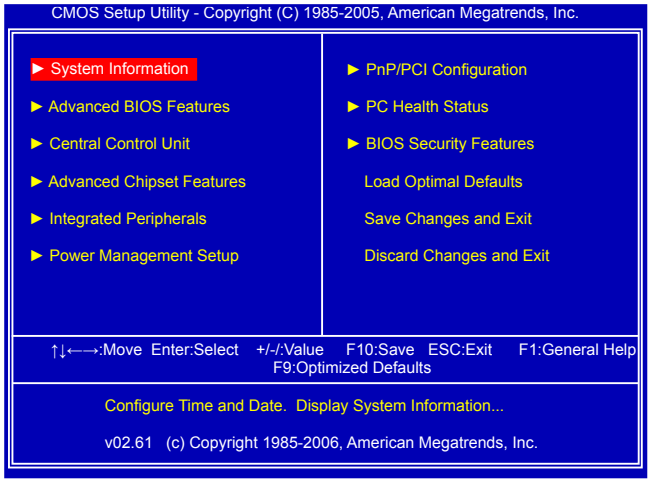
Enter BIOS Setup

The BIOS is the communication bridge between hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the message "**Press <Del> to enter Setup, <Esc> to boot menu**" appears at the bottom of the screen, you can press <DEL> key to enter Setup.

We do not suggest that you change the default values in the BIOS Setup, and we shall not be responsible for any damage which resulted from the change you made.

Main Menu

The main menu allows you to select from a list of setup functions together with two exit choices. Use the arrow keys to select a specific item and press <Enter> to go to the sub-menu.
Each item in the main menu is explained below:



► System Information

It displays the basic system configuration, such as BIOS ID, CPU Name, memory size plus system date, time and Floppy drive. They all can be viewed or set up through this menu.

► Advanced BIOS Features

The advanced system features can be set up through this menu. There are boot up settings.

► Central Control Unit

Some special proprietary features (such as overclocking) can be set up through this menu.

► Advanced Chipset Features

The values for the chipset can be changed through this menu, and the system performance can be optimized.

► Integrated Peripherals

All onboard peripherals can be set up through this menu. There are IDE devices, Super I/O devices such as Serial I/O and other USB devices... etc.

► **Power Management Setup**

All the items related with Green function features can be setup through this menu.

► **PnP/PCI Configuration**

PCI/PnP features, such as graphics card select and bus master ...etc. can be modified through this option.

► **PC Health Status**

This setup enables you to read/change fan speeds, and displays temperatures and voltages of your CPU/System.

► **BIOS Security Features**

The Supervisor/User password can be set up through this menu to prevent unauthorized use of your computer. If you set a password, the system will ask you to key in correct password before boot or access to Setup.

► **Load Optimal Defaults**

The optimal performance settings can be loaded through this menu. However, it may offer better performance in some ways (such as less I/O cards, less memory ...etc.), still, it may cause problem if you have more memory or I/O cards installed. It means, if your system loading is heavy, set to optimal default may sometimes come out an unstable system. What you need now is to adjust BIOS setting one by one, trial and error, to find out the best setting for your current system.

► **Save Changes and Exit**

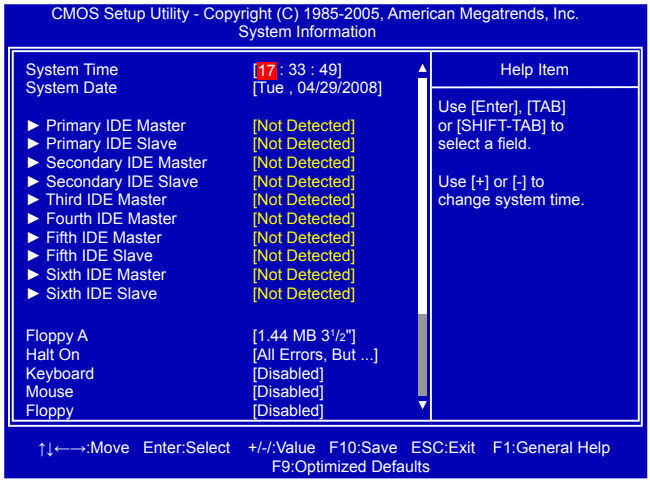
Save setting values to CMOS and exit.

► **Discard Changes and Exit**

Do not change anything and exit the setup.

System Information

This sub-menu is used to set up the standard BIOS features, such as the date, time, floppy drive and so on. Use the arrow up/down keys to select an item, then use the <+> or <-> keys to change the setting.



► System Time

This item allows you to configure the desired time. Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to input the value.

The three fields of the setting are <hour> : <minute> : <second> respectively.

► System Date

<weekday><month><date> <year> format.

Day—weekday from Sun. to Sat., this message is automatically displayed by BIOS (Read Only).

Month—month from 1 to 12.

Date—date from 1 to 31.

Year—year, set up by users.

Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to input the value.

► Primary/Secondary/Fifth/Sixth IDE Master/Slave, Third/Fourth IDE Master

While entering setup, BIOS automatically detects the presence of IDE devices. This item displays the drive information of IDE devices. Please refer to mapping table in next page.

► Floppy A

This option allows you to select which kind of the Floppy Disk Drive is installed in your system. It can be [360KB, 5¼"], [1.2MB, 5¼"], [720KB, 3½"], [1.44MB, 3½"], [2.88 MB, 3½"] and [Disabled].

► Halt On

This category determines whether or not the computer will stop if an error is detected during powering up.

[All Errors] : All errors can result in system halt.

[All Errors But...] : All errors but keyboard or mouse or floppy can result in system halt. The halt condition can be enabled/disabled in the next three settings.

► **Keyboard**

The system boot will not stop for a keyboard error if you enabled this item.

► **Mouse**

The system boot will not stop for a mouse error if you enabled this item.

► **Floppy**

The system boot will not stop for a floppy error if you enabled this item.

► **Model Name**

Model name of this product.

► **BIOS Version**

It displays the current BIOS version. User can check this information and discuss with the field service people if a BIOS upgrade is needed.

► **Memory**

This item displays the current memory size. The size is depending on how many memory modules were installed in your system before powering on.

► **MAC Address**

This item shows the onboard LAN MAC address.

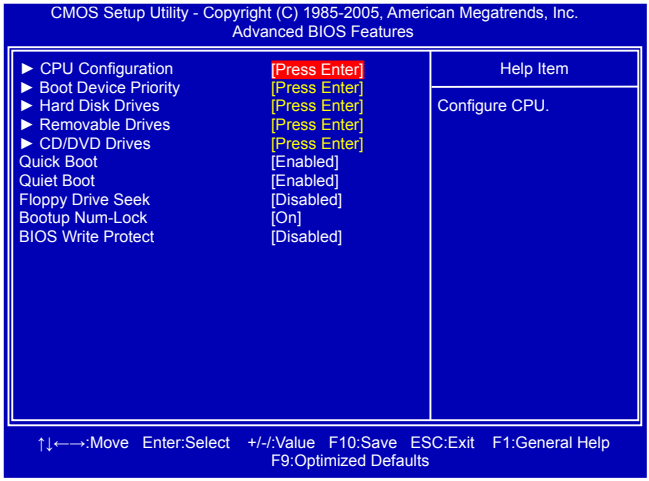
► **CPU Name**

It displays the current CPU name.

Mapping Table :

	With PATA IDE drives				Without PATA IDE drives				With PATA IDE drives	
	OnChip ATA Devices				OnChip ATA Devices				OnChip ATA Devices	
	SATA#1 Configuration Compatible/Enhanced		SATA#1 Configuration Disabled		SATA#1 Configuration Compatible/Enhanced		SATA#1 Configuration Disabled		Configure SATA#1 as	
	SATA#2 Configuration		SATA#2 Configuration		SATA#2 Configuration		SATA#2 Configuration		RAID	AHCI
	Enhanced	Disabled	Enhanced	Disabled	Enhanced	Disabled	Enhanced	Disabled	6 ports	6 ports
Primary IDE Master	SATA 1	SATA 1	SATA 5	ESATA	SATA 1	SATA 1	SATA 5	ESATA	ESATA	ESATA
Primary IDE Slave	SATA 3	SATA 3	-	-	SATA 3	SATA 3	-	-	-	-
Secondary IDE Master	SATA 2	SATA 2	SATA 6	IDE0	SATA 2	SATA 2	SATA 6	-	IDE0	IDE0
Secondary IDE Slave	SATA 4	SATA 4	-	IDE1	SATA 4	SATA 4	-	-	IDE1	IDE1
Third IDE Master	SATA 5	ESATA	ESATA	-	SATA 5	ESATA	ESATA	-	-	-
Third IDE Slave	-	-	-	-	-	-	-	-	-	-
Forth IDE Master	SATA 6	IDE0	IDE0	-	SATA 6	-	-	-	-	-
Forth IDE Slave	-	IDE1	IDE1	-	-	-	-	-	-	-
Fifth IDE Master	ESATA	-	-	-	ESATA	-	-	-	-	-
Fifth IDE Slave	Not Used									
Sixth IDE Master	IDE0	-	-	-	-	-	-	-	-	-
Sixth IDE Slave	IDE1	-	-	-	-	-	-	-	-	-

Advanced BIOS Features



► CPU Configuration

Press <Enter> to go to its submenu.

► Boot Device Priority

This option is used to select the priority for boot devices. After pressing <Enter>, you can select the device using the Up/Down arrow keys, and change the device priority using <+> or <->; you can exit this menu by pressing <Esc>.

► Hard Disk Drives

This option is used to specify the boot priority sequence from available hard disk drives.

► Removable Drives

This option is used to specify the boot priority sequence from available removable drives.

► CD/DVD Drives

This option is used to specify the boot priority sequence from available CD/DVD drives.

► Quick Boot

While Enabled, this option allows BIOS to skip certain tests while booting, this will shorten the time needed to boot the system.

► Quiet Boot

This item is used to enable/disable the quiet boot.

[Disabled] : Displays the normal POST messages.

[Enabled] : Displays OEM customer logo instead of POST messages.

► Floppy Drive Seek

This item controls whether the BIOS will be checking for a floppy drive while booting up. If it cannot detect one (either due to improper configuration or physical unavailability), it will appear an error message. Disabling this function, then POST will not detect the floppy.

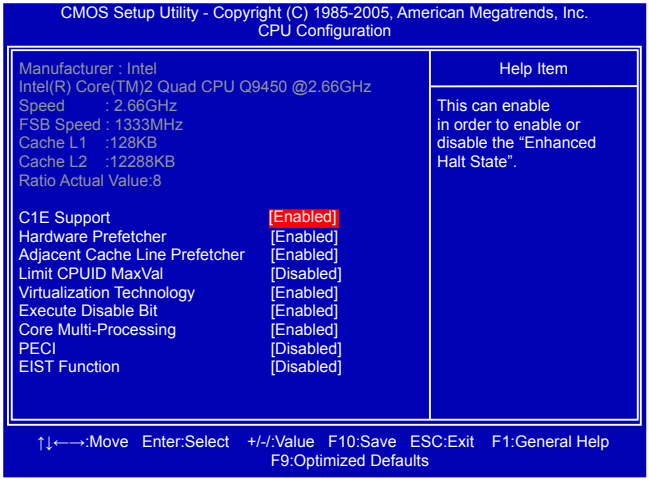
► Bootup Num-Lock

This item defines if the keyboard Num Lock key is active when your system is started. The available settings are: On (default) and Off.

► BIOS Write Protect

To protect the system BIOS from virus attack, there is a BIOS write-protection mechanism provided. Super BIOS Protect function protects your BIOS from being affected by viruses, e.g.CIH.

CPU Configuration



► **C1E Support**

C1E represents Enhanced HALT State. It is a feature which Intel CPU uses to reduce power consumption when in halt state. C1E drops the CPU's multiplier and voltage to lower levels when a HLT (halt) command is issued. This item is used to enable/disable the C1E support.

► **Hardware Prefetcher**

The processor has a hardware prefetcher that automatically analyzes its requirements and prefetches data and instructions from the memory into the Level 2 cache that are likely to be required in the near future. This reduces the latency associated with memory reads.

When enabled, the processor's hardware prefetcher will be enabled and allowed to automatically prefetch data and code for the processor.

When disabled, the processor's hardware prefetcher will be disabled.

► **Adjacent Cache Line Prefetcher (Appears only when CPU supports)**

The processor has a hardware adjacent cache line prefetch mechanism that automatically fetches an extra 64-byte cache line whenever the processor requests for a 64-byte cache line. This reduces cache latency by making the next cache line immediately available if the processor requires it as well.

When enabled, the processor will retrieve the currently requested cache line, as well as the subsequent cache line.

When disabled, the processor will only retrieve the currently requested cache line.

► **Limit CPUID MaxVal**

This item is used to enable or disable CPUID maximum value limit configuration. Set Limit CPUID MaxVal to 3, it should be [Disabled] for WinXP.

► **Virtualization Technology (Appears only when CPU supports)**

Virtualization (i.e. Intel® Vanderpool Technology) allows a platform to run multiple operating systems and applications in independent partitions or "containers." One physical compute system can function as multiple "virtual" systems. Vanderpool Technology can help improve future virtualization solutions. This item will be displayed only when the CPU is supporting this feature and the setting is used to enable/disable it.

► **Execute Disable Bit**

This item is used to enable/disable the Execute Disable Bit feature.

Intel's Execute Disable Bit functionality can help prevent certain classes of malicious buffer overflow attacks when combined with a supporting operating system.

Execute Disable Bit allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage and worm propagation. Replacing older computers with Execute Disable Bit-enabled systems can halt worm attacks, reducing the need for virus-related repairs. By combining Execute Disable Bit with anti-virus, firewall, spyware removal, e-mail filtering software, and other network security measures, IT managers can free IT resources for other initiatives.

► **Core Multi-Processing**

It is used to enable or disable the feature and will be displayed only if your CPU is supporting this feature.

► **PECI**

PECI stands for Platform Environment Control Interface. The PECI bus, allowing access to this data from chipset components, is a proprietary single-wire interface with a variable data transfer speed (from 2 kbit/s to 2 Mbit/s).

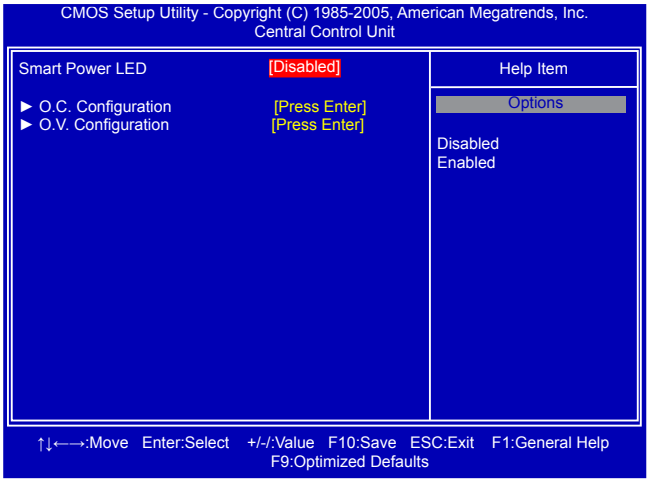
From a control standpoint, the main difference between PECI and the previously used thermal monitoring methods is that PECI reports a negative value expressing the difference between the current temperature and the thermal throttle point (at which the CPU reduces speed or shuts down to prevent damage due to overheating) instead of the absolute temperature. For example, for a CPU with maximal temperature of 85 °C and a current temperature reading of 35 °C, the value reported by PECI would be -50 °C.

► **EIST Function**

You can select the EIST (Processor Power Management, PPM) through this item.

Enhanced Intel SpeedStep® technology (EIST) allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production. There are some system requirements must be met, including CPU, chipset, motherboard, BIOS and operation system. Please refer to Intel Website for more information.

Central Control Unit



► Smart Power LED

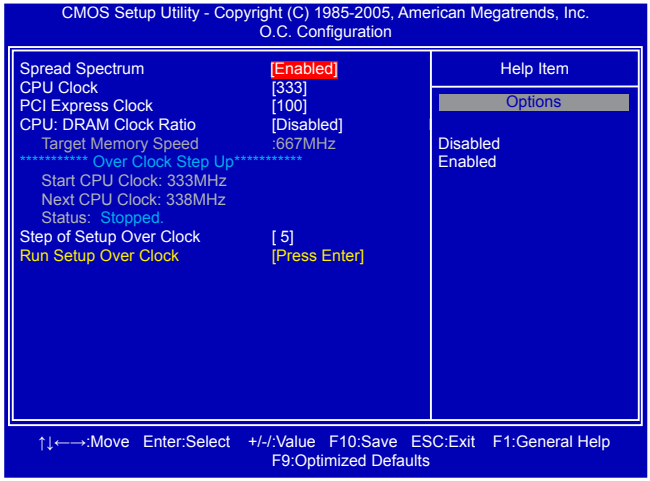
Smart Power LED is a feature built on your motherboard to indicate different states during Power On Self Test (POST). The LED is located at the front panel, and it displays POST state by different long-short blinking intervals. You can always leave this state enabled.

System Status	Power LED Status	Stop Blinking Condition
Normal	Always On	Always On
No Memory	Continue blinking On (1sec.), Off (1sec.)	Reboot & Memory OK
No Display	Continue blinking On (2sec.), Off (2sec.)	Reboot & Display OK
Post Error Message	Quick blinking twice (1/3sec. On, 1/3sec. Off), one long On (1sec.), continuously.	Enter Setup or Skip
No CPU Fan	Continue blinking On (1/2sec.), Off (1/2sec.)	Reboot & Fan OK

► O.C./O.V. Configuration

Press <Enter> to go to its submenu.

O.C. Configuration



► **Spread Spectrum**

If you enabled this function, it can significantly reduce the EMI (Electromagnetic Interference) generated by the system, so to comply with FCC regulation. But if overclocking is activated, you had better disable it.

► **CPU Clock**

This option is used to adjust the CPU clock.

► **PCI Express Clock**

This option is used to adjust the speed of PCI Express slot. It may enhance the graphics card speed.

► **CPU:DRAM Clock Ratio**

This option is used to select the clock ratio between CPU and DRAM. The normal memory speed of DDR2 is equal to twice that of DRAM clock.

[Auto]: Set CPU:DRAM clock ratio automatically according to the range of CPU clock.

[Disabled]: Set CPU:DRAM ratio as real ratio.

You also can select the CPU:DRAM ratio manually through the options: [1:1.25], [1:1.66], [1:1], [1:0.83].

************Over Clock Step Up************

► **Start CPU Clock**

This displays the current CPU clock value under overclocking test.

► **Next CPU Clock**

This displays the next CPU clock value which will be used in overclocking test.

► **Status**

This displays the overclocking state. It can be “Running“ or ”Stopped.”.

► **Step of Setup Over Clock**

This is the clock step increment when running overclock test. It is implemented in running “Run Setup Over Clock” option, that CPU will start its overclocking by stepping this value. Item value ranges from 1 to 15. You can change the value by pressing keys [+]/[-] or inputting the value directly.

► **Run Setup Over Clock**

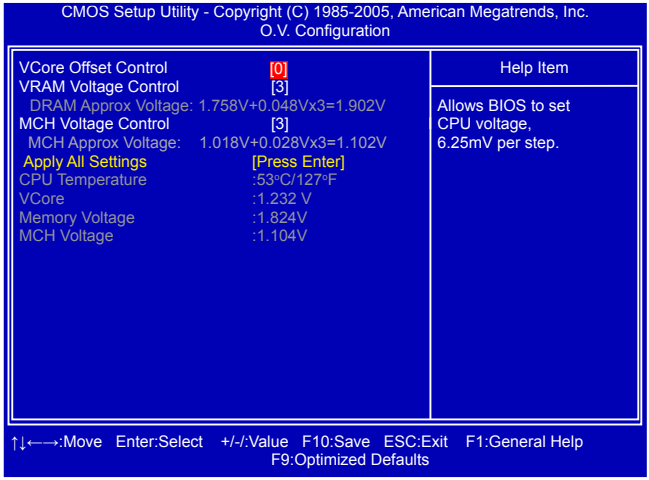
This setting is used to detect a CPU clock value which can be run in your overcolck system without risk. Select [OK], and press [Enter], then BIOS will increase CPU clock step by step, drive the system to its maximal speed until it can not drive any more and restarts itself. During the process, you can press [q] or [Q] to stop it.

When the overclock test is running, you must always remember the current CPU clock value on the screen. When the maximal clock value is reached, system will restart itself, and a message displays :

System recovers from Setup Over Clock
Press F1 to Resume

You can then press [F1] to continue, press [Del] to enter BIOS again, and select "O.C. Configuration" menu, enter an appropriate CPU clock value (smaller than the latest CPU clock value shown on the screen before your PC restarts) in “CPU Clock” option, and start running your overclock system.

O.V. Configuration



► **Vcore Offset Control**

This option is used to change the CPU voltage in a step of 6.25mV. You may change the step value from 0 to 30 by pressing [+] / [-] key or input a number directly.

► **VRAM Voltage Control**

This option is used to change the memory voltage in a step of 0.048V. You may change the step value from 0 to 30 by pressing [+] / [-] key or input a number directly.

► **MCH Voltage Control**

This option is used to change the North Bridge voltage in a step of 0.028V. You may change the step value from 0 to 15 by pressing [+] / [-] key or input a number directly.

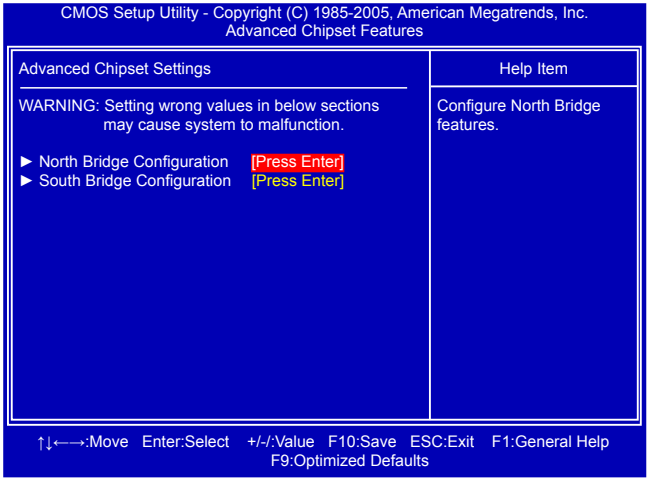
► **Apply All Settings**

Press [Enter] to apply all the changes.

► **CPU Temperature/Vcore/Memory Voltage/MCH Voltage**

These options display the temperature and voltage information.

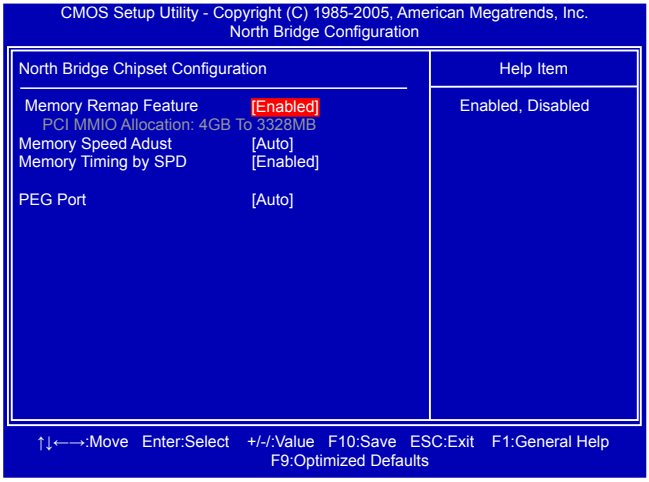
Advanced Chipset Features



► North Bridge Configuration/ South Bridge Configuration

Press <Enter> to go to its submenu.

North Bridge Configuration



► Memory Remap Feature

This item is used to enable/disable memory remapping around memory hole.

PCI doesn't actually care much which addresses are used, but by convention the PC platform puts them at the top of the 32-bit address space. For many years it wasn't possible or practical to put that much RAM into a PC. But now it is, so it's up to the memory controller and host bridge to figure out what to do. Many systems cause that high RAM to simply be ignored, resulting in the loss of effective RAM. More complex systems will take the RAM that would occupy that 3.5-4GB address space and re-map it into the 4.0-4.5 address space. The RAM doesn't care because it's just an array of storage cells, it's up to the memory controller to as-

sociate addresses with those storage cells.
Of course, that only works if you're using a 64-bit (or 32bit physical address extension (PAE) enabled) OS that can deal with physical addresses larger than 32 bits.
Once this option is enabled, the BIOS can see maximum 8192 MB of memory.

► **Memory Speed Adjust**

This item is used to adjust the memory speed. Select [Auto] for SPD enable mode. You also can select a value manually such as [667 MHz] or [800 MHz].

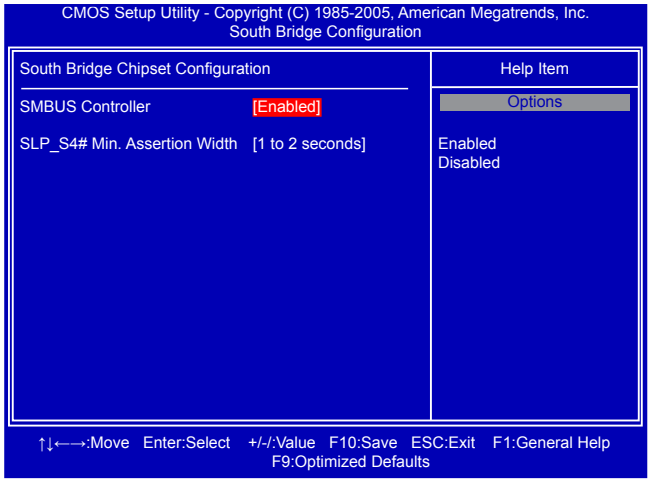
► **Memory Timing by SPD**

This item is used to enable/disable provision of DRAM timing by SPD device. The Serial Presence Detect (SPD) device is a small EEPROM chip, mounted on a memory module. It contains important information about the module's speed, size, addressing mode and various other parameters, so that the motherboard memory controller (chipset) can better access the memory device.

► **PEG Port**

This item is used to enable/disable PCI Express graphics port.

South Bridge Configuration



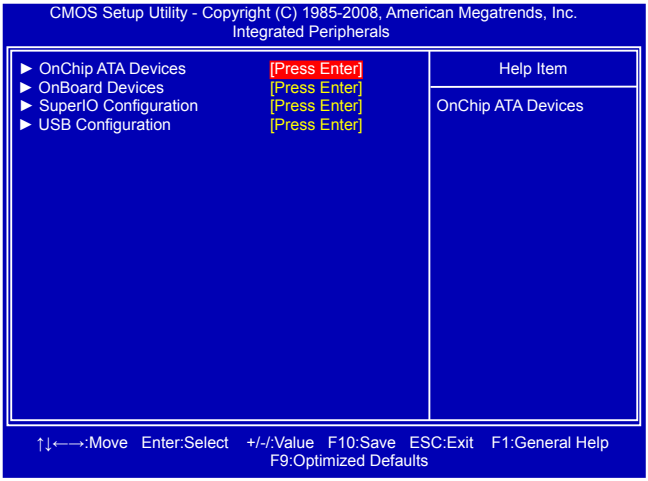
► **SMBUS Controller**

The System Management Bus is a specific implementation of an I²C bus. The SMBus specification describes the data protocols, device addresses, and electrical requirements that are superimposed on the I²C bus specification. The SMBus is used to physically transport commands and information between the Smart Battery, SMBus Host, Smart Battery Charger, and other SMBus Devices. This item is used to enable/disable System Mangement Bus controller.

► **SLP_S4# Min. Assertion Width**

SLP_S4# is a signal for power plane control. This signal shuts off power to all non-critical systems when in the S4 (Suspend to Disk) or S5 (Soft Off) state.
This setting indicates the minimum assertion width of the SLP_S4# signal to ensure that the DRAMs have been safely power-cycled. Setting values are: [4 to 5 seconds], [3 to 4 seconds], [2 to 3 seconds], [1 to 2 seconds].

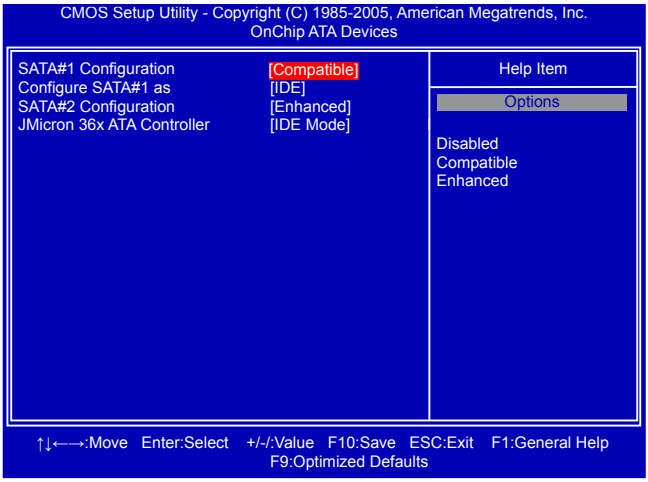
Integrated Peripherals



► OnChip ATA Devices/OnBoard Devices/SuperIO Configuration/USB Configuration

Press <Enter> to go to relative submenu.

OnChip ATA Devices



► SATA#1 Configuration

SATA#1 are the SATA ports 1, 2, 3, 4 of the motherboard. This item allows you select the mode of the SATA ports. Setting values are: [Disabled], [Compatible], [Enhanced].

► Configure SATA#1 as

This item is used to set the operation mode of your SATA ports 1, 2, 3, 4. Setting values are: [IDE]; [RAID]; [AHCI].

[IDE] - This configures the SATA ports to support IDE mode.

[RAID] - When you enable RAID, it means all your SATA drives must also support AHCI.

[AHCI] - The Advanced Host Controller Interface (AHCI) specification describes the register

level interface for a Host Controller for Serial ATA. The specification includes a description of the hardware/software interface between system software and the host controller hardware. AHCI provides more advanced features including SATA features, but some SATA drives may not support AHCI, unless they are labeled with AHCI support in its specification.

If your motherboard supporting AHCI, and you have a SATA device, which also supports AHCI, then you can select IDE option to have fair performance (only PATA, SATA level), or you can select AHCI to get its best performance.

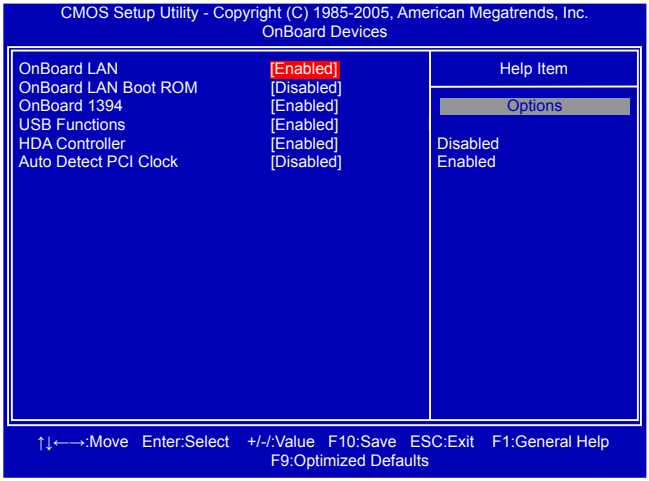
► **SATA#2 Configuration**

SATA#2 are the SATA ports 5,6 of the motherboard. This item allows you select the mode of the SATA ports. Setting values are: [Disabled], [Enhanced].

► **JMicron 36x ATA Controller**

This item is used to select the operating mode for JMicron 36x ATA controller. Setting values are: [Disabled], [IDE Mode] and [AHCI + IDE Mode]. This item is in charge of the ESATA port on the back panel.

OnBoard Devices



► **OnBoard LAN**

This item is used to enable or disable the onboard LAN controller.

► **OnBoard LAN Boot ROM**

This item is used to enable or disable the onboard LAN boot optional ROM. A LAN boot ROM lets you set up a diskless workstation on the network. By installing a boot ROM in the network board, you can enable a client PC system on the network to be booted remotely.

► **OnBoard 1394**

This item is used to enable or disable the onboard 1394 devices.

► **USB Functions**

This item is used to enable or disable USB function.

► **HDA Controller**

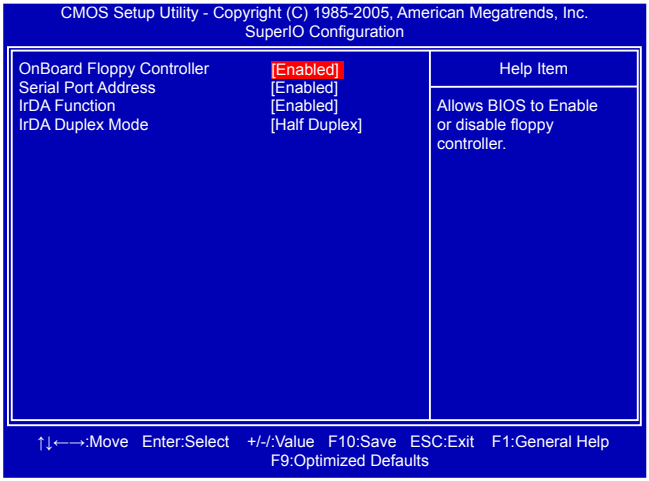
This item is used to enable or disable the HD Audio Controller.

► **Auto Detect PCI Clock**

This option is used to auto detect PCI slots. When enabled, the system will turn off clock of the

empty PCI slot to reduce EMI (Electromagnetic Interference).

SuperIO Configuration



► **OnBoard Floppy Controller**

This item is used to enable/disable Floppy Controller.

► **Serial Port Address**

This item is used to assign the I/O address and interrupt request (IRQ) for the onboard serial port .

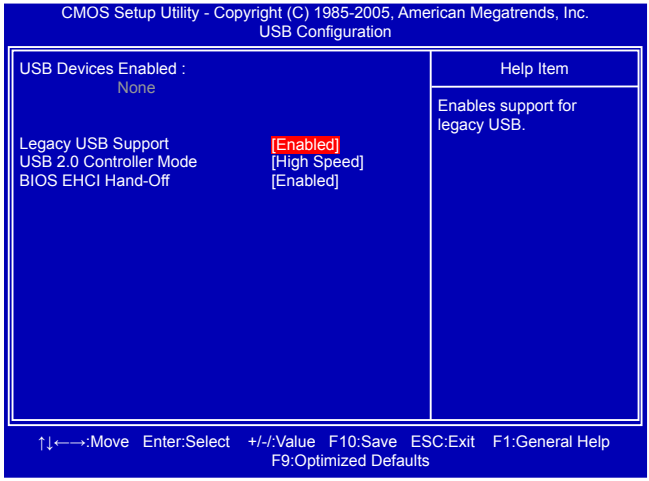
► **IrDA Function**

This item is used to enable/disable onboard infrared chip function.

► **IrDA Duplex Mode**

This item enables you to determine the transfer mode of the onboard infrared chip. Setting values are: [Full Duplex], [Half Duplex].

USB Configuration



► **Legacy USB Support**

This item is used to enable the support for USB devices on legacy OS. If you have a USB keyboard or mouse, set to enabled.

► **USB 2.0 Controller Mode**

This item is used to set the transmission speed of USB 2.0. Setting values are :
[High Speed] in 480Mbps; [Full Speed] in 12Mbps.

► **BIOS EHCI Hand-Off**

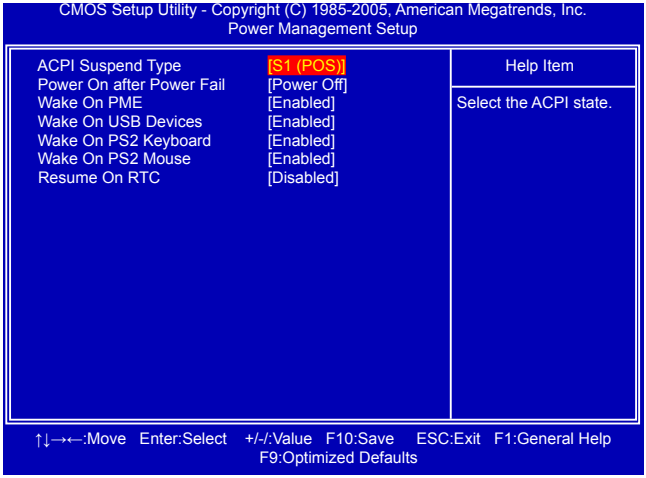
Windows XP supports a number of features in the Enhanced Host Controller Interface (EHCI) specification, but there are a few features that are not implemented. Microsoft said preliminary support for EHCI BIOS handoff will be available in Windows XP SP2.
This item allows you to enable support for OS without EHCI hand-off feature.
This is a workaround for OS without EHCI hand-Off support .
The EHCI ownership change should claim by EHCI driver.

If USB devices are connected to the computer, the following item will appear :

► **USB Mass Storage Device**

After pressing <Enter>, you can set the reset delay for the USB mass storage device. There are many different emulation types of this USB device, such as [Auto], [Floppy], [Forced FDD], [Hard Disk] and [CDROM] can be selected. Select [Auto], USB devices less than 530MB will be emulated as Floppy and remaining as hard drive.[Forced FDD] option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive).

Power Management Setup



ACPI (Advanced Configuration and Power Interface) is an open industry standard interfaces enabling OS-directed configuration, power management, and thermal management of mobile, desktop, and server platforms. It defines five sleeping states, they are :

S1 - The S1 sleeping state is a low wake latency sleeping state. In this state, no system context is lost (CPU or chip set) and hardware maintains all system context. (also called **Power On Suspend**)

S2 - The S2 sleeping state is a low wake latency sleeping state. This state is similar to the S1 sleeping state except that the CPU and system cache context is lost (the OS is responsible for maintaining the caches and CPU context). Control starts from the processor's reset vector after the wake event.

S3 - The S3 sleeping state is a low wake latency sleeping state where all system context is lost except system memory. CPU, cache, and chip set context are lost in this state. Hardware maintains memory context and restores some CPU and L2 configuration context. Control starts from the processor's reset vector after the wake event. (also called **Suspend to RAM**)

S4 - The S4 sleeping state is the lowest power, longest wake latency sleeping state supported by ACPI. In order to reduce power to a minimum, it is assumed that the hardware platform has powered off all devices. Platform context is maintained. (also called **Suspend to Disk**)

S5 - The S5 state is similar to the S4 state except that the OS does not save any context. The system is in the "soft" off state and requires a complete boot when it wakes. Software uses a different state value to distinguish between the S5 state and the S4 state to allow for initial boot operations within the BIOS to distinguish whether or not the boot is going to wake from a saved memory image.

► ACPI Suspend Type

This item is used to set the energy saving mode of the ACPI function. When you select "S1 (POS)" mode, the power is always on and computer can be resumed at any time. When you select "S3 (STR)" mode, the power will be down after a period of time. The status of the

computer before it entering STR will be saved in memory, and the computer can quickly return to previous state when the STR function wakes.

► **Power On after Power Fail**

This item is used to set which state the PC will take with when it resumes after an AC power loss.

► **Wake On PME**

This item is used to enable/disable the PCI / PCIE devices to generate a wake up.

► **Wake On USB Devices**

This item is used to enable/disable the USB keyboard and mouse to generate a wake up.

► **Wake On PS2 Keyboard**

This item is used to enable/disable the PS2 keyboard to generate a wake up.

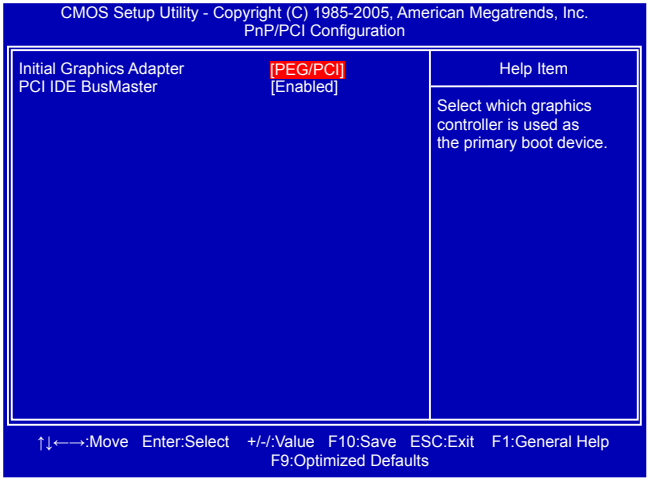
► **Wake On PS2 Mouse**

This item is used to enable/disable the PS2 mouse to generate a wake up.

► **Resume On RTC**

This item is used to enable/disable RTC alarm event to generate a wake up.RTC is system real time clock.

PnP/PCI Configuration



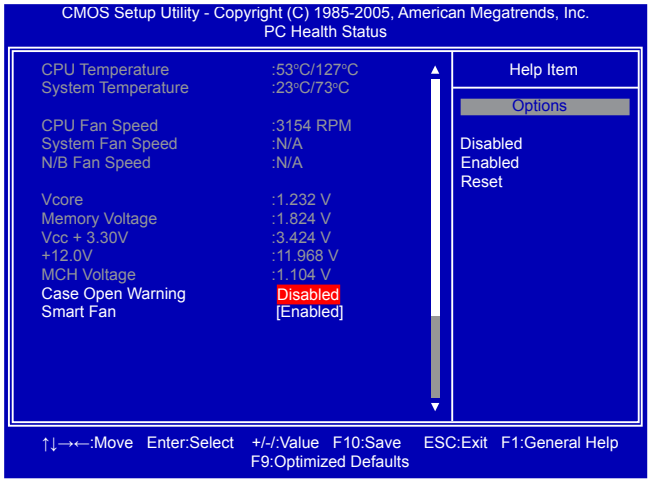
► **Initial Graphics Adapter**

This item is used to select which graphics controller is used as the primary boot device.

► **PCI IDE BusMaster**

This item is used to enable/disable PCI IDE busmaster function. Select [Enabled], BIOS uses PCI busmastering to read/write the IDE drives.

PC Health Status



► **CPU/System Temperature**

The CPU/System temperature are automatically detected and displayed by the system.

► **CPU Fan/System Fan/NB Fan Speed**

The CPU fan/System fan/NB fan speed are automatically detected and displayed by the system.

► **VCore/Memory Voltage/Vcc + 3.30V/+12.0V/MCH Voltage**

The current voltages are automatically detected and displayed by the system.

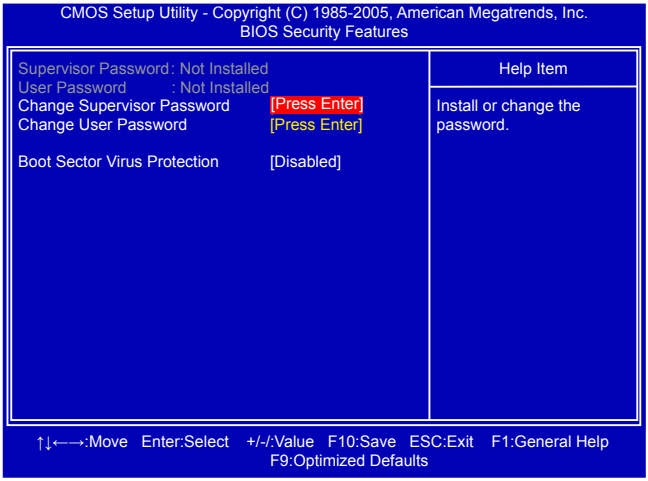
► **Case Open Warning**

This item is used to enable or disable case open warning function.

► **Smart Fan**

This option is used to enable or disable smart fan function.

BIOS Security Features



► **Change Supervisor Password**

This item is used to install or change supervisor password. After you input Supervisor password, it then will ask you to input user password optionally.

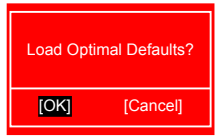
► **Change User Password**

This item is used to install or change user password.

► **Boot Sector Virus Protection**

This item is used to enable/disable boot sector virus protection.

Load Optimal Defaults

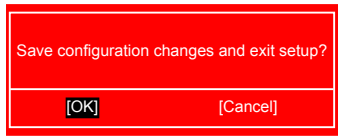


Optimal defaults are the best settings of this motherboard. Always load the Optimal defaults after updating the BIOS or after clearing the CMOS values.

Select this option and press Enter, it will pop out a dialogue box to let you load the defaults. Select <OK> and then press <Enter> to load the defaults. Select <Cancel> and press <Enter>, it will not load.

By this default, BIOS have set the optimal performance parameters of system to improve the performances of system components. But if the optimal performance parameters to be set cannot be supported by your hardware devices (for example, too many expansion cards were installed), the system might fail to work.

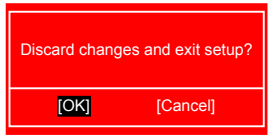
Save Changes and Exit



When you select this option and press <Enter>, a message will be displayed in the center of the screen:

Select [OK] to save your changes to CMOS and exit the program, select [Cancel] or <ESC> to return to the main menu.

Discard Changes and Exit



If you select this option and press <Enter>, the following message will be displayed in the center of the screen:

Select [OK] to exit CMOS without saving your modifications, select [Cancel] or <ESC> to return to the main menu.

The utility CD that came with the motherboard contains useful software and several utility drivers that enhance the motherboard features.

This chapter includes the following information:

- Utility CD content
- Install driver and utility
- FOX ONE
- FOX LiveUpdate
- FOX LOGO
- FOX DMI

Note : Because each module is independent, so the section number will be reorganized and unique to each module, please understand.

Utility CD content

This motherboard comes with one Utility CD. You can simply put it into your CD/DVD-ROM drive, and the main menu will be displayed on your PC screen to guide you how to install.

1. Install Driver

Use these options to install all the drivers for your system. You should install the drivers in order, and you need to restart your computer after all the drivers have been installed.

A. Intel Chipset Driver
B. Realtek HDA Audio Driver
C. Realtek 811X LAN Driver
D. Intel RAID Driver
E. JMicron RAID Driver

2. Software Utilities

Use these options to install additional software programs. FOX ONE is a very powerful user interface program which allows you to change your system setting without going to BIOS. Some auto features help user to improve (or overclock) your system without being a computer literate.

A. FOX ONE
B. FOX LiveUpdate
C. FOX LOGO
D. FOX DMI
E. Microsoft DirectX 9.0
F. Adobe Acrobat Reader
G. Norton Internet Security

Install driver and utility

1. Install Driver

You must click "Intel Chipset Driver" to install it first. After that, you can click "One Click Setup" to install all the other drivers left, or you can click on each individual driver to install it manually.

Manual Installation Step by Step

Automatic Installation by One Click

Exit the program

Drop to System Tray

Click to visit Foxconn's website

Select to Install Utilities

Select to Install Drivers

Browse CD

2. Install Utility

You can select the specific utility to install.

FOX ONE

FOX ONE is a powerful utility for easily modifying system settings. It also allows users to monitor various temperature values, voltage values, frequencies and fan speeds at any time.

With FOX ONE, you can :

- Modify system performance settings, such as the CPU and memory bus speeds, CPU voltages, fan speeds, and other system performance options.
- Monitor hardware temperatures, voltages, frequencies and fan speeds.

CAUTION

Depending on hardware support, voltage monitoring and Fox Intelligent Stepping features are optional and only supported in some models. If the option is selectable, it also means the feature is supported.

- Voltage Monitoring is supported only in FOX ONE Premium & Deluxe products.
- Fox Intelligent Stepping is supported only in FOX ONE Deluxe products.

Supporting Operating Systems :

- Windows 2000
- Windows 2003 (32-bit and 64-bit)
- Windows XP (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

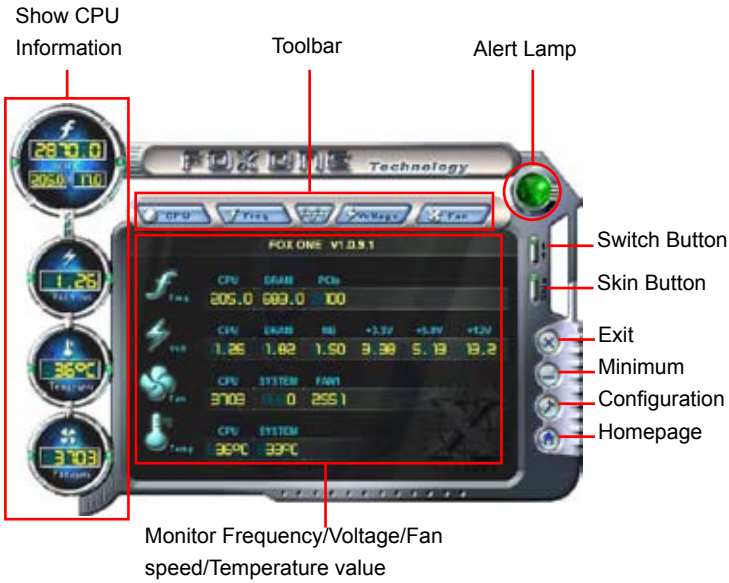
Using FOX ONE :

The very first time you run FOX ONE, F.I.S. Calibration function (FOX Intelligent Stepping) will require you to calibrate the CPU's loading. Click "OK" to proceed and start the Utility. F.I.S. is a feature of FOX ONE, which can automatically adjust your CPU clock based on your current system loading.

CAUTION

Before you running the FOX ONE program, the system parameters (such as CPU clock, voltage...etc.) are controlled by BIOS settings. After you run FOX ONE, it will take over, and the controlling right will be transferred to FOX ONE. Later, if you exit FOX ONE, then BIOS control will be back again.

1. Main Page



Toolbar

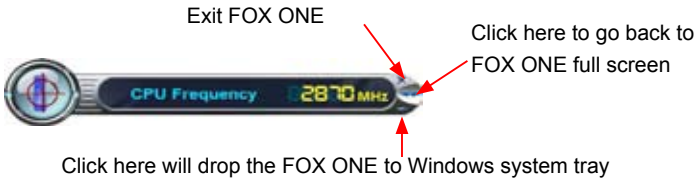
Use the toolbar to navigate to other pages.

Alert Lamp

When the system is in healthy state, the color of alert lamp is green. When the system is in abnormal state, the alert lamp color is red.

Switch Button

Click this button, it will simplify the whole FOX ONE control panel to a smaller information bar (i.e. Simple Mode) as depicted below, you can drag this bar to any place on your screen to help you monitoring system status.



Skin Button

There are more choices of FOX ONE screen panels. Click this button, you can select your favorite skin (FOX ONE Panel).

Exit

Click this button to exit the program.

Minimum

Click this button to drop the FOX ONE to Windows system tray located at the lower right corner of your screen.

Homepage

Click this button to visit Foxconn motherboard website :
http://www.foxconnchannel.com

Configuration

This menu allows you to configure :

1). Monitor interval (ms) :

This is to define the interval of different messages of system settings which are to be displayed on Simple Mode screen. Minimum value is 1 second.

2). Simple Mode :

To select which message of system settings are to be displayed in the Simple Mode. Messages such as CPU frequency, voltage...etc., they can be displayed one by one in Simple Mode.

3). F.I.S. Calibration (FOX Intelligent Stepping, Optional)

This function will re-calibrate the CPU's loading, and it may take several minutes to proceed. The FOX ONE calibration process will apply different loadings to your CPU, record PWM IC voltage together with the CPU clock running at these loadings, so it can define and estimate within a particular range of system loading, what the CPU clock should be.

Step 1 : Click Calibration icon, a message pops out to ask for continue. Select Yes.

Step 2 : After data is collected, it will ask you to restart your computer now.

Later on, when the FOX ONE program is activated, and F.I.S. feature (in CPU Page) is also enabled, FOX ONE will automatically adjust your CPU clock according to your system loadings. (Loadings are like Power Gaming, Data Mining...etc.)

2. CPU Page - CPU Control

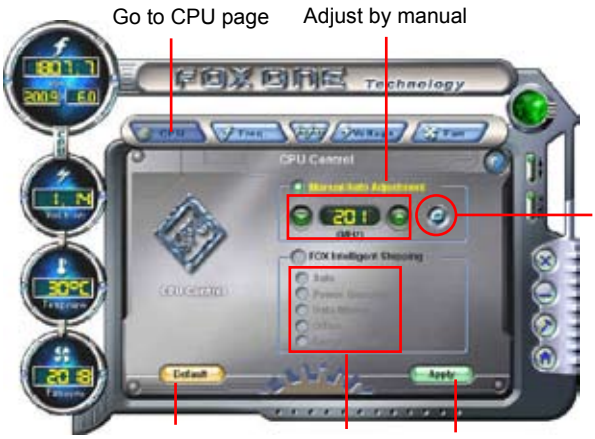
This page lets you select (or overclock) CPU clock to meet the current performance level of the system. The fastest and suitable CPU clock running for current system can be calculated by FOX ONE automatically or manually input by yourselves.

Manual :

You can press the up/down button to adjust your CPU clock.

Auto :

Click this button to let FOX ONE check the highest CPU clock you can use. System will raise the CPU clock step by step until it hangs, you can then push the RESET button on your PC panel to restart the system. When system restarts, run FOX ONE again, it will display a recommended highest CPU clock for you, click <Yes> to apply it.



Press Auto button to let FOX ONE check the highest CPU clock you can use.

A message informs you to push RESET button later if the system hangs finally.
Click Yes to continue.

You can see the system is raising CPU clock until the system hangs.
Push RESET button on the front panel of your system to restart the computer.

Run FOX ONE program again, it will inform you the previous test found that 255MHz is the recommended CPU clock for your system.
Click Yes to apply it to your system.

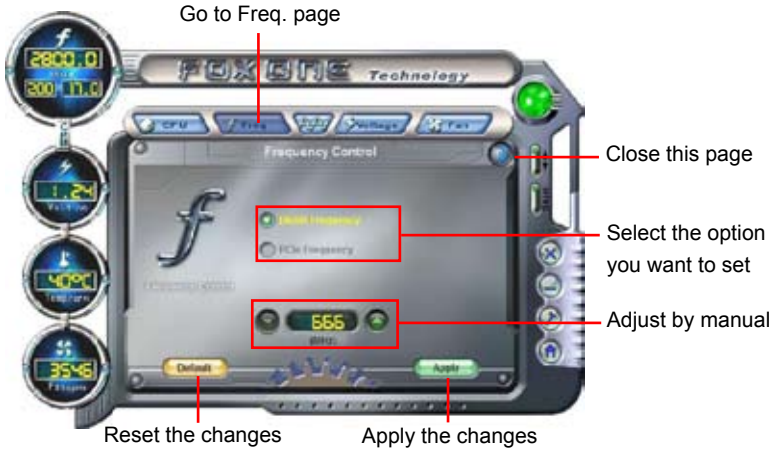
Now, your system is running at a CPU clock of 255MHz.

FOX Intelligent Stepping (F.I.S., Optional)

Select FOX Intelligent Stepping will allow your system to automatically adjust your CPU clock rate based on different system loadings. For example, if you select Power Gaming, CPU clock will be driven to run at its maximum speed. While in Energy Saving, CPU will lower down its speed to a minimum. The four benchmarks - Power Gaming, Data Mining, Office and Energy Saving, the references of their system loading were calculated and defined in the FIS Calibration option of Configuration menu. Select Auto, CPU will automatically adjust its clock according to current system loading.

3. Frequency Page - Frequency Control

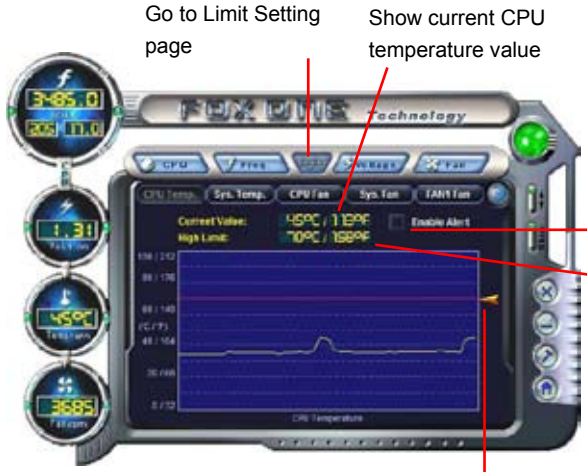
This page lets you set memory and PCI Express frequencies by manual.



4. Limit Setting

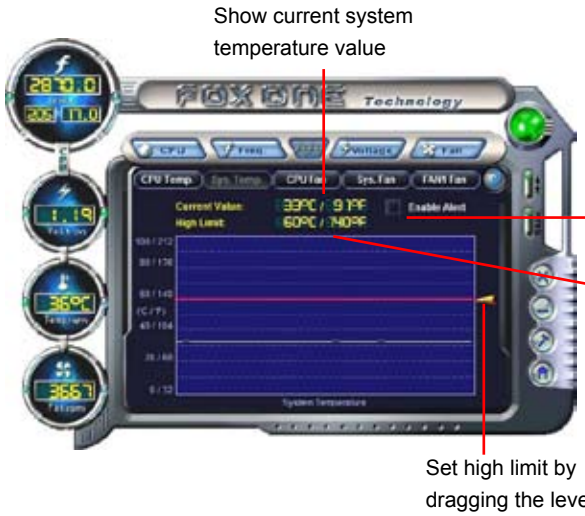
4.1 Limit Setting - CPU Temperature

This page lets you to set CPU high limit temperature and enable the alert function.



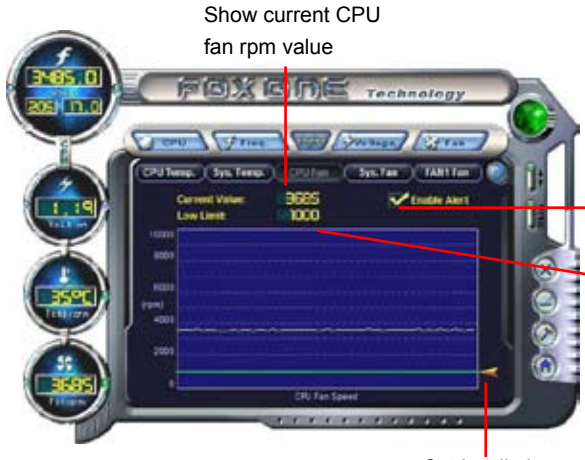
4.2 Limit Setting - System Temperature

This page lets you to set system high limit temperature and enable the alert function.



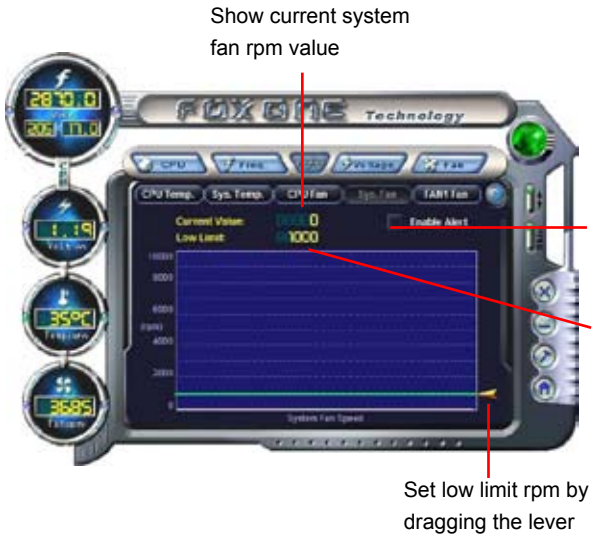
4.3 Limit Setting - CPU Fan

This page lets you to set CPU fan low limit rpm and enable the alert function.



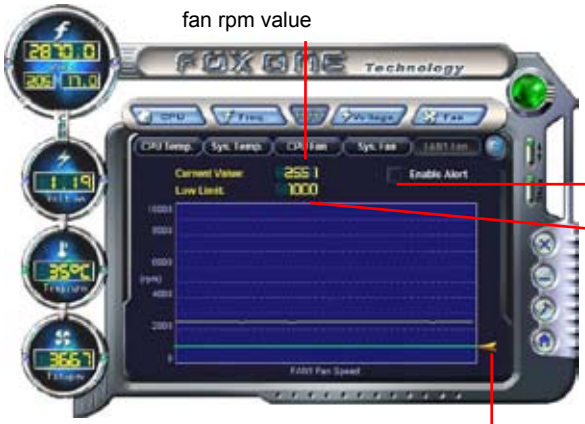
4.4 Limit Setting - System Fan

This page lets you to set system fan low limit rpm and enable the alert function.



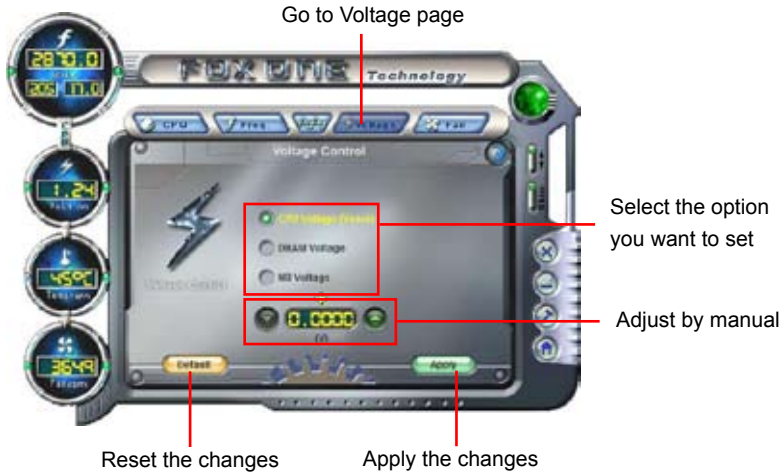
4.5 Limit Setting - FAN1 Fan

This page lets you to set FAN1 fan low limit rpm and enable the alert function.



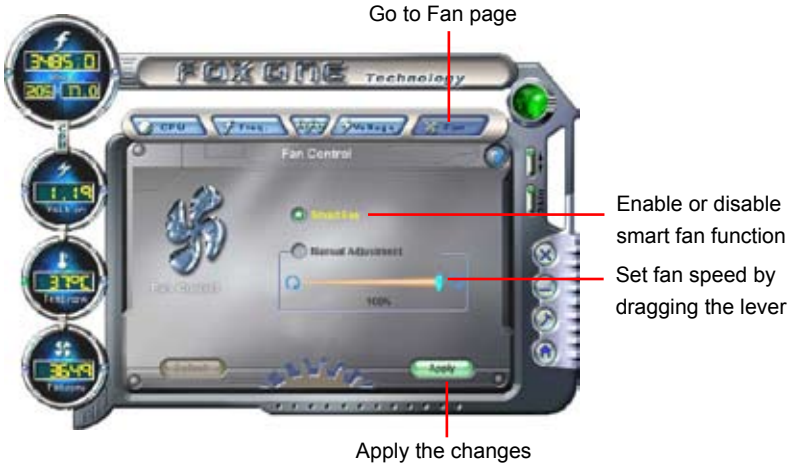
5. Voltage Page - Voltage Control (Optional)

This page lets you set CPU voltage, memory voltage and North Bridge voltage manually. CPU voltage can be stepped up/down by a unit of 12.5mV, while memory is 0.05V/step, and North Bridge is 0.04V/step.



6. Fan Page - Fan Control

This page lets you enable Smart Fan function or set the fan speed by manual.
When Smart Fan is selected, you must use a 4-pin CPU cooler in your system.



FOX LiveUpdate

FOX LiveUpdate is a useful utility to backup and update your system BIOS, drivers and utilities by local or online.

Supporting Operating Systems :

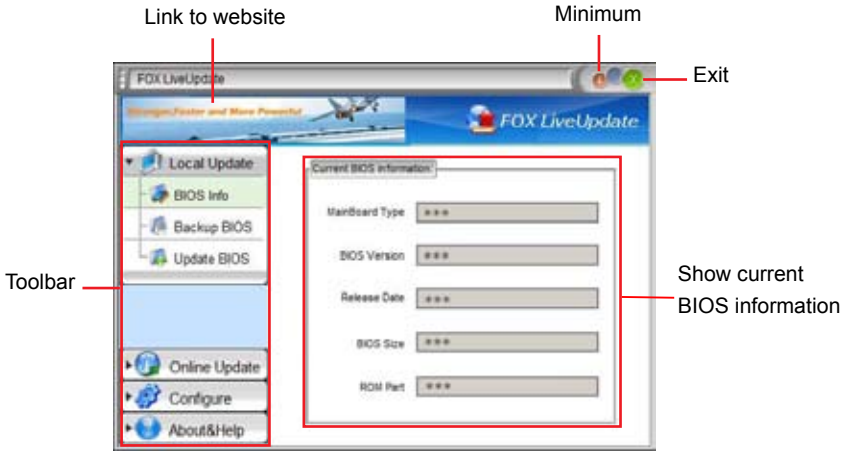
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

Using FOX LiveUpdate :

1. Local Update

1-1 Local Update - BIOS Information

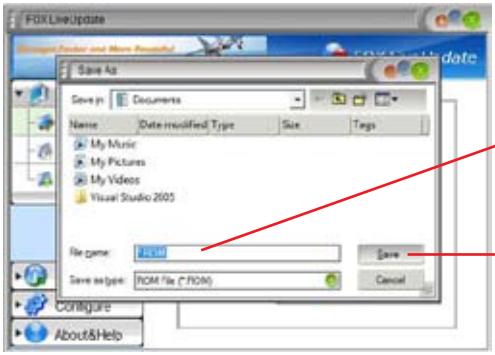
This page lets you know your system BIOS information.



*** : please refer to the physical motherboard for detail.

1-2 Local Update - Backup

This page can backup your system BIOS. You can click “Backup”, and key in a file name, then click “Save” to finish the backup operation. The extension of this backup file is ".BIN" for Award BIOS and ".ROM" for AMI BIOS. Default directory is "C:\Desktop\My Documents" in Windows XP and "Documents" in Vista. Make sure you can remember the file name together with the directory which it is stored, prevented that you may need them to recover your BIOS later.



1-3 Local Update - Update

This page helps you to update your BIOS from a local file. After click “Update”, An alert message will be displayed to ensure if you really want to continue, click “Yes” to confirm. A setup wizard will guide you to load a local BIOS file to finish the operation. You must remember from which directory to load your new BIOS file (with an extension of ".BIN" for Award BIOS, ".ROM" for AMI BIOS) before the setup wizard starts.

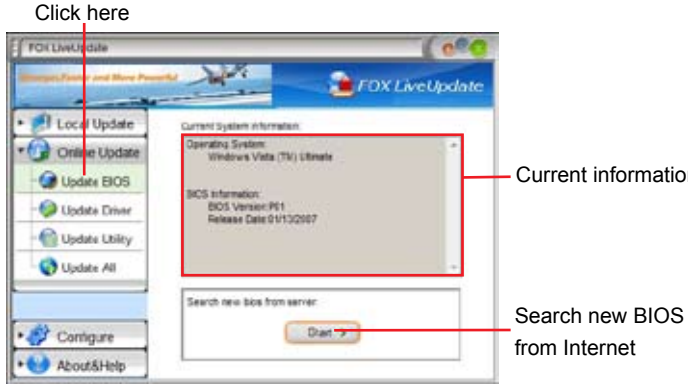
CAUTION

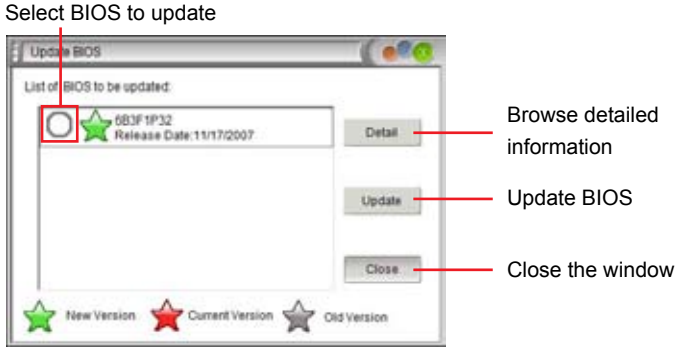
FOX LiveUpdate can automatically backup old BIOS before update. This feature can be enabled in the "Configure-System" setup. Please refer to "Configure-System" section for more detail. The default backup directory is C:\LiveUpdate_Temp, but the backup file name will be automatically generated. It is hard to find it out from a backup directory, and we recommend you using Explorer to check date/time message of this backup file to find it out and write its name down to remember it.

2. Online Update

2-1 Online Update - Update BIOS

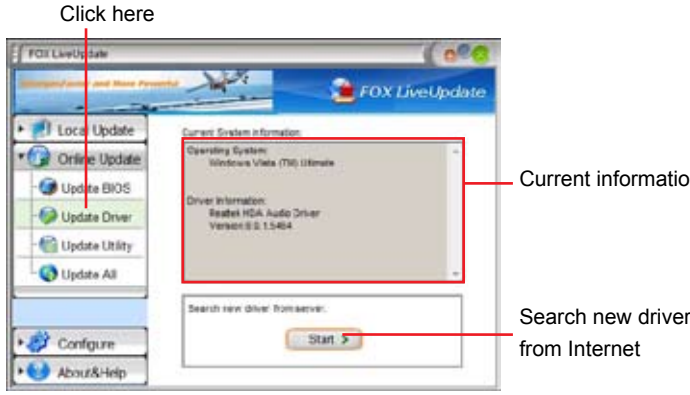
This page lets you update your system BIOS from Internet. Click “start”, it will search the new BIOS from Internet. Then follow the wizard to finish the update operation.

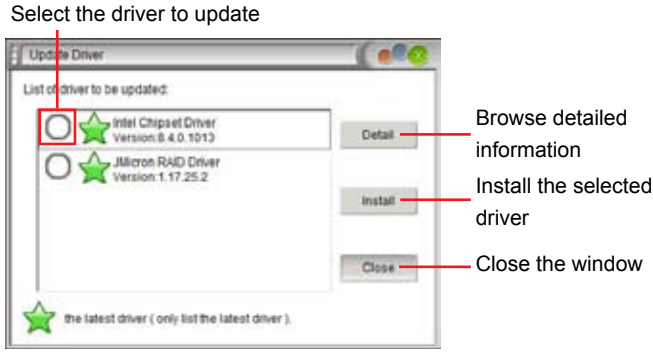




2-2 Online Update - Update Driver

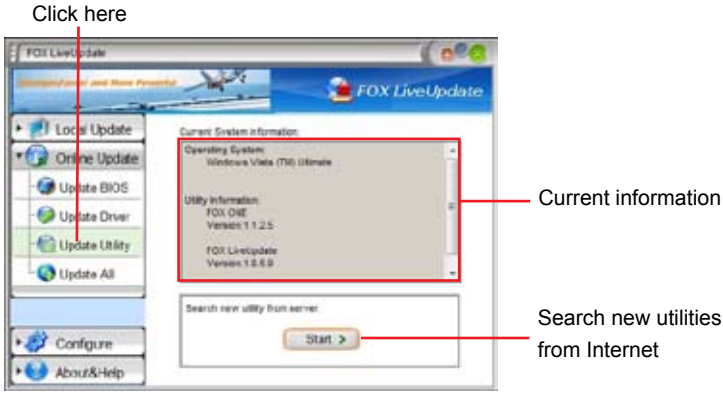
This page lets you update your system drivers from Internet. Click “start”, it will search the new drivers from Internet. Then follow the wizard to finish the update operation.

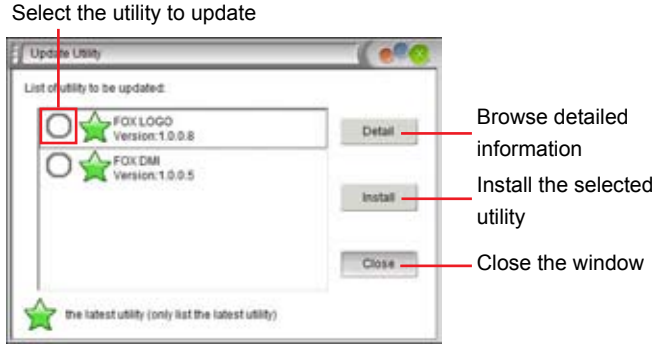




2-3 Online Update - Update Utility

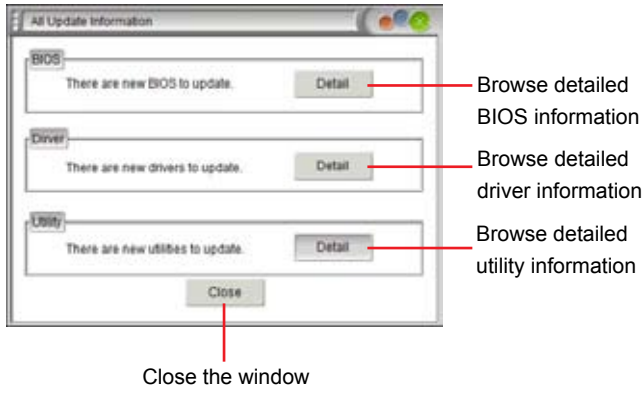
This page lets you update utilities from Internet. Click “start”, it will search the new utilities from Internet. Then follow the wizard to finish the update operation.





2-4 Online Update - Update All

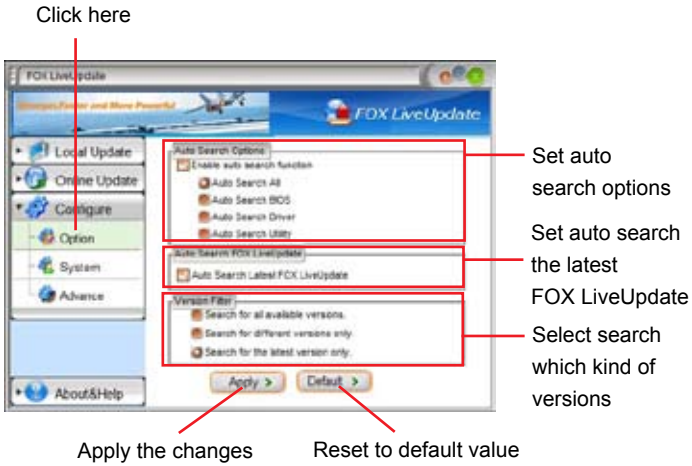
This page lets you update your system drivers from Internet. Click “start”, it will search all new BIOS/drivers/utilities from Internet. Then follow the wizard to finish the update operation.



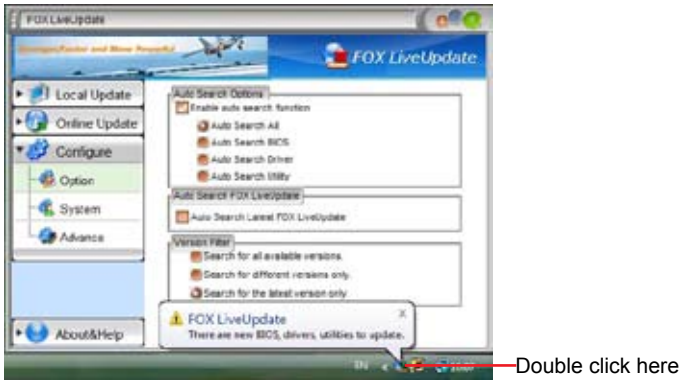
3. Configure

3-1 Configure - option

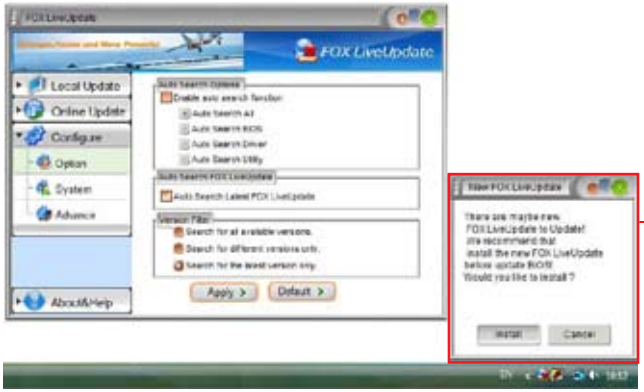
This page lets you set auto search options. After you enable the auto search function, FOX LiveUpdate will start its searching from Internet and if any qualified item found, it will pop out a message on the task bar to inform you to do the next step.



Double click on the icon as show below, you can see the detailed information.

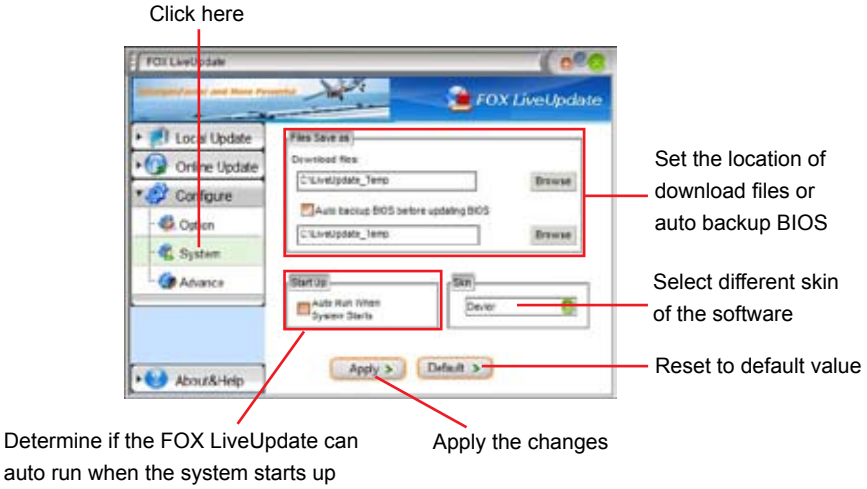


When you enable "Auto Search FOX LiveUpdate", if your FOX LiveUpdate version is older, it will auto search from internet and prompt you to install the new version.



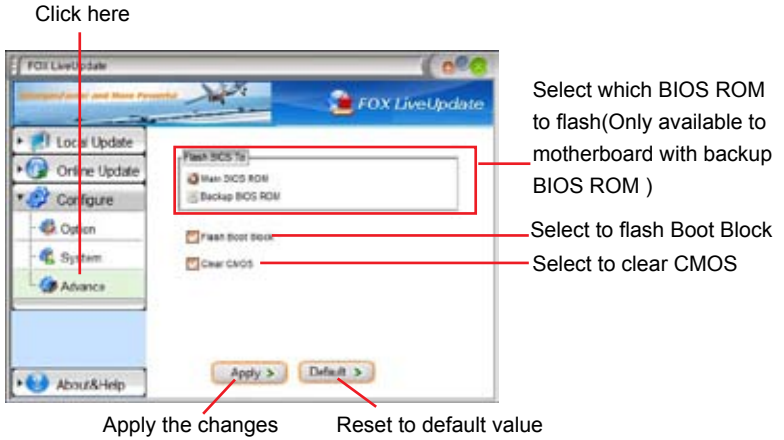
3-2 Configure - System

This page lets you set the backup BIOS location and change different skin of the FOX LiveUpdate utility.



3-3 Configure - Advance

This page lets you select to flash BIOS / Boot Block and clear CMOS. If you choose Flash Boot Block, it means BIOS is not protective, and you must make sure the flash process is continuous and without any interruption.

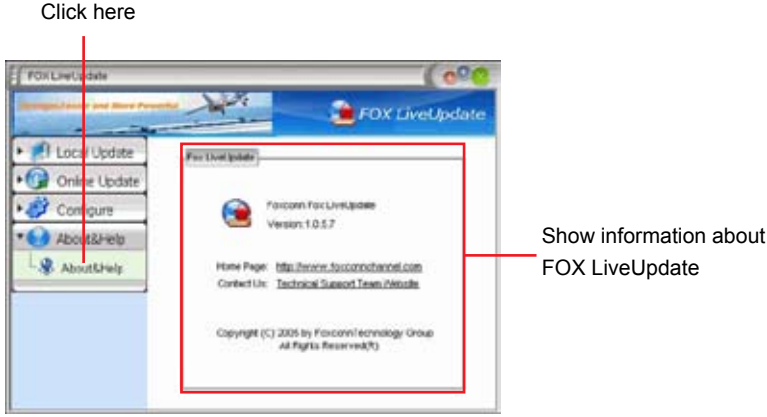


CAUTION

We recommend that you had better keep the default setting unchanged to avoid any damage.

4. About & Help

This page shows some information about FOX LiveUpdate.



FOX LOGO

FOX LOGO is a simple and useful utility to backup, change and delete the boot time Logo. The boot Logo is the image that appears on screen during POST (Power-On Self-Test).

You can prepare a JPG image (1024x768) file, then use FOX LOGO to open it and change the boot time Logo. Boot time Logo will be displayed if you enable the BIOS "Quiet Boot" setting in "Advanced BIOS Features" menu.

Supporting Operating Systems :

- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

Using FOX LOGO:

Main Page

WARNING!

When you change Logo or delete current Logo, the system will flash BIOS file automatically. During this time, please DO NOT shut down the application and the system, or the motherboard will be damaged seriously.

FOX DMI

FOX DMI is a full Desktop Management Interface viewer, and it provides three DMI data formats : Report, Data Fields and Memory Dump.
With DMI information, system maker can easily analyze and troubleshoot your motherboard if there is any problem occurred.

Supporting Operating Systems :

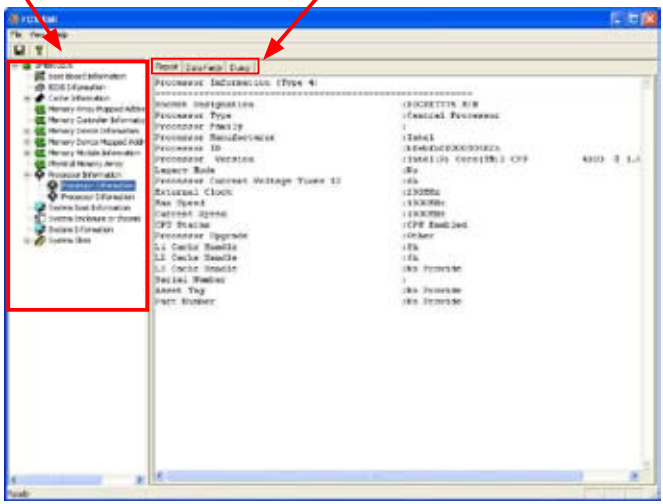
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

Using FOX DMI:

Please operate this utility as the comments shows.

Click here to select the type you want to view.

Click here to select the DMI Data format you need



This chapter will cover two topics :

- Installing a new Windows XP (Vista) in a brand new RAID system.
- Existing Windows XP (Vista) system with new RAID built as data storage.

It includes the following information :

- RAID Configuration Introduction
- Intel® Matrix Storage Manager
- Create a RAID Driver Diskette
- BIOS Configuration
- Create RAID in BIOS
- Install a New Windows XP
- Existing Windows XP with RAID built as data storage

The RAID BIOS Setup pictures shown in this chapter are for reference only, please refer to the practical screen.

P45A-S is supporting RAID, P45A is not.

Installing a new Windows XP (Vista) in a brand new RAID system.

1. Follow 5-1 to create a RAID driver diskette.
   (Windows Vista has in-box driver by its own and can skip this step).
2. Follow 5-2 to set BIOS setting SATA mode to RAID or AHCI.
3. Follow 5-3 to create RAID in BIOS.
4. Follow 5-4 to Install Windows Operating System.

What kinds of hardware and software you need here :
1. A floppy drive.
2. A CD-ROM drive.
3. Several SATA hard disks.
4. A RAID driver diskette.
5. A motherboard driver CD. (To create RAID driver diskette if it is not bundled.)
6. Windows XP or Vista Install CD.

Existing Windows XP (Vista) system with new RAID built as data storage.

Follow 5-5 to go through the processes to build a new RAID data storage in your existing Windows XP system, it includes :
1. Copy RAID driver setup program to your hard disk. (Vista can skip)
2. Follow 5-2 to set BIOS setting SATA mode to RAID or AHCI.
3. Follow 5-3 to create RAID in BIOS.
4. Run setup program to install Intel® Matrix Storage Manager driver into your current Windows XP system. (Vista can skip this step)
5. Format new RAID partitions.

What kinds of hardware and software you need here :
1. A CD-ROM drive.
2. Several SATA hard disks.
3. A motherboard driver CD.

RAID Configuration Introduction

RAID (Redundant Array of Independent Disks) is a method for computer data storage schemes that divide and/or replicate data among multiple hard drives. RAID can be designed to provide increased data reliability (fault tolerance) or increased I/O (input/output) performance, or both. The motherboard comes with the Intel ICH9R. The following RAID configurations are provided for users.

There are three major key concepts in RAID:
1. Mirroring : The copying of data to more than one disk;
2. Striping : The splitting of data across more than one disk;
3. Error correction : Where redundant data is stored to allow problems to be detected and possibly fixed (known as fault tolerance).

Different RAID levels use one or more of these techniques, depending on the system requirements. The main aims of using RAID are to improve reliability, important for protecting information that is critical to a business, for example a database of customer orders; or where speed is important, for example a system that delivers video on demand TV programs to many viewers.

The configuration affects reliability and performance in different ways. The problem with using more disks is that it is more likely that one will go wrong, but by using error checking the total system can be made more reliable by being able to survive and repair the failure. Basic mirroring can speed up reading data as a system can read different data from both the disks, but it may be slow for writing if it insists that both disks must confirm that the data is correctly written. Striping is often used for performance, where it allows sequences of data to be read off multiple disks at the same time. Error checking typically will slow the system down as data needs to be read from several places and compared. The design of RAID systems is therefore a compromise and understanding the requirements of a system is important. Modern disk arrays typically provide the facility to select the appropriate RAID configuration.

RAID is often used in high availability systems, where it is important that the system keeps running as much of the time as possible.

RAID 0 (Stripe)

RAID 0 reads and writes sectors of data interleaved among multiple drives. If any disk member fails, it affects the entire array. The disk array data capacity is equal to the number of drive members times the capacity of the smallest member. The striping block size can be set from 4KB to 128KB. RAID 0 does not support fault tolerance.

RAID 1 (Mirror)

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

RAID 5 (Parity)

RAID 5 provides data striping at the byte level and also stripes error correction information. This results in excellent performance and good fault tolerance. Level 5 is one of the most popular implementations of RAID.

RAID 10 (0+1)

RAID 10 is a combination of striping and mirroring. This configuration provides optimal speed and reliability, but you need four SATA hard disks.

Comparison Table :

Solution	Hard Disks No.	Capacity	Performance	Reliability	Application
RAID0	>=2	All	Highest	Dangerous	Look for speed
RAID1	2	50%	Read faster	Excellent	100% Data backup
RAID5	>=3	N-1	Read faster Write slower	Good	Limited budget
RAID10	>=4 (Even number)	Smallest *2	High	Excellent	Unlimited budget

Intel® Matrix Storage Manager

The Intel® Matrix Storage technology supports RAID 0 ,RAID 1, RAID 5, and RAID 10 (0+1) functions. It allows you to get high performance with fault tolerance, big capacity, or data safety provided by different RAID functions.

In this section, we will use four SATA hard disks as an example to guide you how to configure your RAID system. There are two 232.9GBs, one 298.1GB, and one 279.5GB. A creation of second volume will also be well described.

In each screen, there is also a message bar about each key's function, such as <Tab>, <Enter>, <Del>...etc. it is to help making your selection easier.

Two topics will be introduced :

1). Installing a new Windows XP in a brand new RAID system.

2). Existing Windows XP system with new RAID built as data storage.

Before installing the SATA hard disks, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the hardware.

Steps to Install Serial ATA Hard Disks :

1. Install SATA hard disks into the drive bays.
2. Connect one end of the SATA cable to motherboard's SATA connector, and the other end to SATA hard disk.
3. Connect SATA power cable to the power connector of SATA hard disk.

- Both AHCI and RAID modes need to install **Intel® Matrix Storage driver.**
- Set SATA mode in BIOS to AHCI, you can skip RAID BIOS creation steps, but the software driver installation of **Intel® Matrix Storage Manager** shall follow the same rule as described for RAID.

5-1 Create a RAID driver diskette

If you want to install a brand new Windows XP on a AHCI or RAID system, you need to configure the SATA Mode in BIOS to either AHCI or RAID first. You also need to create a RAID driver diskette for use in installing your Windows XP system.
Windows Vista has native RAID driver in itself, you can skip these steps.

1. Find a PC, put a diskette into its floppy drive A:, this diskette will be formatted later. Put the driver CD into DVD-ROM drive.

2. Depending on which platform your system is, normally, it is a 32-bit XP system. Use Windows explorer, and go to **CD:\Driver\Intel\G45_G43_P45\RAID\Floppy\32bit**, click on **RaidTool** icon to start the creation.

3. Click "GO" to start.

4. Select the desired destination FDD drive. It can be the default drive A: or any USB FDD. Click "OK" to continue.

5. Insert a diskette, click "OK" to continue.

6. You can input a volume label for this diskette, click on "Start" to format.

7. Click on "OK" to go through this warning message.

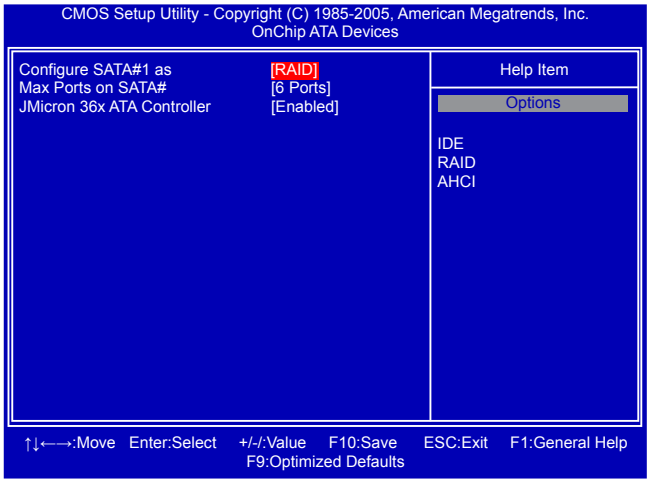
8. Format finished. Click "OK" to continue copying of RAID driver into this diskette.

9. Check if the diskette contains the driver files.
   Later, when in the process of installing Windows XP in your RAID system, it will ask you to use this floppy diskette to provide driver for additional specific devices, for example, a RAID device.

10. Install Serial ATA Hard Disks :
    10-1. Shut down your computer.
    10-2. Install SATA hard disks into the drive bays, connect all power and SATA cables.

5-2 BIOS Configuration

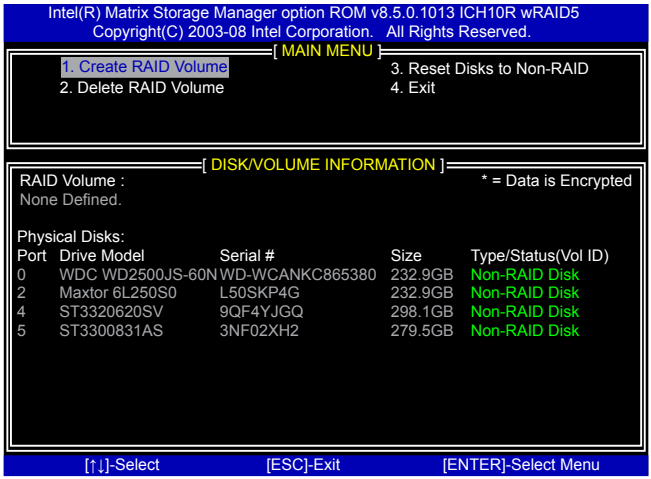
1. Enter the BIOS setup by pressing <DEL> key during the POST(Power On Self Test).
2. Select the “Integrated Peripherals” from the “Main menu”, then select the “OnChip ATA Device” item and press <Enter> to go to the configuration items.
3. Select and Set the “Configure SATA#1 as” option to [RAID].
4. Press <F10> to save the setting then PC will reboot itself.



5-3 Create RAID in BIOS

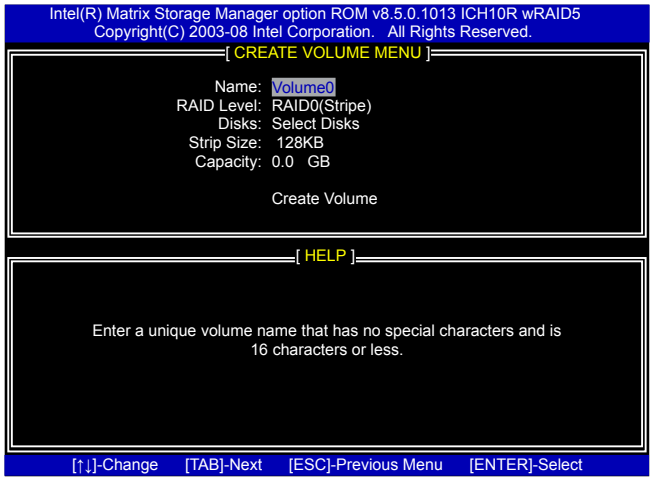
Enter RAID BIOS Setup

When BIOS is restarted, it will display a message asking you to press <Ctrl>+<I> keys simultaneously to enter the main menu of Intel® Matrix Storage Manager Option ROM Utility. Press the <Ctrl>+<I> to enter Configuration Utility.



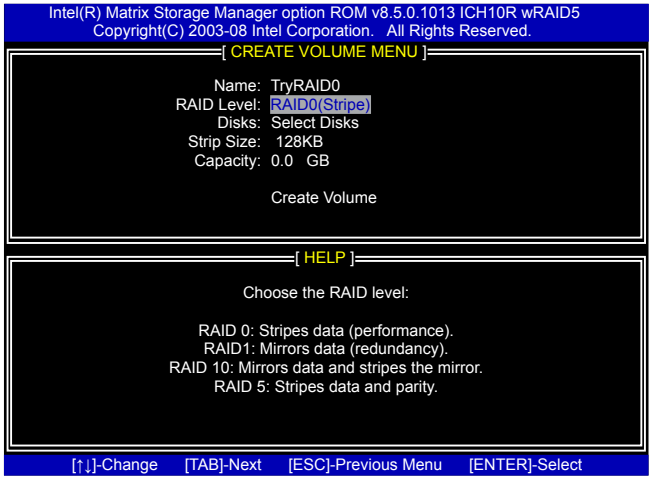
Create RAID Volume
Create RAID 0 (1st Volume)

1. Select "**1. Create RAID Volume**" from the menu and press <Enter>.
The menu appears :

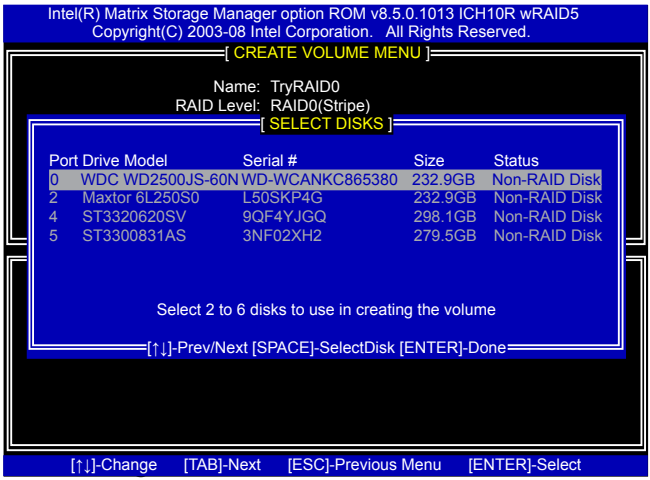


2. In "**Name**" item, you can input a device name for the RAID0 system and press <Enter> to apply it. Here, we name it as TryRAID0 to replace the default Volume0.

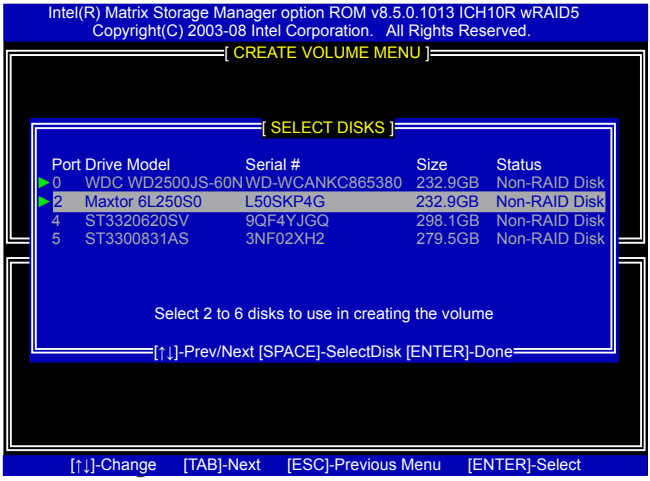
3. In "**RAID Level**" item, you can use Up or Down arrow key to make a selection from one of RAID0, 1, 5, 10 items. Select RAID0 (Stripe) and press <Enter>.



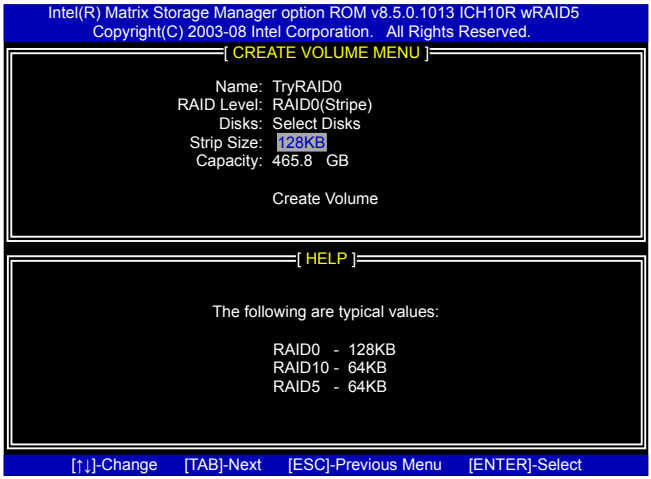
4. It then goes to “**Disks**” item. Press <Enter> to choose the hard disks for this RAID0 system.



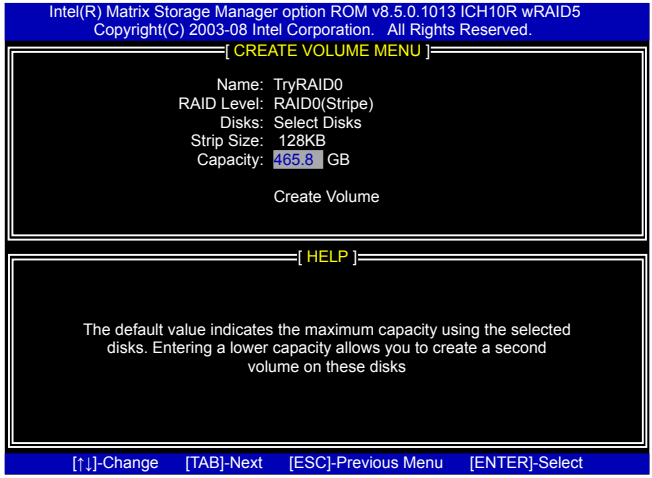
5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as RAID0, then press <Space> key to select them. A triangle sign will appear to indicate the drive selected. Here, we select two 232.9GB hard disks as an example. Press <Enter> key to finish the selection.



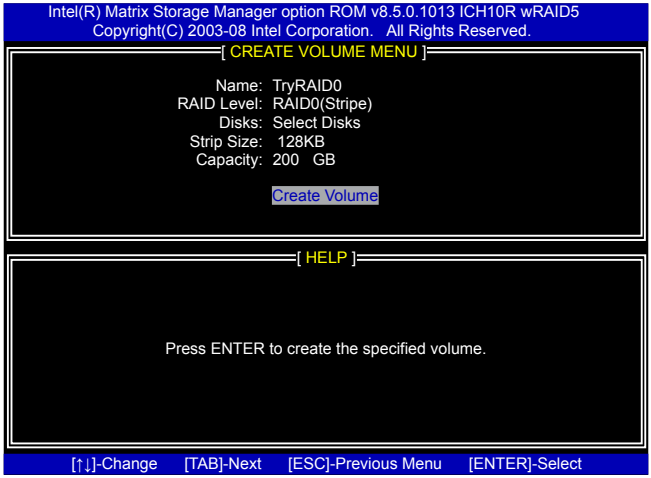
6. It is now entering “**Strip Size**” menu. Use Up or Down arrow key to select the desired strip size. The available values range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :
   16K - Best for sequential transfer.
   64K - Good general purpose strip size.
   128K - Best performance for most desktops and workstations .
   The default value is 128K for RAID0. Press <Enter>.



7. In “**Capacity**” line, it displays there are maximum 232.9GB * 2 = 465.8GB available. As we want to introduce how to create two disk volumes (like logical devices C: and D:) in a RAID0 system, so we only key in 200GB here to build the first volume. Later, we will also describe how the second volume is generated. Input 200GB, and press <Enter>.

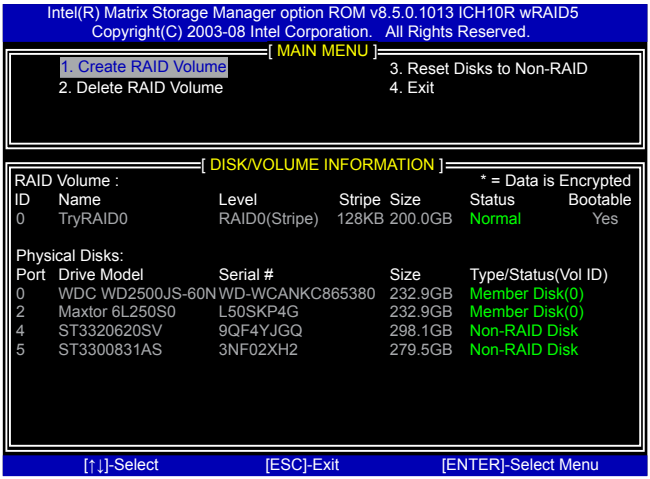


8. In “**Create Volume**” item, press <Enter>.



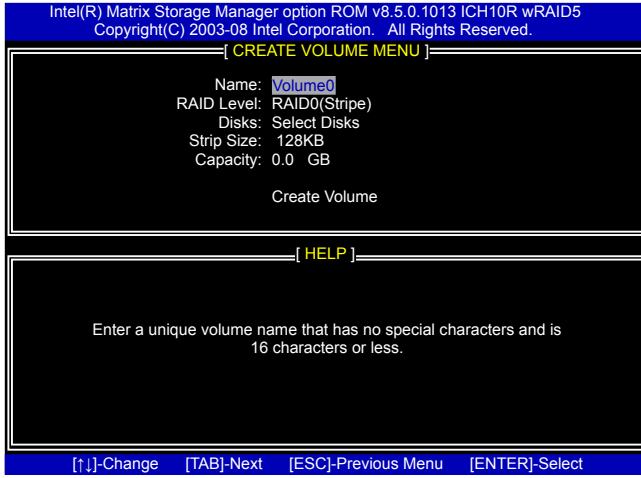
A warning message will appear :

9. Press <Y> to create the volume and return to the main menu, a 200GB RAID0 system is normally configured.



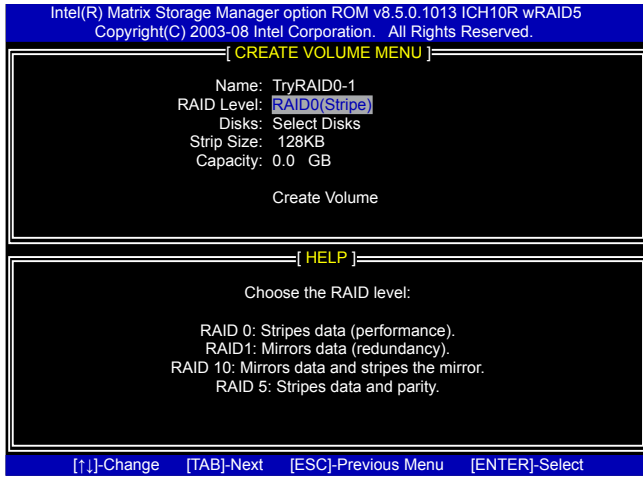
Create RAID0 (2nd Volume)

1. Select "**1. Create RAID Volume**" from the menu and press <Enter>.
   The menu appears :

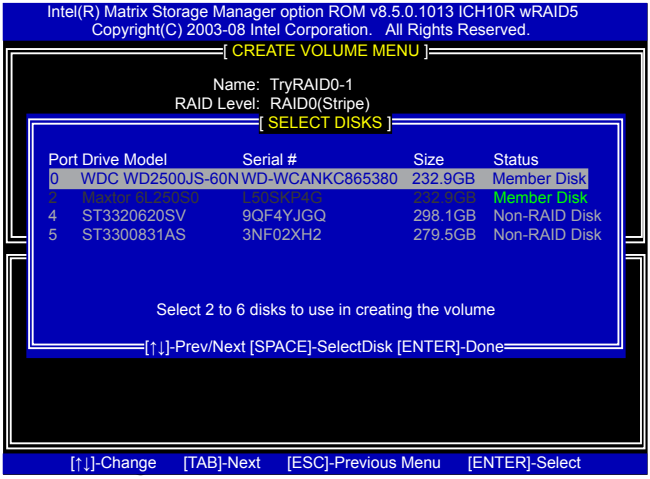


2. In "**Name**" item, we name it as TryRAID0-1 for second volume.
3. In "**RAID Level**" item, you can use Up or Down arrow key to make a selection, only RAID0, 1 can be selected. Select RAID0 (Stripe) and press <Enter>.

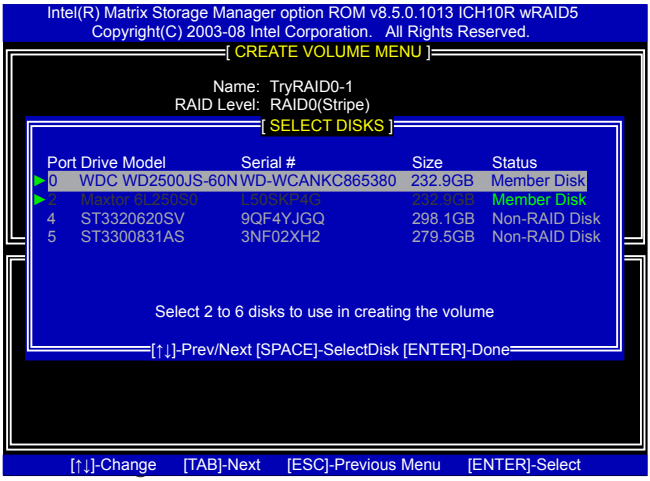
(Note : You also can try to select RAID1 for the second volume as an experiment here)



4. It then goes to “**Disks**” item. Press <Enter> to choose the hard disks for this RAID0 second volume system.



5. From the hard disk list, select the previously configured RAID0 hard disks, and press <Space> key to select them. Two triangle signs will appear to indicate the selections. Press <Enter> to continue.



6. It goes to “**Strip Size**” menu directly. Capacity automatically displays 265.8GB, and at this time, you can not input any value in capacity as there is no additional volume available.

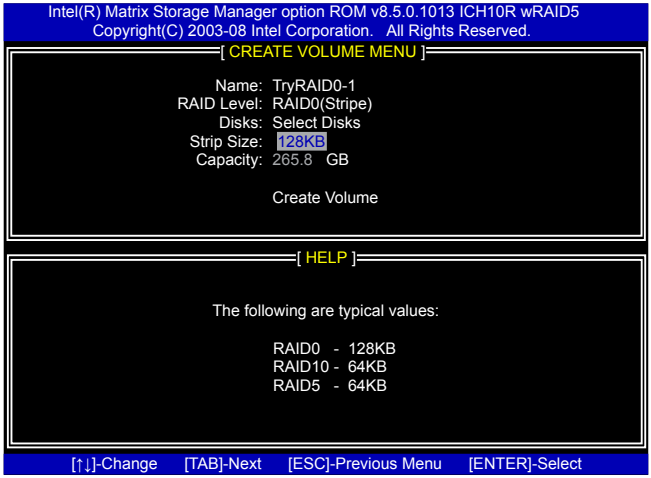
The available values of Strip Size range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :

16K - Best for sequential transfer.

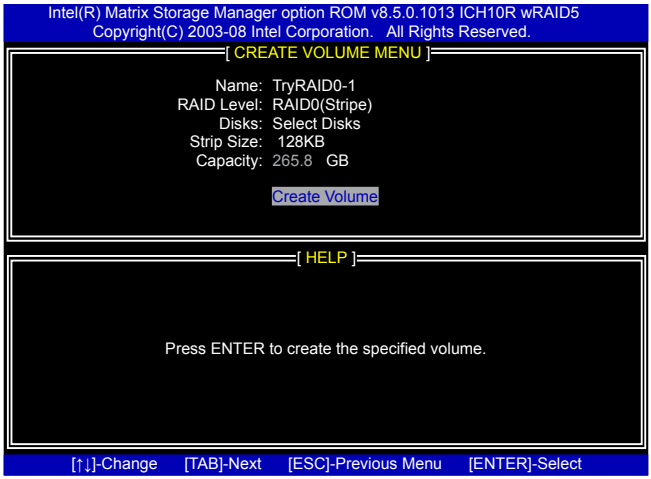
64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations .

The default value is 128K. Press <Enter>.

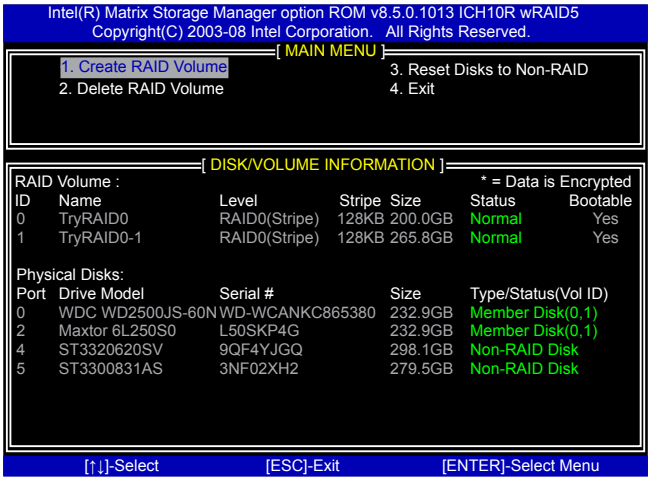


7. Select “**Create Volume**” and press <Enter>.



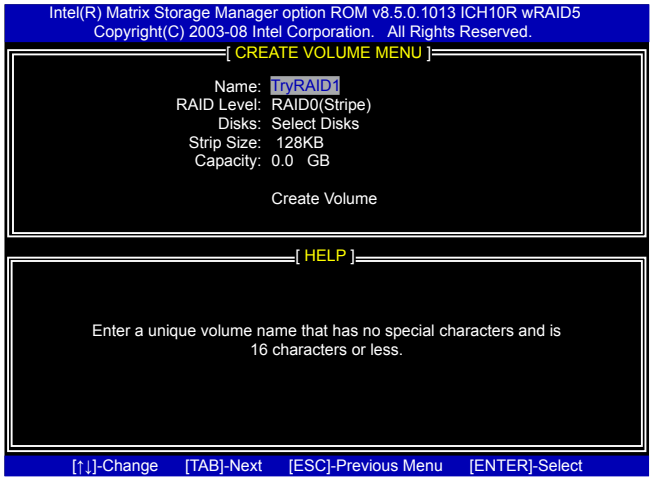
A message will appear :

Press <Y> to create the volume and return to the main menu. Two RAID0 volumes were configured.

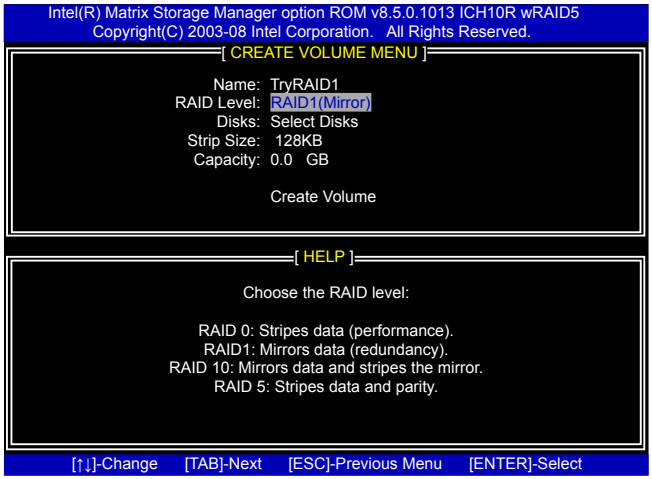


Create RAID 1

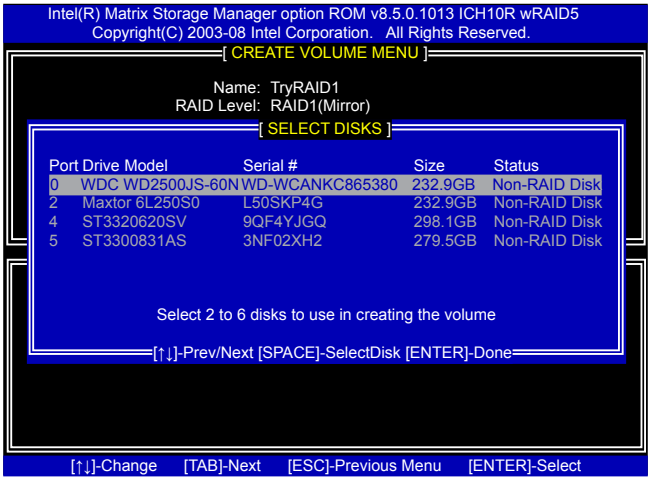
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID1 system and press <Enter> to apply it. Here, we name it as TryRAID1 to replace the default Volume0.



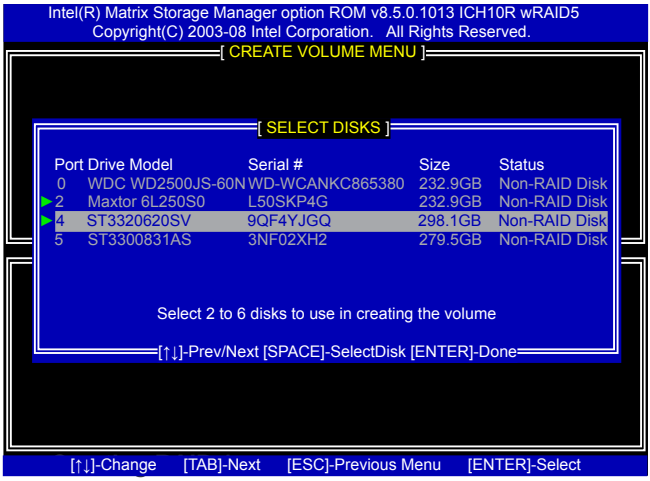
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection from one of RAID0, 1, 5, 10 items. Select RAID1 (Mirror) and press <Enter>.



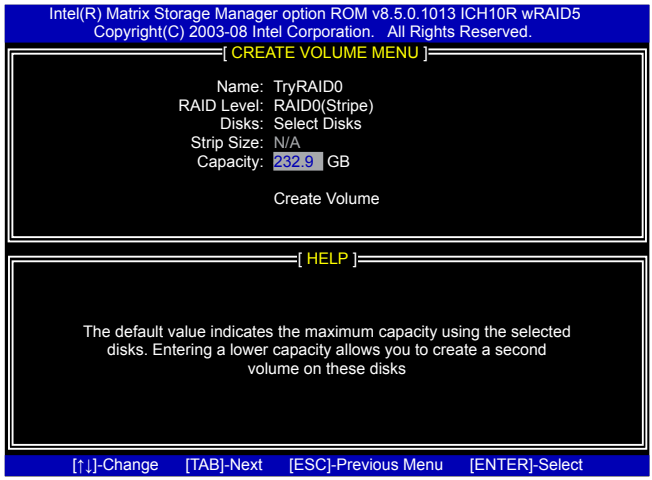
4. It then goes to “**Disks**” item. Press <Enter> to choose the hard disks for this RAID1 system.



5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as RAID1, then press <Space> key to select them. A triangle sign will appear to indicate the drive selection. Here, we select one 232.9GB and one 298.1GB hard disks. Press <Enter> key to finish the selection.

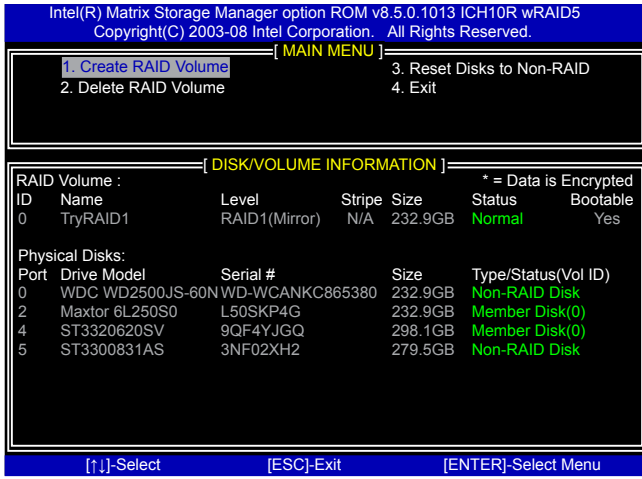


6. It will skip “**Strip Size**” menu for RAID1.



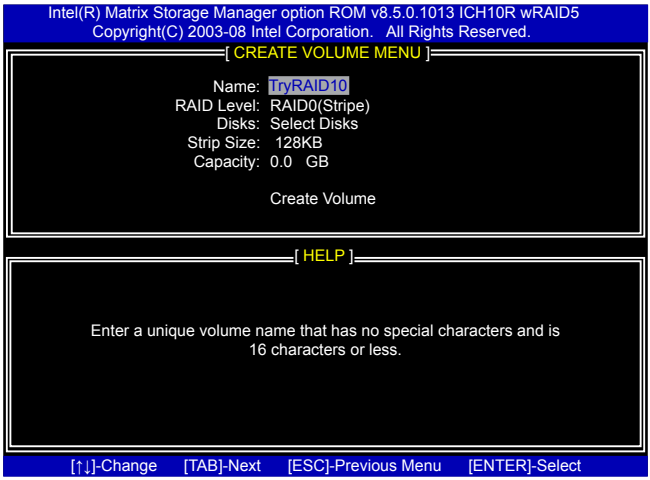
7. In “**Capacity**” item, use the default value, and press <Enter>. The size of the smaller hard disk 232.9GB is becoming the default value, and it indicates the maximum capacity.
8. Select “**Create Volume**” and press <Enter>. A warning message will appear :

Press <Y> to create the volume and return to the main menu.

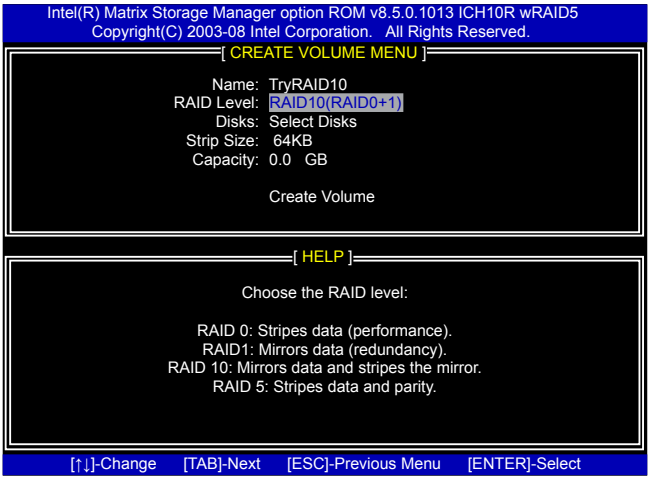


Create RAID 10 (0+1)

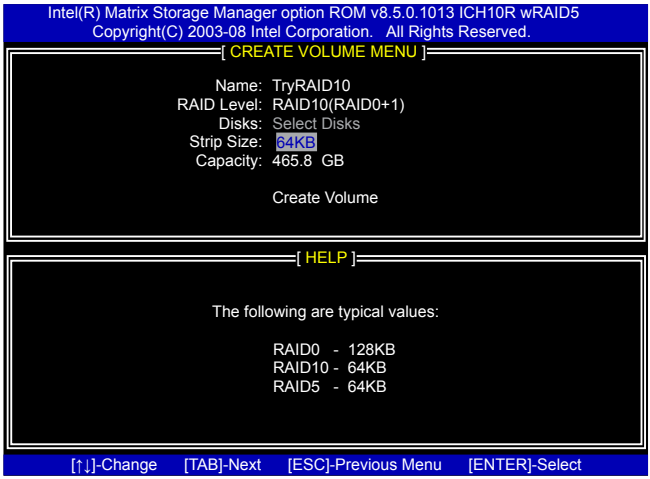
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID10 system and press <Enter> to apply it. Here, we name it as TryRAID10 to replace the default Volume0.



3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection from one of RAID0, 1, 5, 10 items. Select RAID10(RAID0+1) and press <Enter>.

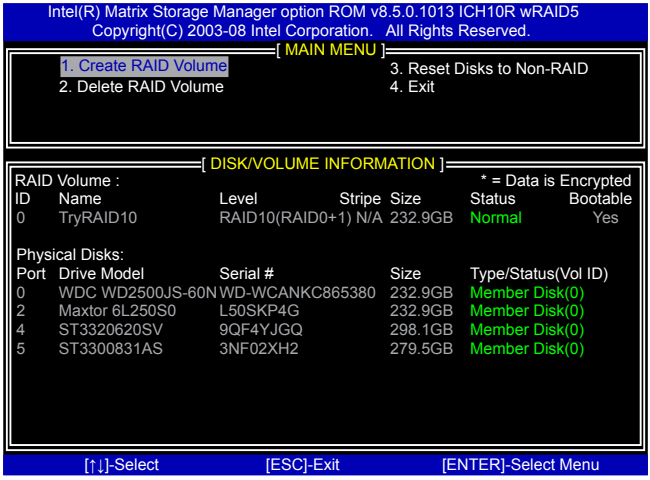


4. After exiting from "**RAID Level**", it goes directly to "**Stripe Size**" item. Because all four disks are selected for RAID10, so there is no need to go to **Disks** option.
5. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K.



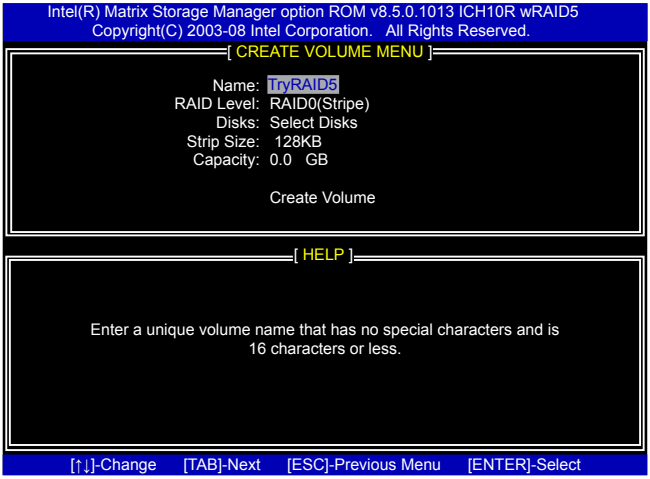
6. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice the smallest hard disk size, that is, 232.9GB * 2 = 465.8GB.
7. Select "**Create Volume**" and press <Enter>. A warning message will appear :

Press <Y> to create the volume and return to the main menu.

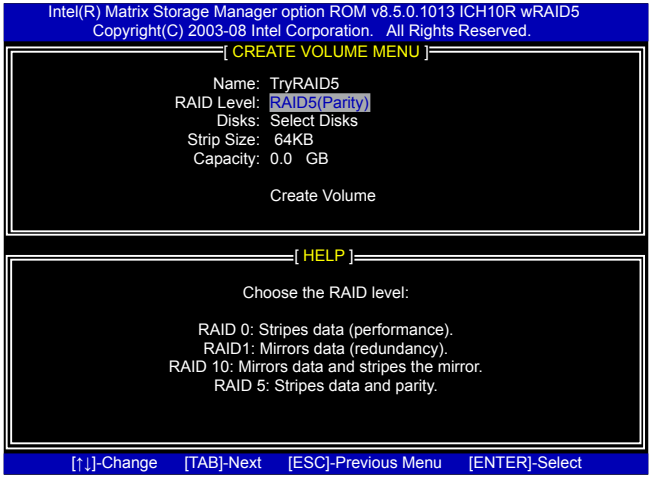


Create RAID5 (Parity)

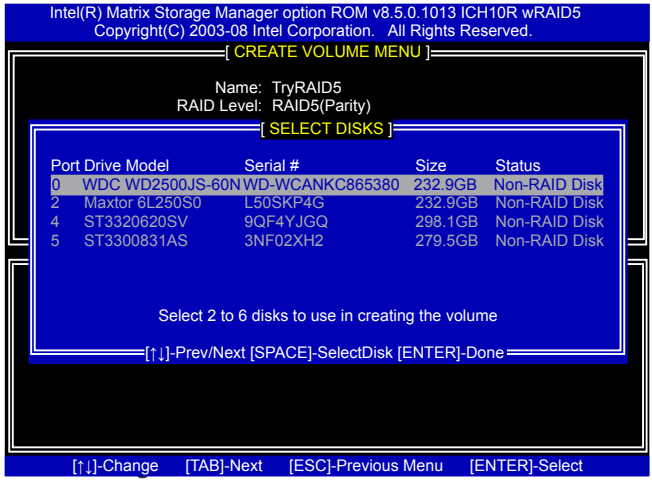
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID5 system and press <Enter> to apply it. Here, we name it as TryRAID5 to replace the default Volume0.



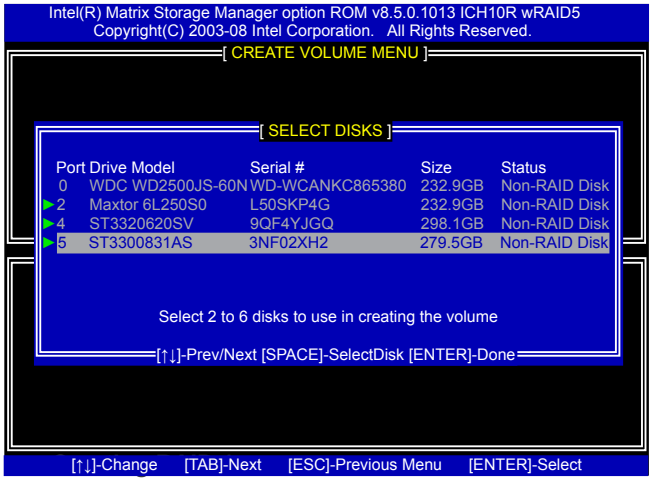
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection from one of RAID0, 1, 5, 10 items. Select RAID5(Parity) and press <Enter>.



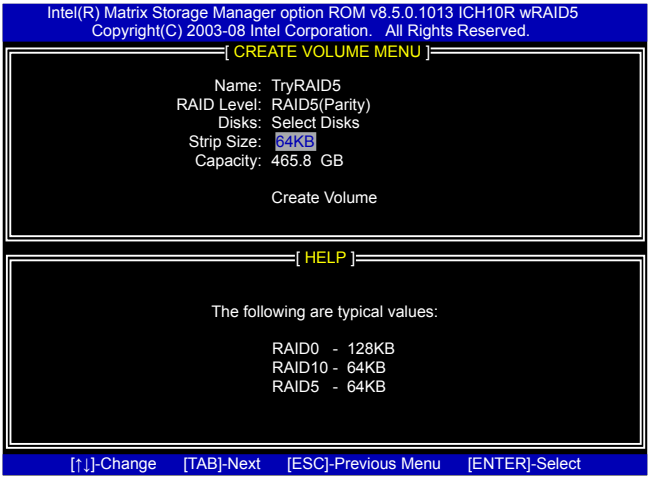
4. It then goes to “**Disks**” item. Press <Enter> to choose the hard disks for this RAID5 system.



5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as RAID5, then press <Space> key to select them. A triangle sign will appear to indicate the drive selection. Here, we select 232.9GB, 298.1GB and 279.5GB hard disks for an example. Press <Enter> key to finish the selection.

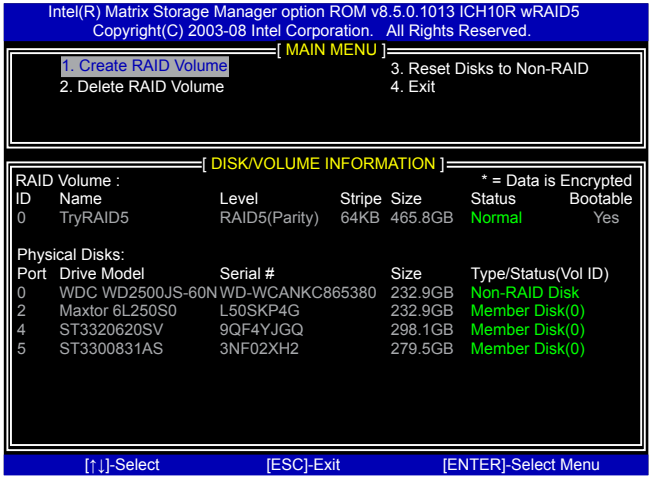


6. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K. Press <Enter>.



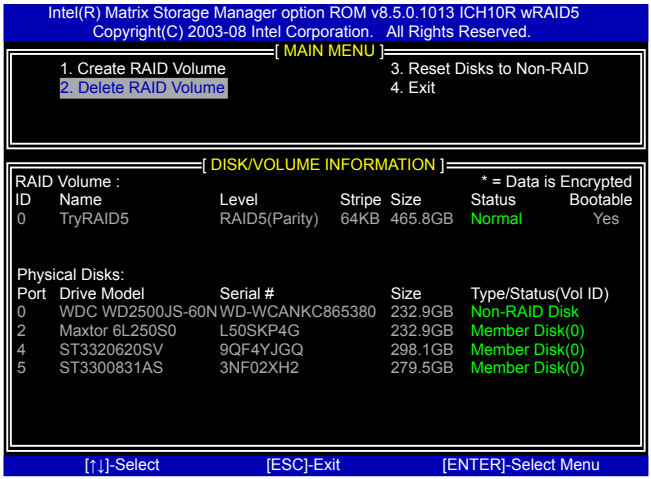
7. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice that of the smallest hard disk size, that is, 232.9GB * 2 = 465.8GB.
8. Select "**Create Volume**" and press <Enter>. A warning message will appear :

Press <Y> to create the volume and return to the main menu.

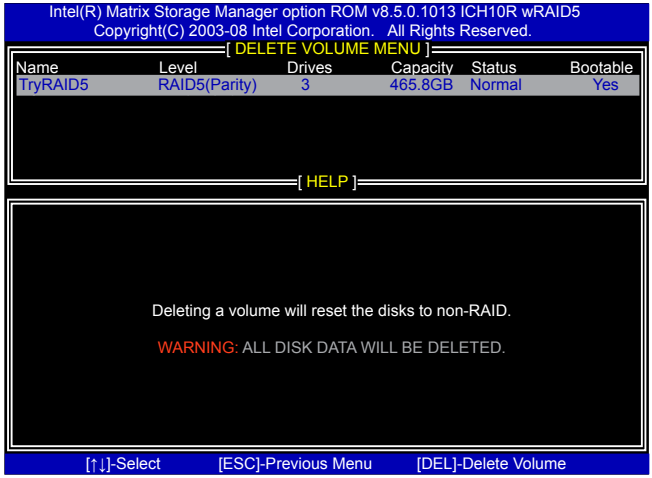


Delete RAID Volume

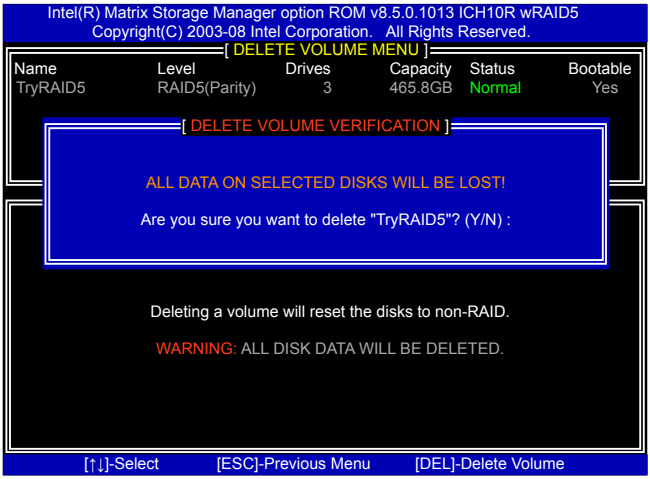
1. Take TryRAID5 for example. Select "**2. Delete RAID Volume**" in main menu and press <Enter>.



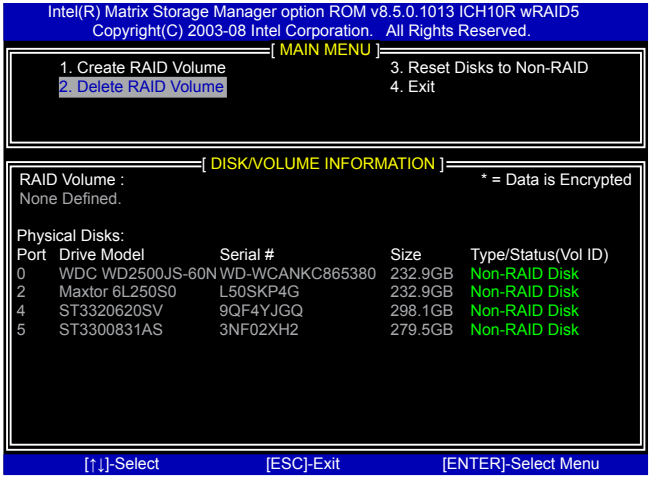
2. Use Up or Down arrow key to select the RAID set you want to delete. Here only one RAID5 is seen, so press <DEL> key to continue.



3. After <DEL> key is pressed, the screen appears as below:
Press <Y> key to confirm the volume deletion.



4. Return to Main Menu.

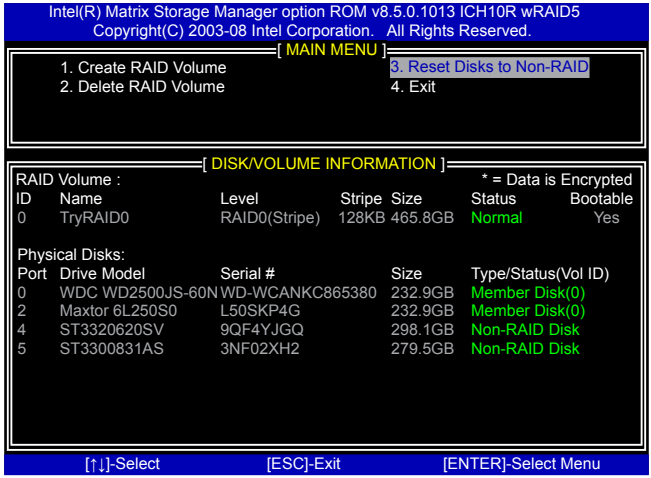


Reset Disks to Non-RAID

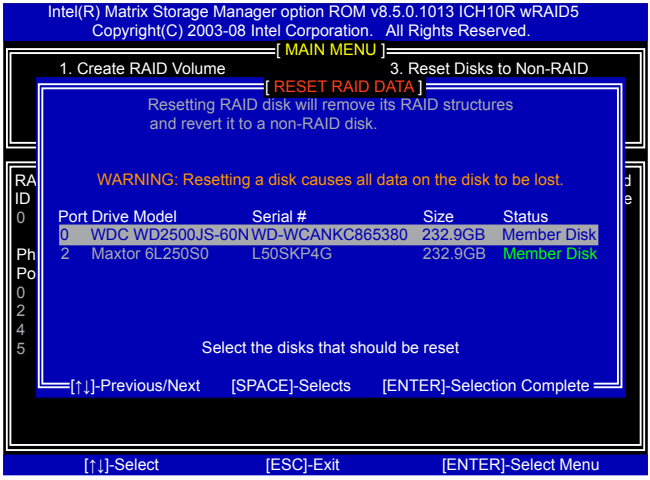
Reset RAID volume allows you to replace a failed disk with a new one, and the operating system will rebuild the data later. For RAID0, reset a hard disk would totally crash the system, but for RAID1, RAID10 and RAID5, they all can be rebuilt.
When rebuild is needed, you must first install a new hard disk in your system before getting into Intel® Matrix Storage Manager utility, because the utility will ask you which hard disk the new rebuild will be performed.

Example 1. Reset a RAID0 system.

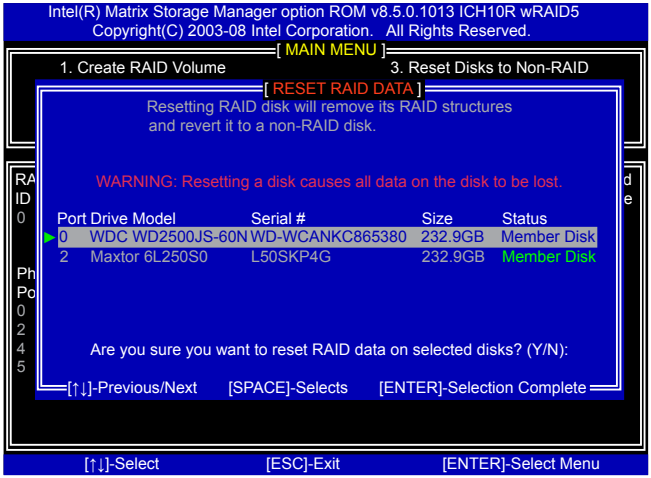
1. A TryRAID0 volume was built with two 232.9GB hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



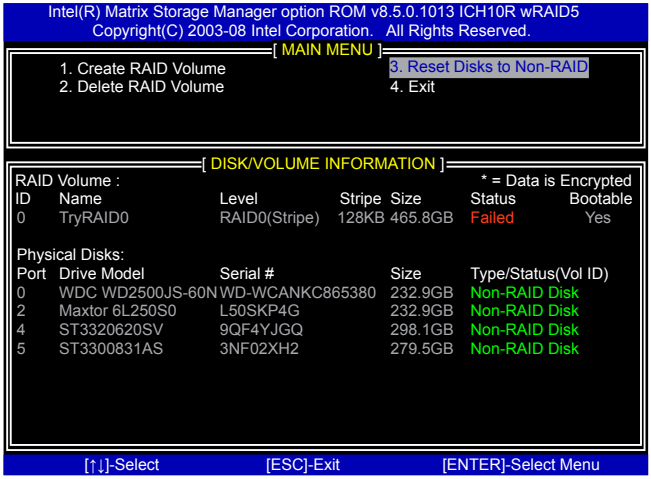
2. A warning message is displayed.



3. Select WDC hard disk as the one to be reset. Press <Enter>. A double confirmation message pops out, press <Y> to confirm.

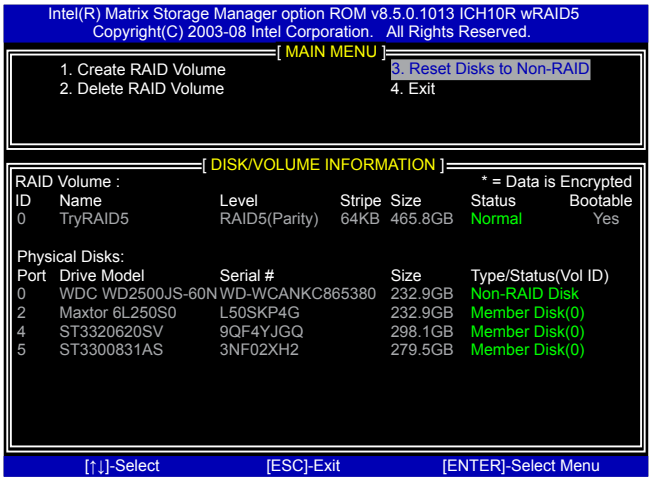


4. It goes back to Main menu with a "Failed" status of RAID0 volume.

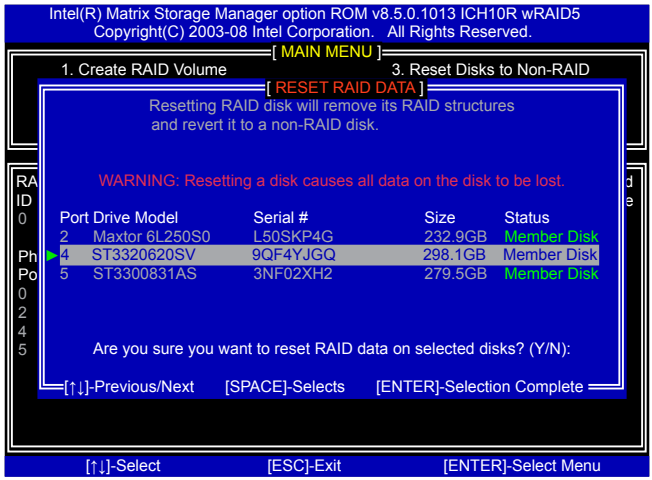


Example 2. Reset a RAID5 system

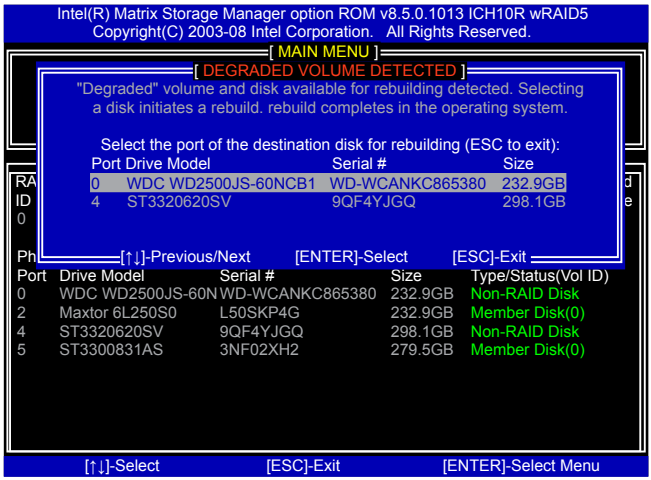
1. A TryRAID5 volume was built with three hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



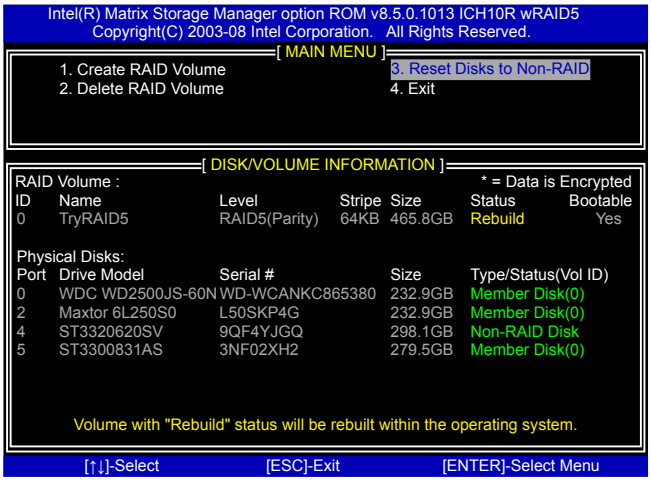
2. A warning message is displayed.
3. Select "**Port 4 - ST3320620SV**" hard disk as the one to be reset. Press <Enter>. A double confirmation message pops out, press <Y> to confirm.



4. A "**DEGRADED VOLUME DETECTED**" screen pops out asking you to select a new hard disk for rebuilding. Here, we select WDC 232.9GB. Press <Enter> to select it.

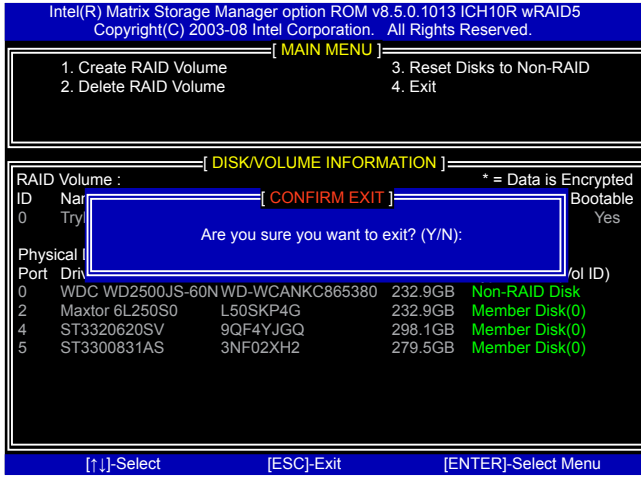


5. It goes back to Main menu with a "Rebuild" status of RAID5 volume. Eventually, a replacement hard disk has to join in and it always keeps three hard disks in the RAID5 system.
6. Operating System will perform the rebuilding later.



Exit RAID BIOS

1. Take TryRAID5 as an example, select "**4. Exit**" in main menu and press <Enter>. The screen displays :



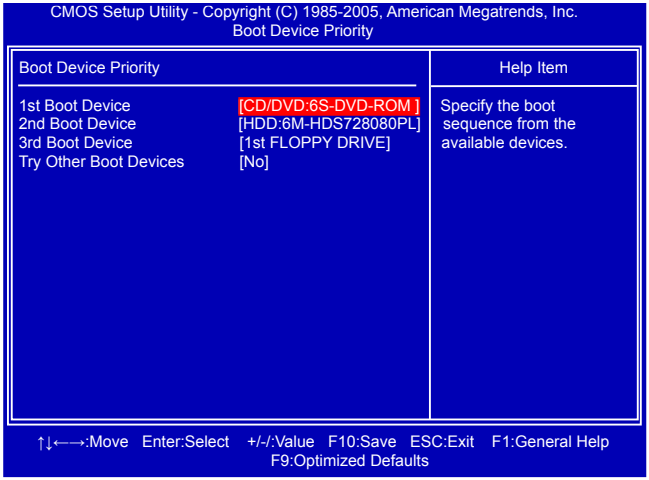
2. Press <Y> to exit Intel® Matrix Storage Manager program. The system will reboot.
3. Shut down the computer, remove WD hard disk, and we will continue for Windows OS installation. If you do not remove irrelevant WD hard disk, Windows may detect it during the installation, and you could be confused.
4. Remove any diskette from floppy drive.
5. Restart computer to start Windows installation.

5-4 Install a New Windows XP

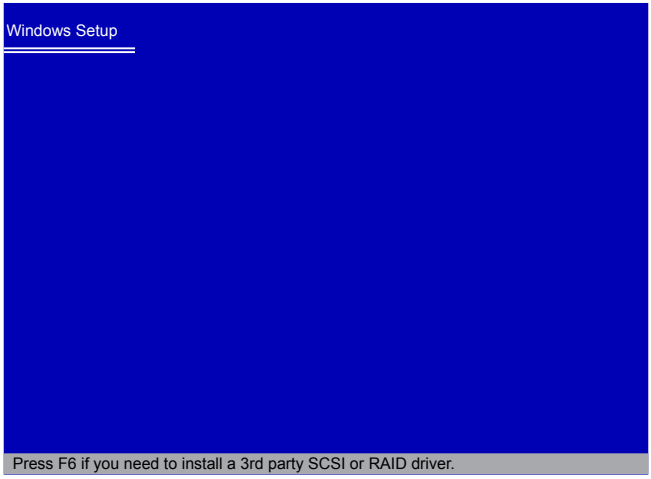
CAUTION

when you set the SATA Mode in BIOS to either AHCI or RAID, you need to follow these steps to install your Windows XP system.

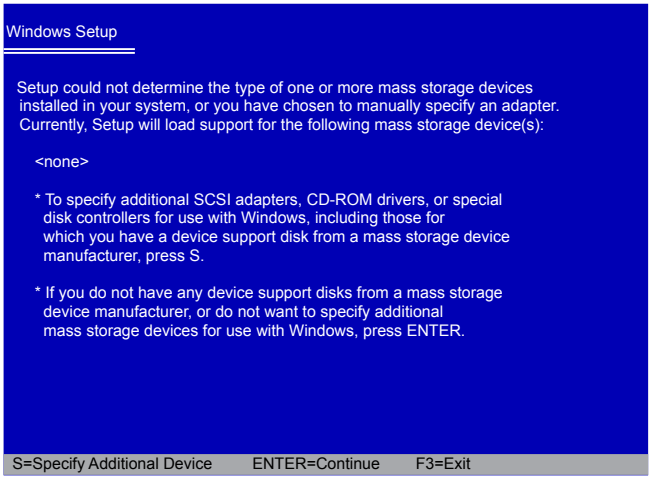
1. Press <DEL> to enter BIOS Setup during POST.
2. Insert the Windows installation CD into the optical drive.
3. Set the “1st Boot Device” to “CDROM”, save changes and exit the BIOS setup.



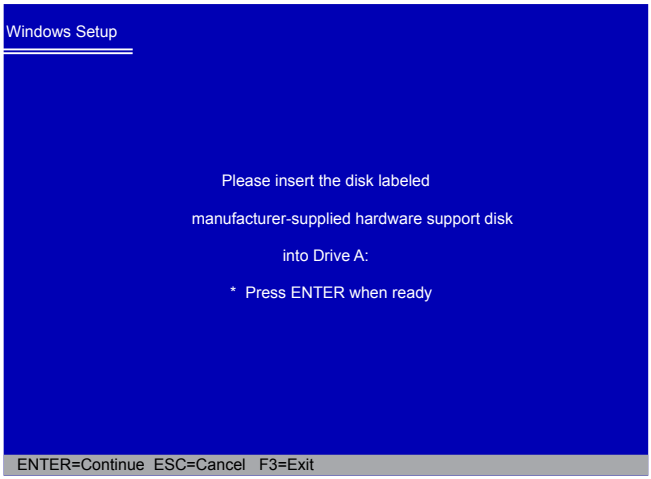
4. The computer will reboot, and it will start installing Windows Operating System. Watch the screen carefully, when the following picture appears, press <F6> key immediately. If you forgot to do this, PC will go to an fatal blue screen, and you may need to reboot the system again. PC may not respond to your <F6> input immediately, and it keeps loading files until the next screen displays.



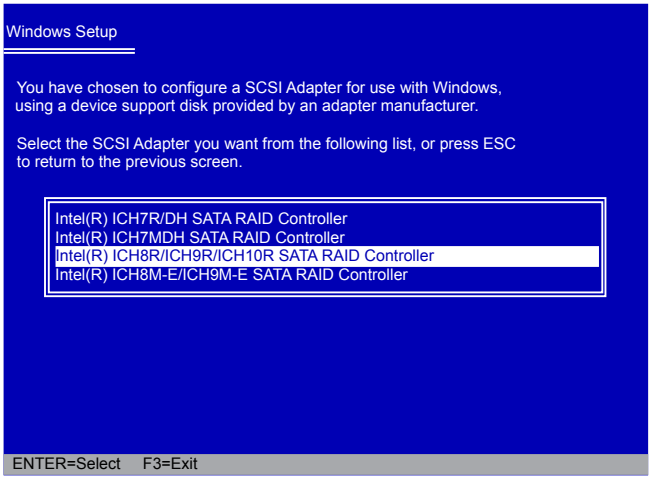
5. After some files are copied to your system, the following picture appears, press <S> to continue the specific driver installation.



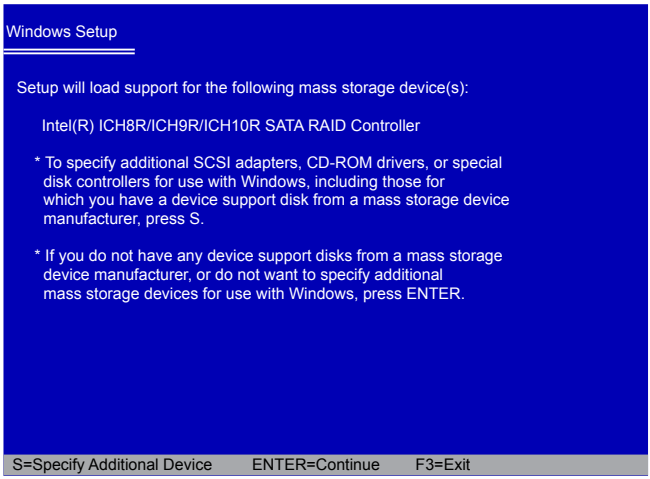
6. It will ask you to insert the RAID driver diskette into you floppy drive. Press <Enter> after it is done.



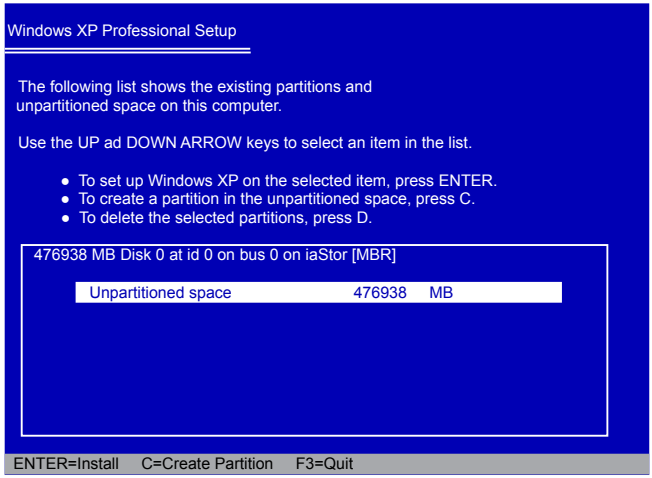
7. Depending on South Bridge chip of your system, select appropriate driver for it. Here, we choose Intel® ICH8R/ICH9R/ICH10R SATA RAID Controller. Press <Enter> to select it.



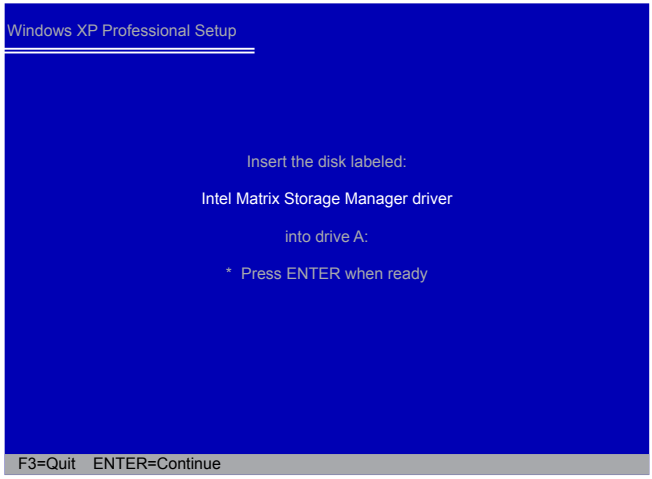
8. A confirmation message pops out to double check if the driver is really what we wanted. Press <Enter> to continue.



9. Windows will display the partition of your system, you have to create partitions as many as you wish, assign them C:, D: or E: drive names. After partitions were done, you can press <Enter> to continue. It will ask you to format your hard disk, then copy files...etc., until the whole Windows is setup.



10. You must always keep RAID diskette in the floppy drive during Windows XP installation, otherwise, Windows may ask you to put it inside again by below message. There are many times Windows XP may copy files from the floppy drive, please remember.
11. Follow the Windows XP install processes to finish the set up.



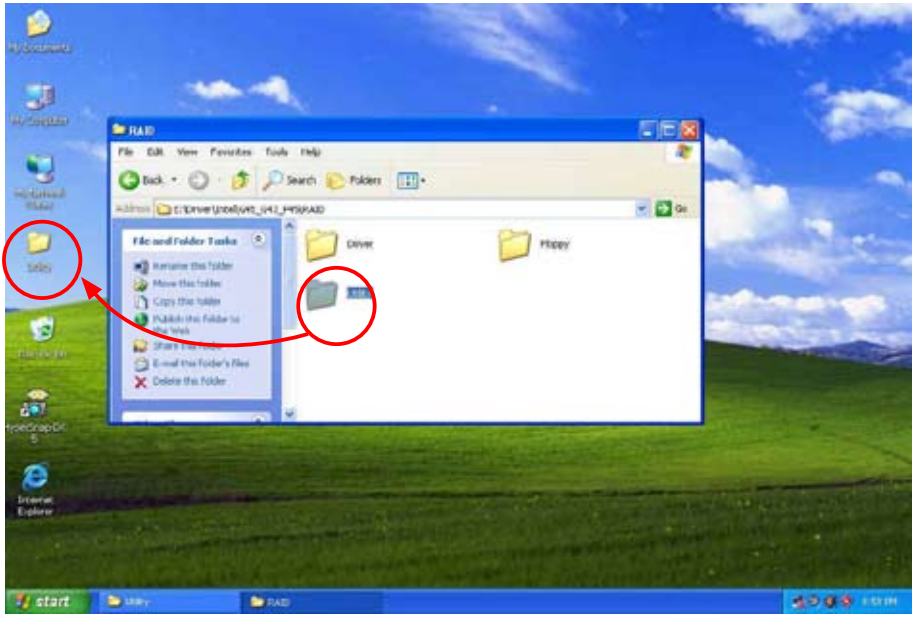
5-5 Existing Windows XP with RAID built as data storage

When you already have a Windows XP system running at a traditional IDE hard disk, and you want to keep it unchanged, but you also want to expand the system with some SATA hard disks, to come out a new RAID system for data storage. In this case, you need to install the Intel® Matrix Storage Manager into your Windows XP system first.

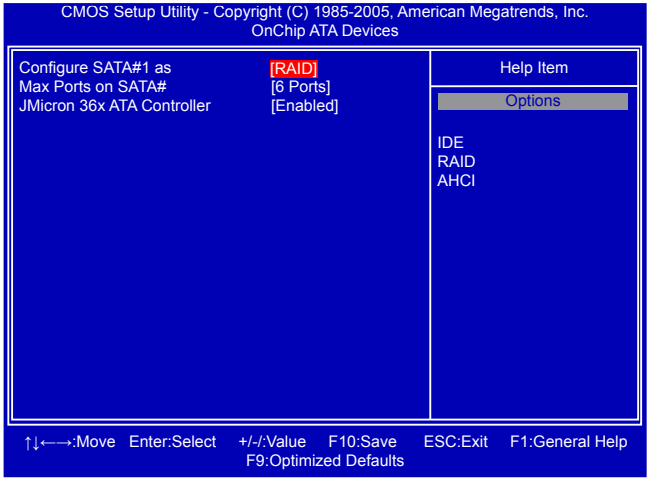
The conditions to install Intel® driver successfully, you need :
1. BIOS SATA mode must be set to [AHCI] or [RAID].
2. You'd better have an IDE CD drive.

If you have a SATA CD drive and the BIOS SATA mode was set to [AHCI] or [RAID], in Windows XP platform, this CD drive can not be recognized if Intel® Matrix Storage Manager has not been installed. If the system can not recognize it, how can the driver be installed ? This is the reason why we need to come out a standard procedure for SATA CD drive users.

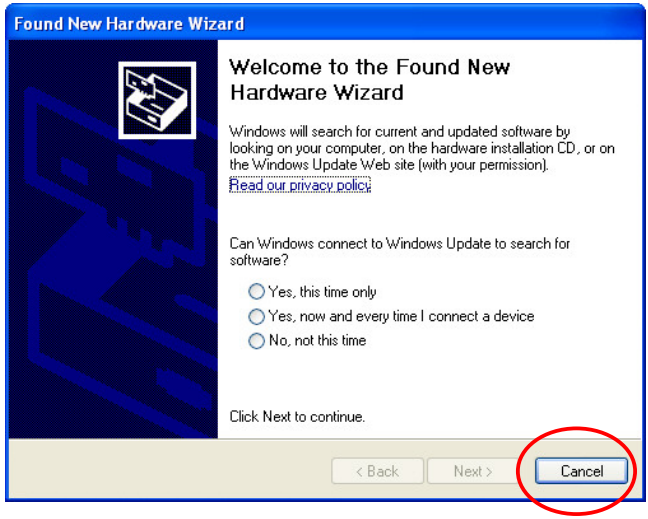
The correct steps are :
1. In current Windows XP system (no matter what SATA or IDE CD drive you have), browse the CD, copy the whole directory of Intel® Matrix Storage Manager setup program to your desktop. For example, drag and copy directory "**\Driver\Intel\G45_G43_P45\RAID\Utility**" to your desktop.



2. Copy section 5-2, BIOS Configuration.
   Shut down the computer, connect SATA hard disks to SATA ports, power on computer again.
   Press <Del> key, get into BIOS, set SATA mode to [RAID], press <F10> to save and exit BIOS. PC will reboot.

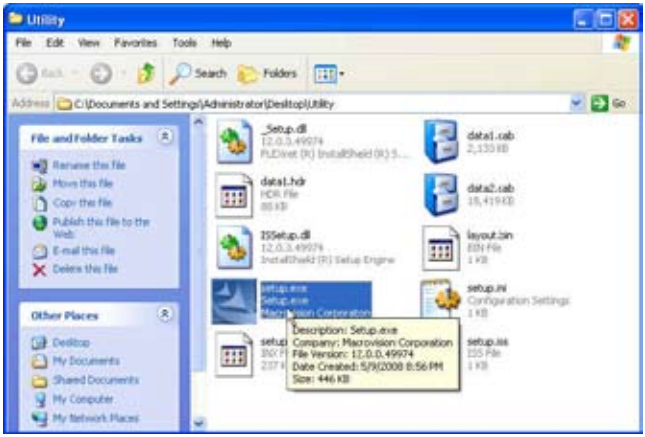


3. Copy section 5-3, Create RAID in BIOS.
   Press <CTRL><I> simultaneously to get into RAID BIOS set up (Intel® Matrix Storage Manager option ROM utility).
   Configure your new hard disks to RAID0, 1, 5 or 10. Exit RAID BIOS. PC will reboot.
4. The Windows XP is running again and a new hardware of RAID disk was found.
   Click [Cancel] to skip this Wizard.



Click to exit.

5. Use Explorer to get into the Intel® driver directory which was previously copied to the desktop.



6. Click on Setup.exe to install Intel® Matrix Storage Manager driver.

7. Install complete.

8. In Windows Explorer, right click on My Computer, click on Manage, then click on Disk Management to format these new RAID disks. Follow the Wizard to finish the job.

Appendix - CrossFire™ Technology

Introduction

CrossFire™ technology is a newly introduced product from ATI Technologies. It is designed to dramatically improve the graphics performance for applications which is used by players and other high-end users.

The CrossFire™ aspect requires the following components to be available in order to appear as an option within Catalyst™ Control Center :

- CrossFire™ Ready motherboard, such as Foxconn's P45A Series.
- CrossFire™ Edition graphics card that works as the master graphics card.
- CrossFire™ Ready graphics card from the same brand-family that works as the slave graphics card.

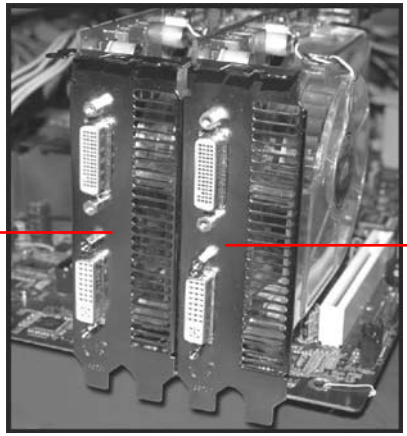
For the detailed CrossFire Graphic Card support list on this motherboard, please visit the website: http://www.foxconnchannel.com

Using CrossFire™ Technology

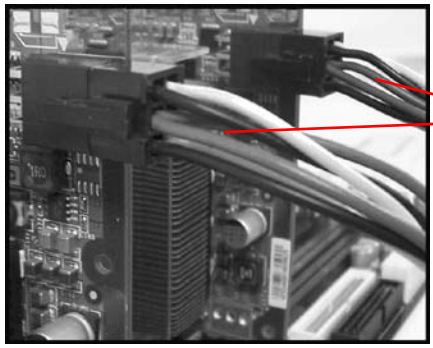
1. Please uninstall any existing graphics card drivers which would possibly create a conflict before attempting to install this display card.

2. Install the Radeon CrossFire™ Edition graphics card (master) to PCI-E1_X16 slot.

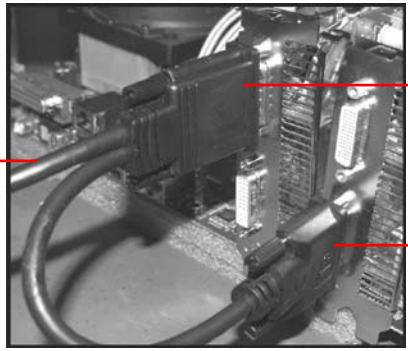
3. Install the Radeon CrossFire™ Ready graphics card (slave) to PCI-E2_X16 slot.



4. Connect an auxiliary power source from the power supply to the graphics card.



5. Connect the DMS-59 cable to the DVI monitor connector and two graphics cards that you install as shown.



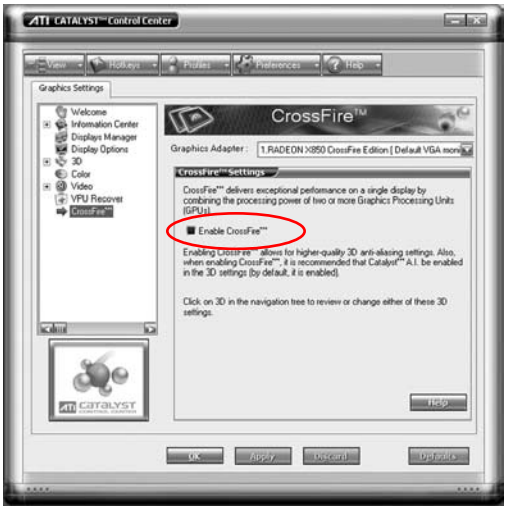
6. Power on your computer and get into OS (Windows® XP 32-bit with SP2 or Windows® XP Professional 64-bit Edition).

7. Install Microsoft's .NET Framework Version 1.1. Without it, The ATI Catalyst™ Control Center can not launch properly.

8. Install the ATI graphics card drivers and restart your computer. Then you will find "ATI Catalyst Control Center" on your desktop.

9. Double-click on the ATI Catalyst Control Center icon 

to launch it. Click "View"-->Select "Advanced View" -->Click "CrossFire™"-->Set "Enable CrossFire™" to Yes.



Now you can enjoy the advanced CrossFire™ technology.

- It is recommended using 400-450 Watt power supply or above to enjoy the benefit of CrossFire™ technology.
- PCI-E1_x16 slot works at x16 mode, and the PCI-E2_x16 slot work at x8 mode. When construct CrossFire™ at PCI-E1_x16 and PCI-E2_x16 slots, they both work at x8 mode.
- The all new Radeon X1300 and X1600 graphics cards do not need a CrossFire™ Edition co-processor or external cable.