Inferno Katana Series

Motherboard

User's Manual

FOXCONN®

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Version:

User's Manual V1.0 for Inferno Katana Series motherboard.
P/N: 3A221SM00-000-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

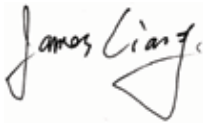
HON HAI PRECISION INDUSTRY COMPANY LTD
66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT,
TAIPEI HSIEN, TAIWAN, R.O.C.

declares that the product

Motherboard Inferno Katana/Inferno Katana GTI

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/2009

Printed Name : James Liang

Declaration of conformity

Trade Name:	FOXCONN
Model Name:	Inferno Katana/Inferno Katana GTI
Responsible Party:	PCE Industry Inc.
Address:	458 E. Lambert Rd. Fullerton, CA 92835
Telephone:	714-738-8868
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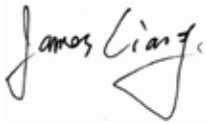
Equipment Classification:	FCC Class B Subassembly
Type of Product:	Motherboard
Manufacturer:	HON HAI PRECISION INDUSTRY COMPANY LTD
Address:	66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT, TAIPEI HSIEN, TAIWAN, R.O.C.

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 : 2009

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.foxconnsupport.com/inquiry.aspx

CPU Support List :
http://www.foxconnsupport.com/cpusupportlist.aspx

Memory, VGA Compatibility List :
http://www.foxconnsupport.com/complist.aspx

Thank you for buying Foxconn Inferno Katana 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, Inferno Katana/Inferno Katana GTI enables you to unleash more power from your computer.

This chapter includes the following information:

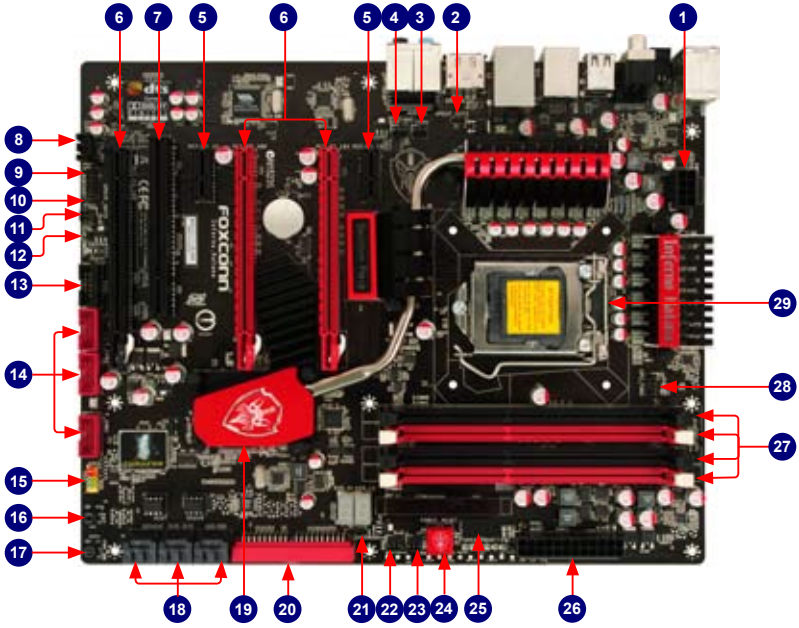
- Product Specifications
- Layout
- Back Panel Connectors

1-1 Product Specifications

CPU	Support LGA 1156 socket Intel® CPU: Intel® Core™ i7/ i5 processors
Chipset	Intel® P55 chipset
Memory	4 x 240-pin DDR3 DIMM sockets Support up to 16GB of system memory Support three channel DDR3 1800(oc*)/1600(oc*)/1333/1066MHz 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 Support DTS™ connect and Dolby Digital Live technology (Only for Inferno Katana)
LAN	Realtek 10/100/1000Mb/s LAN chip
Expansion Slots	3 x PCI Express x16 slots 2 x PCI Express x1 slots 1 x PCI slot
Onboard Serial ATA	6 x SATA connectors (Controlled by Intel® P55) 300MB/s data transfer rate Support hot plug and NCQ (Native Command Queuing)
USB	Support hot plug Supports up to 14 x USB 2.0 ports (8 rear panel ports, 3 onboard USB headers supporting 6 extra ports) Support 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 CPU fan header (4-pin) 5 x System fan headers (3-pin) 1 x CD-IN connector 1 x Front Audio connector 2 x SPDIF-OUT connectors 3 x USB 2.0 connectors (supporting 6 x USB devices) 1 x Front Panel connector 6 x SATA connectors (Controlled by Intel® P55) 1 x IDE connector (Controlled by Marvell Chipset) 1 x 1394a connector (Only for Inferno Katana) 1 x Speaker connector 1 x Fuzzy Equalizer
Back Panel Connectors	1 x PS/2 keyboard port 1 x Clear CMOS button 2 x eSATA ports (Controlled by Marvell Chipset, Only for Inferno Katana) 1 x 1394a port (Only for Inferno Katana) 1 x RJ-45 LAN port 1 x Optical S/PDIF out port

	1 x Coaxial S/PDIF out port
	8 x USB 2.0 ports
	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	Aegis Panel
	FOX LiveUpdate
	FOX LOGO
	FOX DMI
Operating System	Support for Microsoft® Windows® XP/Vista
Form Factor	ATX Form Factor, 12 inches x 9.6 inches (30.5cm x 24.4cm)

1-2 Layout

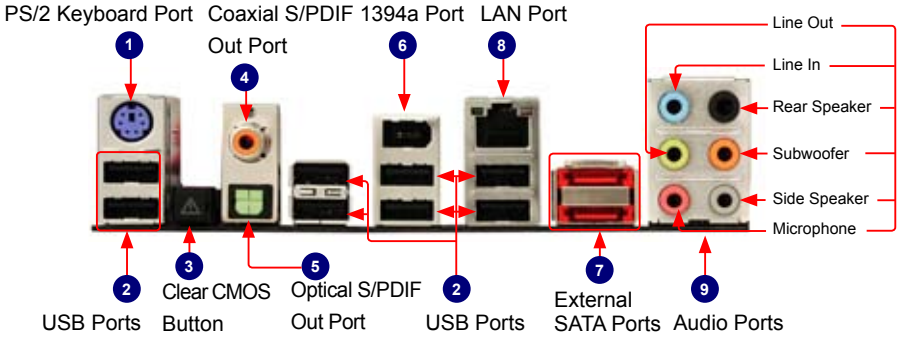


1. 8-pin ATX 12V Power Connector
2. S/PDIF Out 2 Connector
3. FAN4 Header
4. FAN5 Header
5. PCI Express x1 Slots
6. PCI Express x16 Slots
7. PCI Slot
8. CD_IN Connector
9. Front Audio Connector
10. S/PDIF Out 3 Connector
11. FAN1 Header
12. Clear CMOS Jumper
13. 1394a connector (Only for Inferno Katana)
14. Front USB Connectors
15. Front Panel Connector
16. Reset Button
17. Power On Button
18. SATA Connectors
19. Intel® P55 Chipset
20. IDE Connector
21. Speaker Connector
22. FAN3 Header
23. FAN2 Header
24. Force_Reset Button (Only for Inferno Katana)
25. Fuzzy Equalizer
26. 24-pin ATX Power Connector
27. DDR3 DIMM Slots
28. CPU_FAN1 Header
29. LGA 1156 CPU Socket

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

1-3 Back Panel Connectors

Inferno Katana:



Inferno Katana GTI:

1. PS/2 Keyboard Port

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

2. 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.

3. Clear CMOS Button

Turn off the AC power supply, push the CLS_CMOS button and hold there for a couple of seconds to clear CMOS.

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. Optical S/PDIF Out Port

This port provides digital audio out to an external audio system that supports digital optical audio.

6. 1394a Port (Only for Inferno Katana)

This port is used to connect a 1394a device.

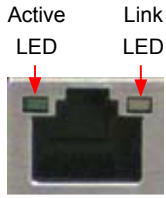
7. External SATA Ports (Only for Inferno Katana)

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.

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

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
- Onboard Button
- Onboard Debug LED
- Onboard LED
- BIOS Debug Code Description

Please visit the following website for more supporting information about your motherboard.

CPU Support List:

http://www.foxconnsupport.com/cpusupportlist.aspx

Memory, VGA Compatibility List:

http://www.foxconnsupport.com/complist.aspx

2-1 Install the CPU and CPU Cooler

CAUTION

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

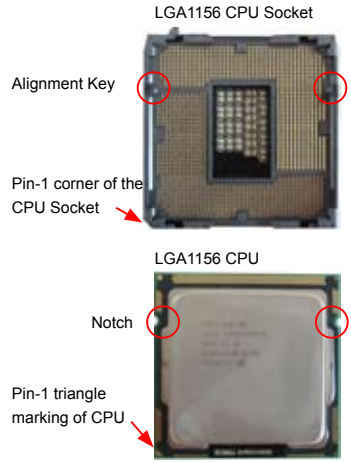
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power supply before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on 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.

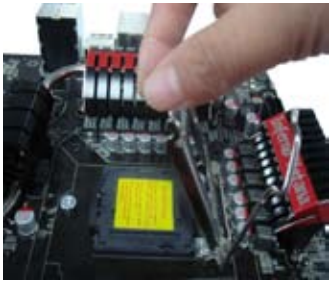


Follow the steps to install the CPU onto the CPU socket :

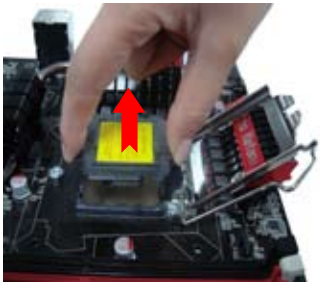
CAUTION

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. Release the CPU socket lever.



2. Lift the metal cover on the CPU socket.



3. Remove protective socket cover.

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.

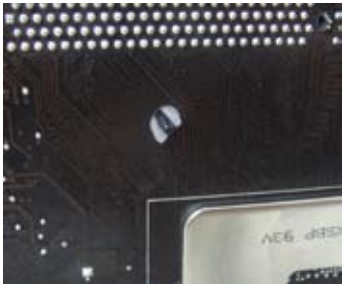
5. When CPU is properly seated, replace the metal cover and push the CPU socket lever back to its locked position.

Install the CPU Cooler

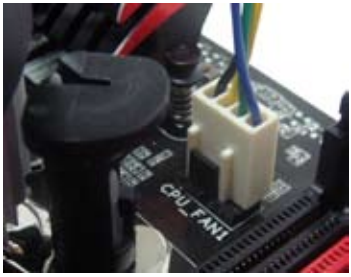
Follow the steps below to correctly install the CPU cooler on the motherboard.

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

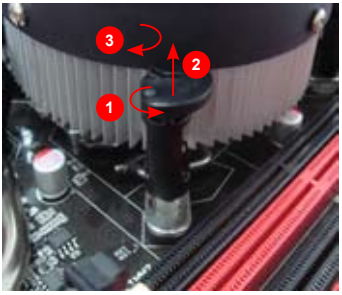
2. Place the four bolts of the CPU cooler to the holes of the motherboard, push them straight down from the top, and the bolts will be fastened on the motherboard. That's it.



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

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.
- 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.

Dual Channel Memory Configuration

This motherboard provides four DDR3 memory sockets and supports Dual Channel Technology. When memory is installed, the BIOS will automatically check the memory in your system.

Four DDR3 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

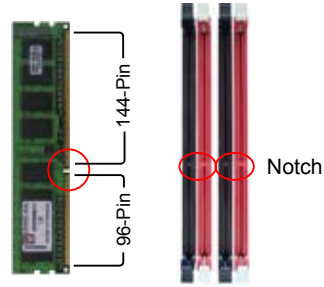
(DS : Double Side, SS : Single Side, - : No Memory)

- For this motherboard, DIMM(1,2), DIMM(3,4), are two pairs of channels. In each pair of DIMM channel, you need to install red DIMM first, then install black DIMM the second. Black DIMM can not function if no red DIMM is installed.

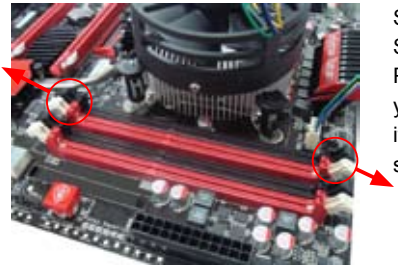
Installing a Memory

CAUTION

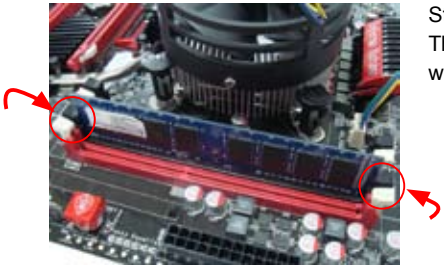
- Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module. Be sure to install DDR3 DIMMs on this motherboard.



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.

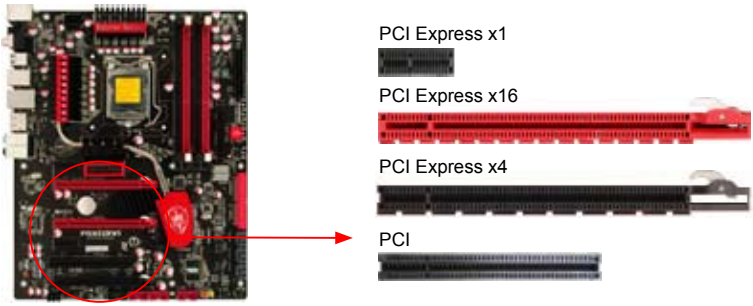


Step 2:
The clips at both ends of the socket will snap into place when the memory module is securely inserted.

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.
- The two red PCI Express x16 slots can not reach 16X at the same time. Only plug one graphic card into any of them, it can work at 16X. Plug two, they will work at 8X.



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.

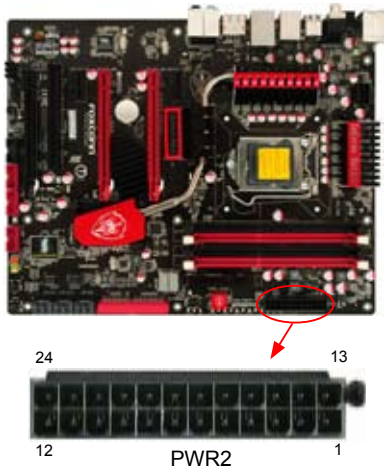
2-4 Install other Internal Connectors

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: PWR2

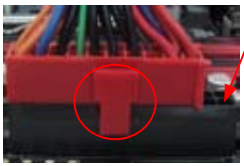
PWR2 is the ATX power supply connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.



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

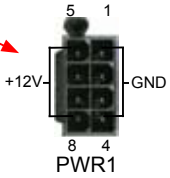
We recommend you using a 24-pin power supply. If you are using a 20-pin power supply, you need to align the ATX power connector according to the picture.



20-Pin Power

8-pin ATX 12 V Power Connector: PWR1

Connect the 8-pin ATX 12V power supply to PWR1 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

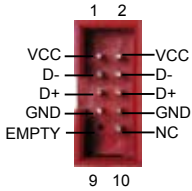
CAUTION

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.

Connect a 4-pin power plug

USB Connectors: F_USB1/2/3

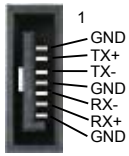
In addition to the eight USB ports on the rear panel, this product also provides three 10-pin USB headers on its motherboard. By connecting through USB cables with them, user can quickly expand another six USB ports on the front panel.



F_USB 1/2/3

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.



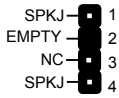
SATA_1/2/3/4/5/6

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.

Speaker Connector: SPEAKER

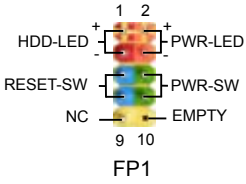
The speaker connector is used to connect speaker of the chassis.



SPEAKER

Front Panel Connector: FP1

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



FP1

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)

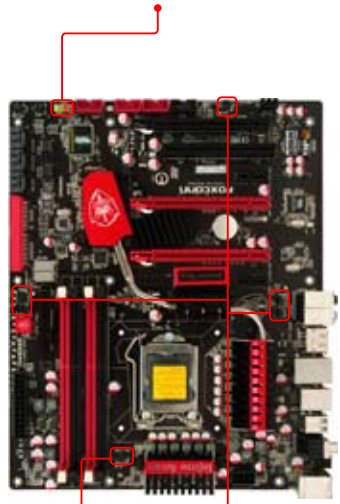
Attach the connector to the Reset switch on the front panel of the case; the system will restart when the switch is pressed.

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.

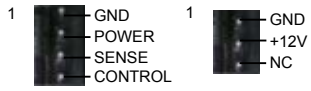
Power Switch Connector (PWR-SW)

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.



Fan Connectors: CPU_FAN1, FAN1/2/3/4/5

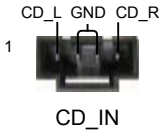
There are six main fan headers on this motherboard. The fan speed can be controlled and monitored in "PC Health Status" section of the BIOS Setup. These fans can be automatically turned off after the system enters
3, S4 and S5 sleeping states.



CPU_FAN1 FAN1/2/3/4/5

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.

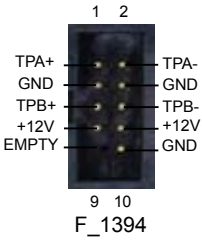


Audio Connector: F_AUDIO

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

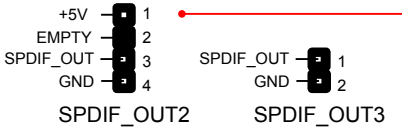
1394a Connector: F_1394 (Only for Inferno Katana)

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.



S/PDIF Connector: SPDIF_OUT2/3

The connector is used for S/PDIF output.



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.

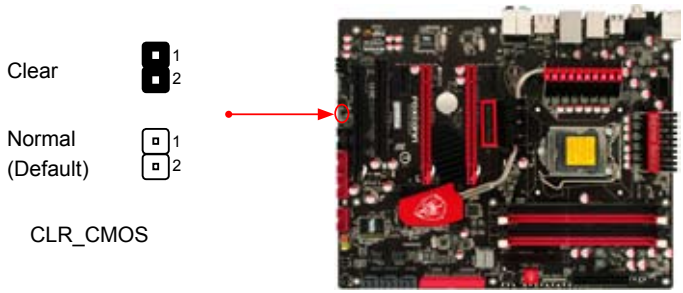
Jumper	Diagram	Definition	Description
1	1	1-2	Set Pin 1 and Pin 2 closed
	1	1-2	Set Pin 1 and Pin 2 Open
1	1	1-2	Set Pin 1 and Pin 2 closed
	1	2-3	Set Pin 2 and Pin 3 closed

Clear CMOS 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. Put a metal object(such as a screwdriver) onto pins 1-2 to short them. This will clear CMOS data.
3. After a few seconds, remove the metal object to leave the Pins 1-2 open.
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.



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

2-6 OnBoard Button

Power on Button: PWR_ON
Push the power on button to power on the system.

Reset Button: RST
Push the reset button to reboot the system.

Clear CMOS Button: CLS_CMOS2
Turn off the AC power supply, push the CLS_CMOS button and hold there for a couple of seconds to clear CMOS.

Force Reset Button: FORCE_RESET (Only for Inferno Katana)
Simply rebooting after applying new OC settings can cause the system to fail because the hardware has not been reset properly. But with one press on the Force Reset button, your system will not only re-boot, but also re-tune itself! This button triggers the CPU, memory controller and chipset to re-initialize, running hardware checks and timing algorithms before reloading with your new overclocking settings. This reduces instances of failed re-boots after implementing OC settings.

FORCE_RESET

CAUTION

- Make sure the power supply is turned off before pressing the CLS_CMOS button to clear CMOS.
- Push down the CLS_CMOS button and hold it there for a couple of seconds to clear the CMOS completely, then release.

2-7 OnBoard Debug LED

2-digital LED readout displays hardware status and enables quick error diagnosis.

2-8 OnBoard LED

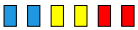
Core Nerve (Only for Inferno Katana):

There are ten LEDs under the “Quantum Force” light. Their flashing frequency is following the power loading. The power loading is heavier, the leds flash faster. User can check the loading in time through this light.

Core Nerve

Fuzzy Equalizer (Only for Inferno Katana):

Fuzzy Equalizer can offer efficient power when user need it. It identifies one LED reprsents two phases power. All the six LEDs flashing means the motherboard are using twelve phases power.



Fuzzy Equalizer

Do not remove or plug in any device when the onboard LED is lighting on.

2-9 BIOS Debug Code Description

1. i-Tweaker BIOS Debug Code

a. It means that DebugCode appear to 7 segment LEDs by i-Tweaker when you can see two DOT symbols such as 5.0. at 7’seg LEDs, otherwise is BIOS debug code.
b. i-Tweaker first debug code is meaning of PCB version that i-Tweaker can supported. Ex: A.A. means PCB A, B.B. means PCB B… etc.
c. i-Tweaker second debug code is meaning of i-Tweaker version. It should be combined with PCB version such as AA01, AA02, BB01, BB02 and etc.

Debug Code	Description
0.0.	i-Tweaker AC Ready.
5.0.	All ready. Wait for power button click to boot machine.
5.1.	On power sequence, but power button event fail.
5.2.	On power sequence, wait S_SLP_S4 event.
5.3.	On power sequence, wait S_SLP_S3 event.
5.4.	On power sequence, pass S_SLP_S3 and S_SLP_S4 event.
5.5.	On power sequence, but 1.8V PLL cannot ready.
5.6.	On power sequence, when 1.8V PLL is ready.
5.7.	On power sequence, but Vdimm cannot ready.

5.8.	On power sequence, when Vdimm is ready.
5.9.	On power sequence, but 1.05V PCH cannot ready.
5.A.	On power sequence, when 1.05V PCH is ready.
5.B.	On power sequence, but 1.1V VTT cannot ready.
5.D.	On power sequence, when 1.1V VTT is ready.
5.F.	On power sequence, but ATXPWROK cannot ready.
6.0.	On power sequence, when ATXPWROK is ready.
6.1.	On power sequence, but Vcore cannot ready.
6.6.	Power sequence finished.

2. AMI BIOS8TM Check Point

Checkpoints may differ between different platforms based on system configuration. Checkpoints may change due to vendor requirements, system chipset or option ROMs from add-in PCI devices.

1. Bootblock Initialization Code Checkpoints

The Bootblock initialization code sets up the chipset, memory and other components before system memory is available. The following table describes the type of checkpoints that may occur during the bootblock initialization portion of the BIOS:

Checkpoint	Description
Before D0	If boot block debugger is enabled, CPU cache-as-RAM functionality is enabled at this point. Stack will be enabled from this point.
D0	Early Boot Strap Processor (BSP) initialization like microcode update, frequency and other CPU critical initialization. Early chipset initialization is done.
D1	Early super I/O initialization is done including RTC and keyboard controller. Serial port is enabled at this point if needed for debugging. NMI is disabled. Perform keyboard controller BAT test. Save power-on CPUID value in scratch CMOS. Go to flat mode with 4GB limit and GA20 enabled.
D2	Verify the boot block checksum. System will hang here if checksum is bad.
D3	Disable CACHE before memory detection. Execute full memory sizing module. If memory sizing module not executed, start memory refresh and do memory sizing in Boot block code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM. Copies compressed boot block code to memory in right segments. Copies BIOS from ROM to RAM for faster access. Performs main BIOS checksum and updates recovery status accordingly.

D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. If BIOS recovery is necessary, control flows to checkpoint E0. See Bootblock Recovery Code Checkpoints section of document for more information.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST(Execute POST Kernel). See POST Code Checkpoints section of document for more information.
DC	System is waking from ACPI S3 state.
E1-E8 EC-EE	OEM memory detection/configuration error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

2. Bootblock Recovery Code Checkpoints

The Bootblock recovery code gets control when the BIOS determines that a BIOS recovery needs to occur because the user has forced the update or the BIOS checksum is corrupt. The following table describes the type of checkpoints that may occur during the Bootblock recovery portion of the BIOS:

Checkpoint	Description
E0	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	Set up floppy controller and data. Attempt to read from floppy.
EA	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	Disable ATAPI hardware. Jump back to checkpoint E9.
EF	Read error occurred on media. Jump back to checkpoint EB.
F0	Search for pre-defined recovery file name in root directory.
F1	Recovery file not found.
F2	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.
F3	Start reading the recovery file cluster by cluster.
F5	Disable L1 cache.
FA	Check the validity of the recovery file configuration to the current configuration of the flash part.

FB	Make flash write enabled through chipset and OEM specific method. Detect proper flash part. Verify that the found flash part size equals the recovery file size.
F4	The recovery file size does not equal the found flash part size.
FC	Erase the flash part.
FD	Program the flash part.
FF	The flash has been updated successfully. Make flash write disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

3. POST Code Checkpoints

The POST code checkpoints are the largest set of checkpoints during the BIOS preboot process. The following table describes the type of checkpoints that may occur during the POST portion of the BIOS:

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable “wCMOSFlags.”
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system.
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to “POSTINT1ChHandlerBlock.”
07	Fixes CPU POST interface calling pointer.
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start -- Disable Cache – Init Local APIC.
C1	Set up boot strap processor Information.
C2	Set up boot strap processor for POST.
C5	Enumerate and set up application processors.
C6	Re-enable cache for boot strap processor.
C7	Early CPU Init Exit.
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.

0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
20	Relocate System Management Interrupt vector for all CPU in the system.
24	Uncompress and initialize any platform specific BIOS modules. GPNV is initialized at this checkpoint.
2A	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See DIM Code Checkpoints section of document for more information. USB controllers are initialized at this point.
39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory. Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.

87	Execute BIOS setup if needed / requested. Check boot password if installed.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Initialization of system management interrupt by invoking all handlers. Please note this checkpoint comes right after checkpoint 20h
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module. Display boot option popup menu.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT1Ch vector and INT09h vector.
AB	Prepare BBS for Int 19 boot. Init MP tables.
AC	End of POST initialization of chipset registers. De-initializes the ADM module.
B1	Save system context for ACPI. Prepare CPU for OS boot including final MTRR values.
00	Passes control to OS Loader (typically INT19h).

4. ACPI Runtime Checkpoints

ACPI checkpoints are displayed when an ACPI capable operating system either enters or leaves a sleep state. The following table describes the type of checkpoints that may occur during ACPI sleep or wake events:

Checkpoint	Description
AC	First ASL check point. Indicates the system is running in ACPI mode.
AA	System is running in APIC mode.
01, 02, 03, 04, 05	Entering sleep state S1, S2, S3, S4, or S5.
10, 20, 30, 40, 50	Waking from sleep state S1, S2, S3, S4, or S5.

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
- Advanced Chipset Features
- Boot Configuration Features
- Power Management Setup
- PC Health Status
- Quantum BIOS
- BIOS Security Features
- Load Optimal Defaults
- Save & Exit Setup
- Exit Without Saving

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

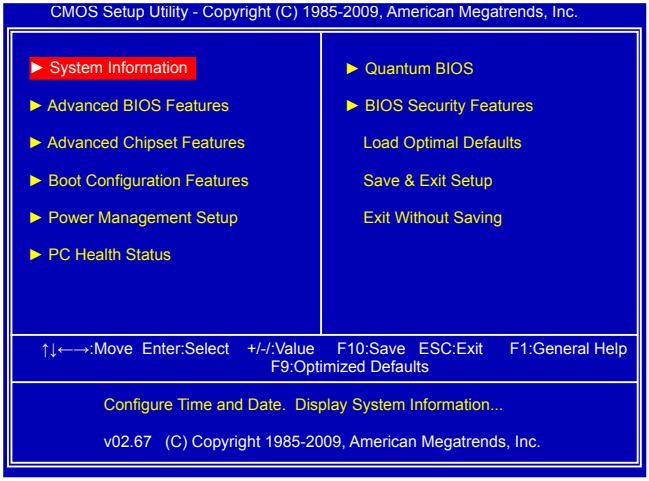
The BIOS is the communication bridge between hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the message "Press **Tab** to show POST screen, **DEL** to enter SETUP" appears at the bottom of the screen, you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

CAUTION

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 information, memory size and system date, time. They all can be viewed or set up through this menu.

► **Advanced BIOS Features**

Advanced settings can be set up through this menu. There are IDE configuration, AHCI configuration and MPS configuration.

► **Advanced Chipset Features**

Chipset features, USB functions and some onBoard devices values can be set up through this menu.

► **Boot Configuration Features**

Boot features can be set up through this menu. You can enable or disable "Quick Boot" and "Quiet Boot" feature here.

► **Power Management Setup**

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

► **PC Health Status**

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

► **Quantum BIOS**

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

► **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 & Exit Setup**

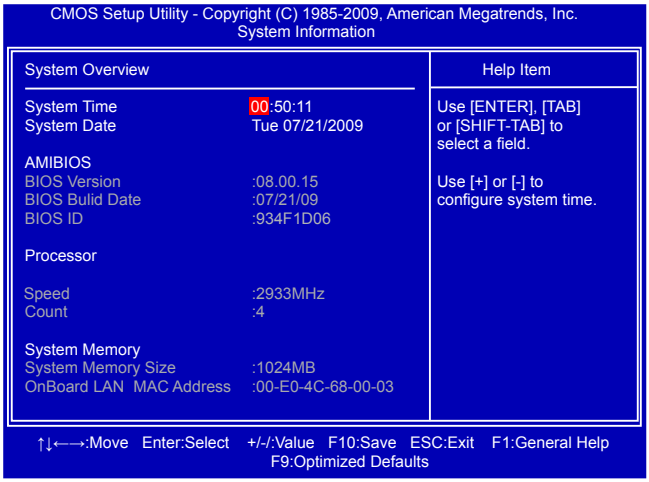
Save setting values to CMOS and exit.

► **Exit Without Saving**

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, memory and so on. Use the arrow up/down keys to select an item, then use the <+> or <-> keys to change the setting.



System Overview

► 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.

AMIBIOS

► 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.

► BIOS Build Date

This item shows the BIOS building date.

► BIOS ID

This item shows the BIOS ID.

Processor

► Speed

It displays the current CPU speed.

► Count

It shows the CPU numbers.

System Memory

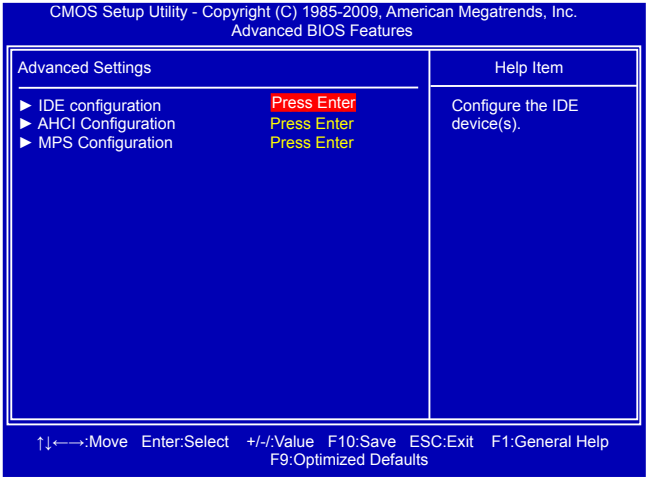
► **System Memory Size**

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

► **OnBoard LAN MAC Address**

This item shows the onboard LAN MAC address.

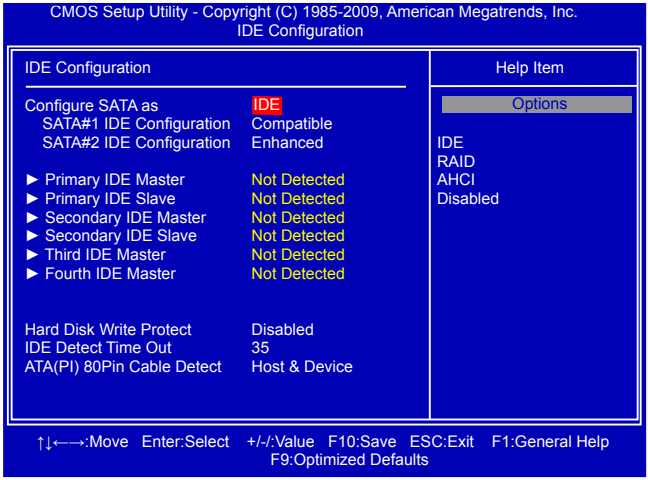
Advanced BIOS Features



► IDE Configuration/ACHI Configuration/MPS Configuration

Press <Enter> to go to relative submenu.

IDE Configuration



► Configure SATA as

This item is used to set the operation mode of your SATA ports 1, 2, 3, 4, 5, 6. Setting values are: [IDE]; [RAID]; [AHCI]; [Disabled].

[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#1 IDE 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: [Compatible], [Enhanced].

► **SATA#2 IDE 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].

► **Primary/Secondary 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.

► **Hot Plug (Appears when "Configure SATA as" is set to[RAID]/[AHCI])**

This item is used to enable or disable hot plug function for SATA hard disks when in RAID/ AHCI mode.

► **Hard Disk Write Protect**

This item is used to disable/enable device write protection. This will be effective only if device is accessed through BIOS.

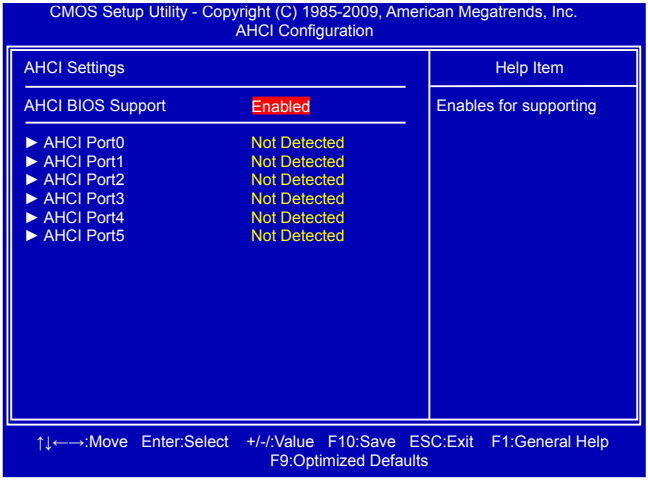
► **IDE Detect Time Out**

This item is used to select the time out value for detecting ATA/ATAPI devices. If the checking time is over the set value, the system will skip it.

► **ATA(PI) 80Pin Cable Detect**

This item is used to select the mechanism for detecting 80Pin ATA(PI) Cable. The default value is: [Host & Device].

AHCI Configuration



AHCI Settings

► AHCI BIOS Support

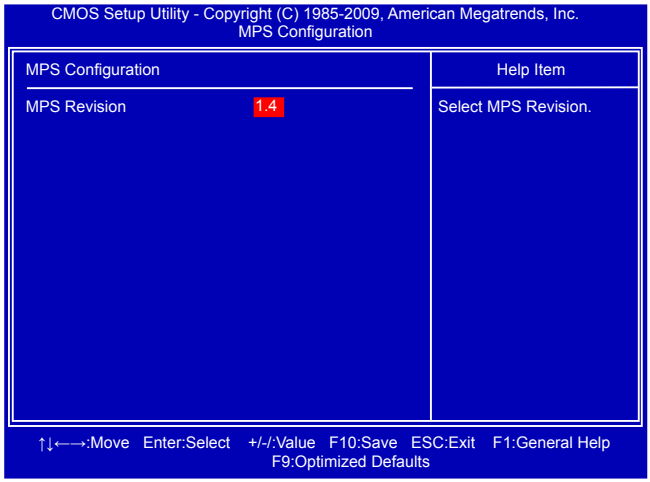
The Advanced Host Controller Interface (AHCI) specification describes the register level interface for a Host Controller for Serial ATA. The specification includes a description of the hardware/software interface between system software and the host controller hardware. AHCI provides more advanced features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

This item is used to enable or disable your motherboard to support the AHCI specification.

► AHCI Port0/1/2/3/4/5

These options display the status of IDE devices. BIOS auto detects the presence of IDE devices while entering setup.

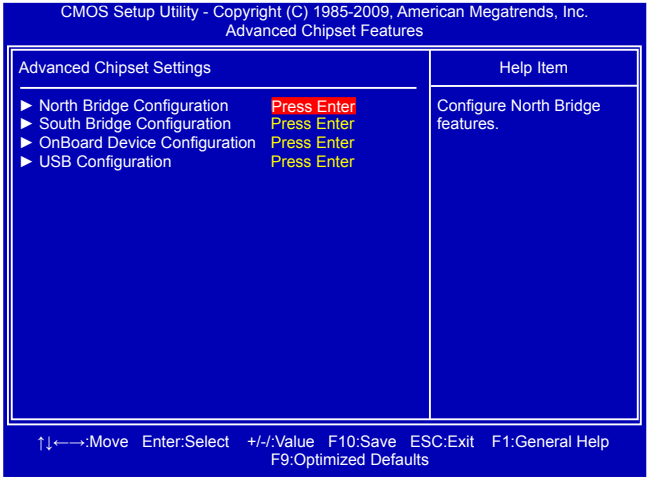
MPS Configuration



► **MPS Revision**

This feature is only applicable to multiprocessor motherboards as it specifies the version of the MPS that the motherboard will use. The MPS is a specification by which PC manufacturers design and build CPU architecture systems with two or more processors. MPS 1.1 was the original specification. MPS version 1.4 adds extended configuration tables for improved support of multiple PCI bus configurations and greater expandability in the future. In addition, MPS 1.4 introduces support for a secondary PCI bus without requiring a PCI bridge. If your operating system comes with support for MPS 1.4, you should keep the setting as the default 1.4. You also need to enable MPS 1.4 support if you need to make use of the secondary PCI bus on a motherboard that doesn't come with a PCI bridge. You should only leave it as 1.1 only if you are running an older operation system that only supports MPS 1.1.

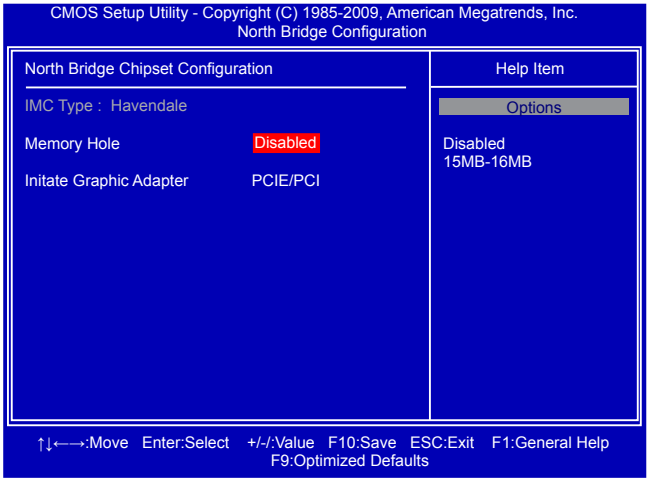
Advanced Chipset Features



► North Bridge Configuration/ South Bridge Configuration/OnBoard Device Configuration/ USB Configuration

Press <Enter> to go to relative submenu.

North Bridge Configuration



North Bridge Chipset Configuration

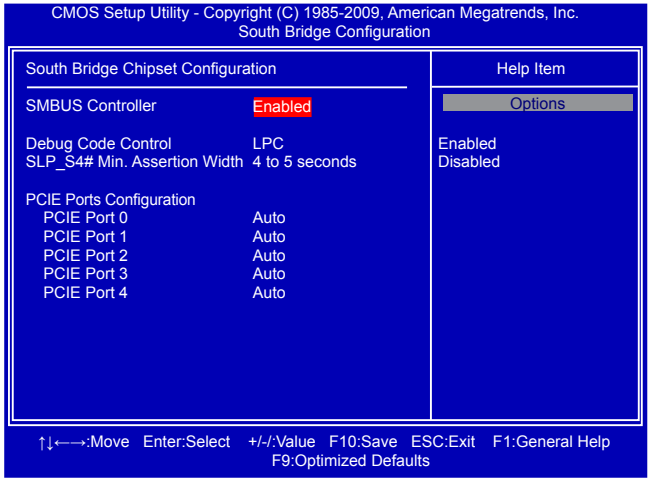
► Memory Hole

This item is used to enable/disable memory hole. The setting values are: [Disabled], [15MB-16MB].

► Initate Graphic Adapter

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

South Bridge Configuration



South Bridge Chipset 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.

► Debug Code Control

This item allows you to select debug code control mode. Select "LPC", you can use onboard seven segment LED; Select "PCI", you must insert debug card into PCI slot.

► 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.

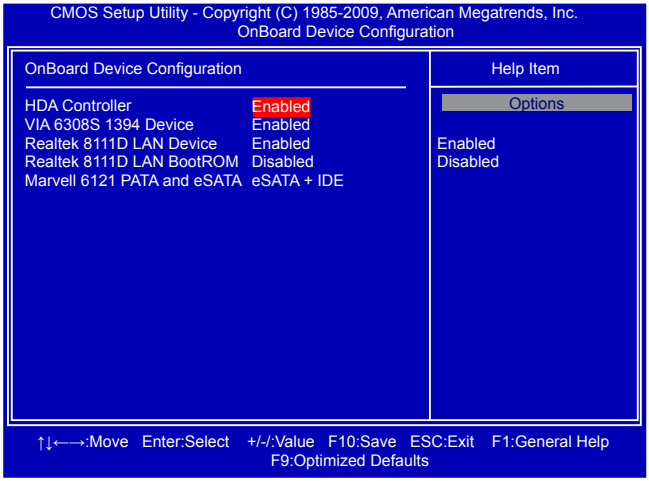
This setting indicates the minimum assertion width of the SLP_S4# signal to ensure that the DRAMs have been safely power-cycled. Setting values are: [4 to 5 seconds], [3 to 4 seconds], [2 to 3 seconds], [1 to 2 seconds].

► PCIE Ports Configuration

PCIE Port 0/1/2/3/4

This option is used to enable or disable the PCI Express port. Setting to [Auto] allows the system to detect the PCI Express devices automatically. If detected, the PCI Express Port is enabled, or else the PCI Express Port is disabled.

OnBoard Device Configuration



► **HDA Controller**

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

► **VIA 6308S 1394 Device**

This item is used to enable or disable the VIA 6308S 1394 device.

► **Realtek 8111D LAN Device**

This item is used to enable or disable the Realtek 8111D LAN device.

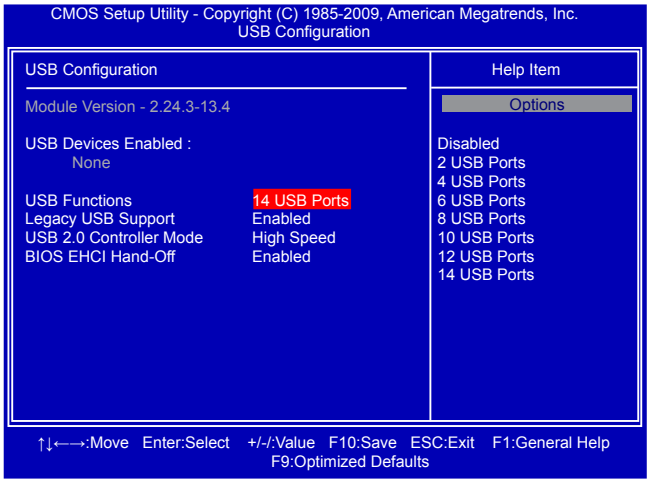
► **Realtek 8111D LAN BootROM**

This item is used to enable or disable the Realtek 8111D LAN BootROM.

► **Marvell 6121 PATA and eSATA**

You may set your PATA and e-SATA to [eSATA+IDE] mode or [RAID+IDE] Mode (RAID for e-SATA, IDE for PATA). We are using Marvell chip to control PATA and e-SATA devices.

USB Configuration



3

USB Configuration

► **USB Functions**

This item is used to enable or disable USB function.

► **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 auto or enabled.

► **USB 2.0 Controller Mode**

This item is used to set the transmission rate mode of USB 2.0. The available settings 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 .

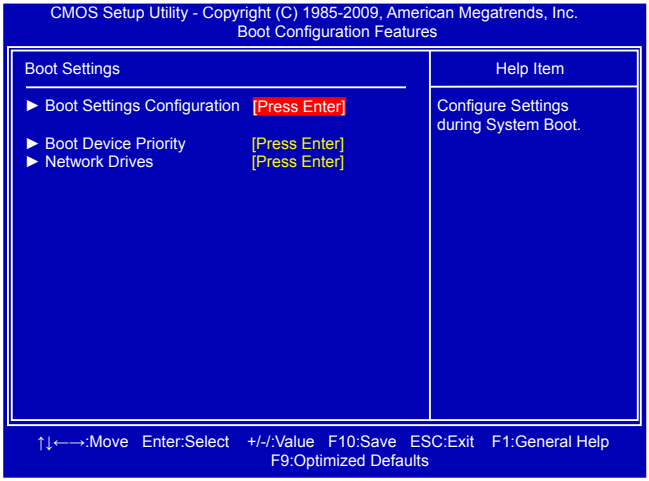
The EHCI ownership change should claim by EHCI driver.

If USB mass 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).

Boot Configuration Features



► **Boot Settings Configuration**

Press <Enter> to go to relative submenu.

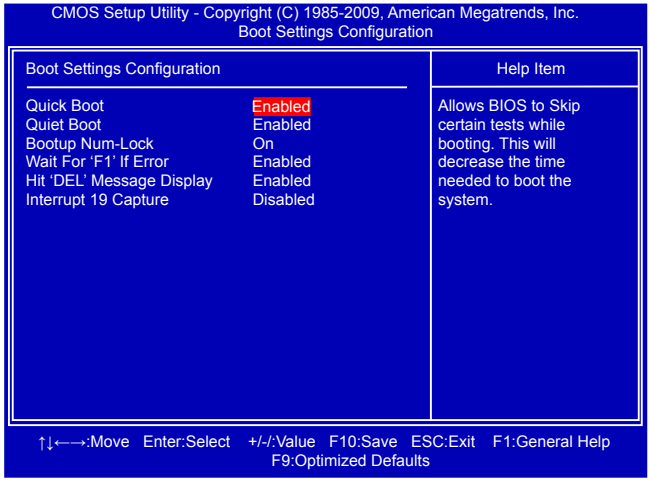
► **Boot Device Priority**

This item is used to specify the boot device priority sequence.

► **Network Drives**

This option is used to specify the boot device priority sequence from available Network Drives.

Boot Settings Configuration



► **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.

► **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].

► **Wait For 'F1' If Error**

You can set whether to press [F1] key if error occurs in the POST(Power On Self Test).

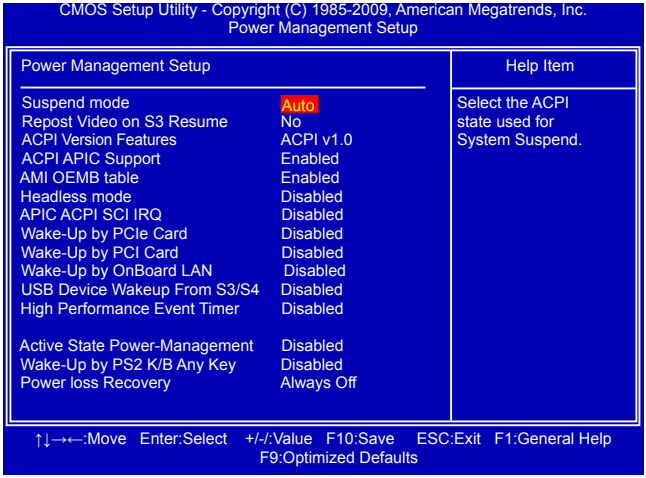
► **Hit 'DEL' Message Display**

This item is used to enable or disable system dispalys the "Press DEL to Enter Setup" in POST.

► **Interrupt 19 Capture**

When set to [Enabled], BIOS allows option ROMS to trap interrupt 19.

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.

► **Suspend mode**

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.

When you select “Auto”, it means OS will automatically take care and assign which mode is the most suitable now.

► **Repost Video on S3 Resume**

This item determines whether to invoke VGA BIOS post on S3/STR resume.

► **ACPI Version Features**

This item is used to select the ACPI Version feature, setting values: [ACPI v1.0], [ACPI v2.0] and [ACPI v3.0].

► **ACPI APIC support**

This item is used to enable or disable the ACPI APIC.

► **AMI OEMB table**

This item is used to enable or disable the AMI OEM BIOS table.

► **Headless mode**

This item is used to enable or disable Headless operation mode through ACPI.

► **APIC ACPI SCI IRQ**

This item is used to enable or disable the APIC ACPI SCI IRQ.

► **Wake-Up by PCIe Card**

This item is used to wake up the system by PCIe card

► **Wake-Up by PCI Card**

This item is used to wake up the system by PCI card.

► **Wake-Up by OnBoard LAN**

This item is used to wake up the system by OnBoard LAN device.

► **USB Device Wakeup From S3/S4**

This item is used to wake up the system by a USB device when it is staying at S3/S4 state.

► **High Performance Event Timer**

This item is used to enable or disable the high performance event timer.

► **Active State Power-Management**

This item is used to enable or disable PCI Express L0s and L1 link power statues.

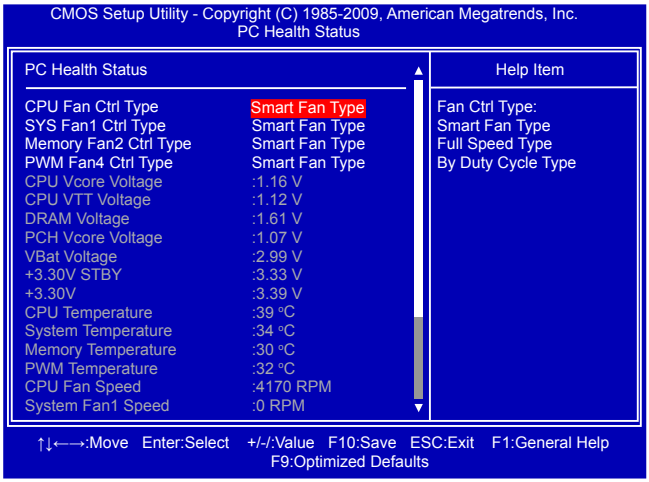
► **Wake-Up by PS2 K/B Any Key**

This item allows you to use the PS/2 keyboard to wake up the system from soft off and green mode. This feature requires an ATX power supply. The setting values: [Disabled], [Enabled].

► **Power Loss Recovery**

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

PC Health Status



PC Health Status

► **CPU Fan Ctrl Type, System Fan1/Memory Fan2/PWM Fan4 Ctrl Type**

These items are used to select the fan control type and available settings are: [Smart Fan Type], [Full Speed Type], [By Duty Cycle Type].

When they are set to [By Duty Cycle Type], the following items will appear:

► **CPU VCore Voltage/CPU VTT Voltage/DRAM Voltage/PCH VCore Voltage/VBat Voltage/ +3.30V STBY/+3.30V**

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

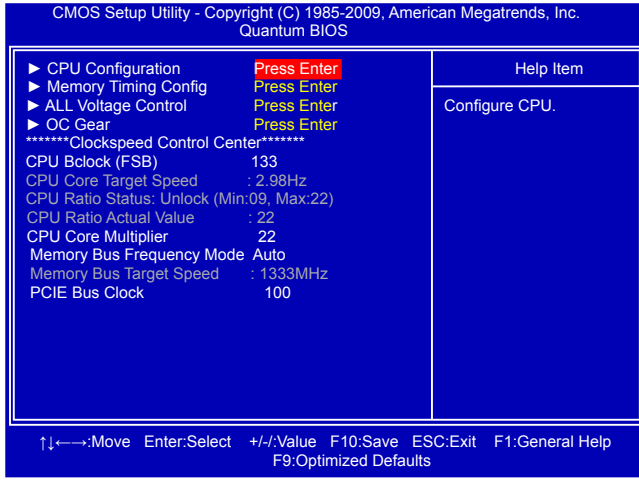
► **CPU/System/Memory/PWM Temperature**

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

► **CPU Fan Speed/System Fan1 Speed/Memory Fan2 Speed/PWM Fan4 Speed**

The current Fan speed are automatically detected and displayed by the system.

Quantum BIOS



► CPU Configuration / Memory Timing Config / ALL Voltage Control / OC Gear

Press <Enter> to go to relative submenu.

********* Clockspeed Control Center *********

► CPU Bclock(FSB)

This item is used to set the ratio between CPU Core Clock and the FSB Frequency. You can modify the value by pressing <+>/<-> key. The default value is 18.

► CPU Core Target Speed

This item shows CPU core target speed.

► CPU Ratio Status: Unlock (Min:09, Max:22)

This item shows CPU ratio status.

► CPU Ratio Actual Value

This item shows CPU ratio actual value is 22.

► CPU Core Multiplier

This item allows you to adjust CPU core multiplier.

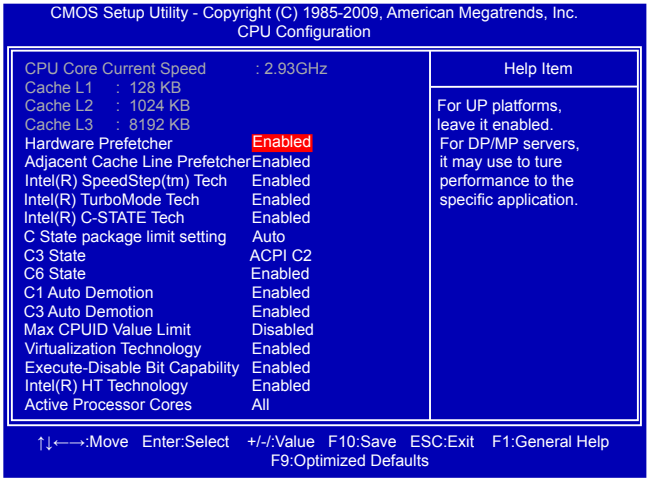
► Memory Bus Frequency Mode

This item is used to set the memory bus frequency mode. Default value is [Auto].

► PCIE Bus Clock

This item allows you to adjust PCIE BUS clock. Default value is:[100].

CPU Configuration



► **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.

► **EIST Function(Appear only when CPU supports)**

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

CAUTION

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.

► **Intel(R) Turbo Mode Tech (Appears only when CPU supports)**

Intel Turbo mode support, this item will take active after PPM item is enabled.

► **Intel(R) C-STATE Tech (Appears only when CPU supports)**

C-states are states in which the CPU is idle. Usually, CPU idle is set to C2/C3/C4.

Different processors support different numbers of C-states in which various parts of the CPU are turned off. This item is used to enable or disable C-State.

► **C State package limit setting**

The selected option will be entered into C State package limit register. The default value is: [Auto].

► **C3 State**

When Intel® C-State technology are enabled, this item allows you select the lowest C3 state supported according to CPU 's idle state.

► **C6 State**

When Intel® C-State technology are enabled, this item allows you select the lowest C6 state supported according to CPU 's idle state.

► **C1 Auto Demotion**

When enable, CPU will conditionally demote C3/C6/C7 request to C1 based on uncore auto-demote information.

► **C3 Auto Demotion**

When enable, CPU will conditionally demote C6/C7 request to C3 based on uncore auto-demote information.

► **Max CPUID Value Limit**

This item is used to enable or disable CPUID maximum value limit configuration. 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 Capability**

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.

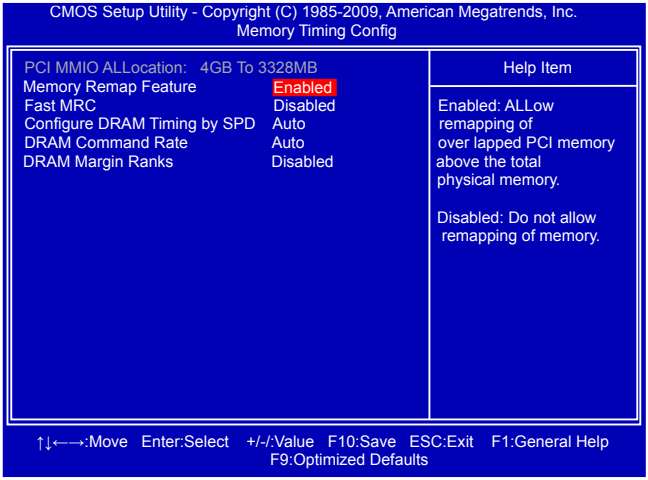
► **Intel(R) HT Technology**

Hyper-Threading Technology allows one physical processor package to be perceived as two separate logical processors within the operating system. This option is used to enable or disable this feature. It will be displayed only if your CPU is supporting this feature.

► **Active Processor Cores**

This item is used to select the number of cores to enable in each processor package.

Memory Timing Config



► **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 associate 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, BIOS will display the true size of memory installed.

► **Fast MRC**

[Enabled]: While cold booting, MRC directly restores memory data from valid NVRAM without hardware training.

[Disabled]: The cold booting with memory detection and hardware training.

► **Configure DRAM Timing by SPD**

This item is used to select the 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.

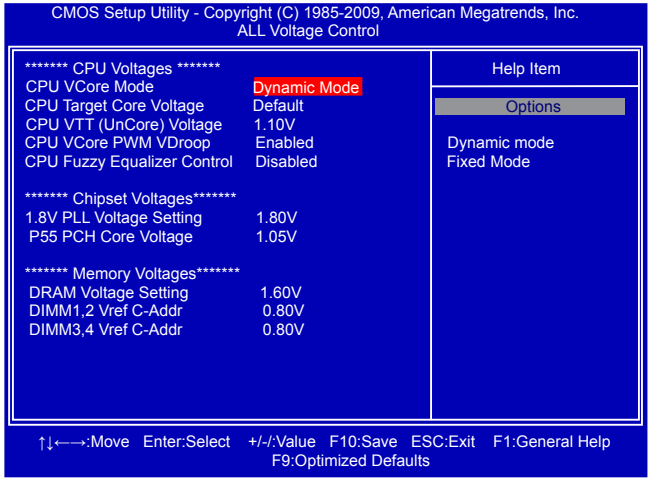
► **DRAM Command Rate**

This item allows you to select a delay time (in clock cycles) between sending the last data from a write operation to the memory and issuing a read command.

► **DRAM Margin Ranks**

This item is used to get all DRAM ranks best margin.

ALL Voltage Control



► **CPU VCore Mode**

This item is used to select the voltage mode for CPU VCore. Default Value is: [Dynamic Mode]. In fact, dynamic mode means EIST Mode is enabled and the voltage is fixed.

► **CPU Target Core Voltage**

This item shows the CPU target core voltage.

► **CPU VTT (UnCore) Voltage**

This item is used to set CPU VTT Voltage. The maximum voltage available for adjustment is 1260mV, one step is 20mV.

Warning: Adjusting the voltage beyond the CPU VTT default voltage could result in damage to the CPU.

► **CPU VCore PWM VDroop**

This item is enable or disable the CPU Vcore Power Mangement Vdroop.

Warning: Adjusting this item to [Enabled] could result in damage to the board.

► **CPU Fuzzy Equalizer Control**

This item is enable or disable the CPU Fuzzy Equalizer control. Enable this function, Fuzzy Equalizer will control the CPU power phase.

► **1.8V PLL Voltage Setting**

This item is used to set CPU PLL (Phase lock loop) Voltage. The default voltage is 1.8V.

Warning: Adjusting the voltage beyond the default voltage could result in damage to the board.

► **P55 PCH Core Voltage**

This item is used to set P55 PCH Core Voltage. The default value is: [1.05V].

Warning: Adjusting the voltage beyond the PCH default core voltage could result in damage to the PCH core.

► **DRAM Voltage Setting**

The maximum voltage available for adjustment is 2.86V.

Warning: Adjusting the voltage beyond the memories default voltage could result in damage to the memory controller, the default voltage is 1.60V

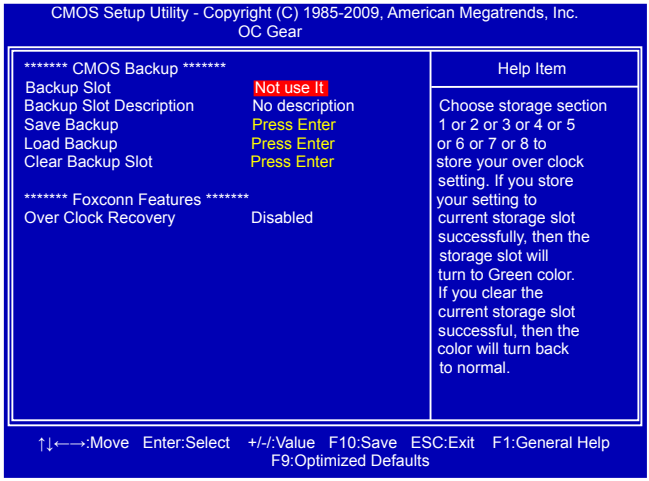
► **DIMM1,2 Vref C-Addr**

C-Addr (Command-address) reference voltage is reference DRAM voltage, the actual reference voltage will be DRAM voltage multiply this item value. The default value is: [0.80V].

► **DIMM3,4 Vref C-Addr**

CA (Command-address) and DQ (Data line) reference voltage is reference DRAM voltage, the actual reference voltage will be DRAM voltage multiply this item value. The default value is: [0.80V].

OC Gear



**********CMOS Backup**********

► **Backup Slot**

We have more spaces in CMOS to allow you to store up to 8 sets of BIOS configuration data. You can change any setting of BIOS, including the overclocking information, and save the whole BIOS settings to one of eight storage slot area. Later, you can retrieve BIOS settings by restore it. This item is used to choose storage section to store your BIOS settings. Setting values: [None]; [Slot 1 - 8].

Note: You should reset the data in slot after flashing BIOS, or there will be some unexpected problems.

► **Backup Slot Description**

This item will be available when “Backup Slot“ is set to [Slot 1 - 8], then you can select the overclock setting for the current slot. Setting values are: [No Description]; [Still Tweaking]; [Max Memory]; [Max CPU]; [Max FSB]; [2d Benching]; [3d Benching]; [24/7 OverClock]; [Tweaked Stock Speed].

► **Save Backup**

This item allows you to save the BIOS settings. See the help string in “Help Item” table for detail.

► **Load Backup**

This item allows you to restore the BIOS settings. See the help string in “Help Item” table for detail.

► **Clear Backup Slot**

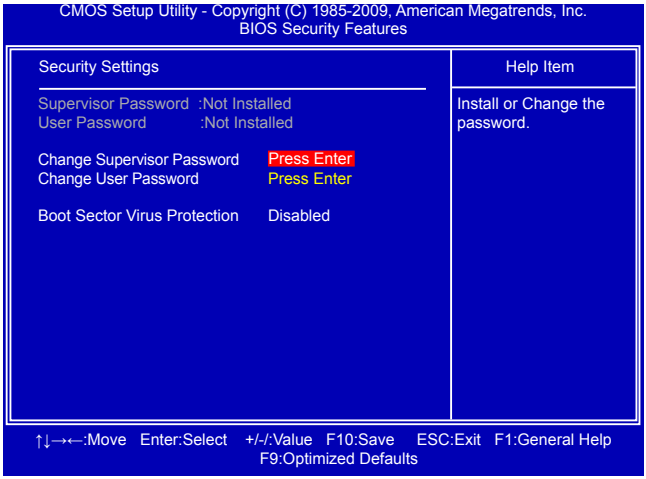
This item allows you to clear the BIOS settings. See the help string in “Help Item” table for detail.

********Foxconn Function********

► **Over Clock Recovery**

When this feature is enabled, once system failed after overclocking, it will load the previous CMOS settings (before overclocking) back, so the system can always work.

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**

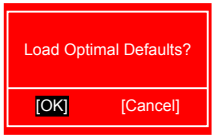
This item is used to install or change user password.

► **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.



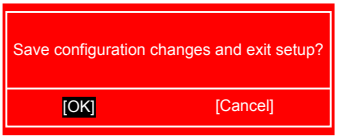
Select this option and press Enter, it will pop out a dialogue box to let you load the defaults. Select <OK> and then press <Enter> to load the defaults. Select <Cancel> and press <Enter>, it will not load.

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 & Exit Setup

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.



Exit Without Saving

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 Introduction
- Aegis Panel
- 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 introduction

This motherboard comes with one Utility CD. To begin with, simply insert the CD into your CD drive. The CD will automatically run and display the main menu on the screen.

1. Driver

Select "**Driver**", then use these options to install all the necessary drivers for your motherboard. You must click "Intel Chipset Driver" to install it first, then to install the others left. You need to restart your computer after finishing all the installations of drivers.

CAUTION

After installing "Intel Chipset Driver", you can click "One Click Setup" to install all the other drivers except “Intel RAID Driver”. You have to click “Intel RAID Driver” item to install it manually.

Intel chipset Driver

Use it to install Intel chipset driver.

Realtek HDA Audio Driver
Use it to install Realtek Audio driver.

Realtek 811X LAN Driver
Use it to install Realtek LAN driver.

Intel RAID Driver
Installing this driver needs "SATA Mode" in BIOS to be set to [AHCI] or [RAID]. This restriction forces us to find out another way to install this driver. Please go to "**5-5 Existing Windows XP with RAID built as data storage.**" for more detail.

2. Utility
Use these options to install additional software programs.

AEGIS PANEL
Foxconn new utility software for monitoring system information. See “AEGIS PANEL” for details.

FOX LiveUpdate
The Fox LiveUpdate allows you to backup or update the system BIOS, drivers and utilities in Windows® environment. See “Fox LiveUpdate” for details.

FOX LOGO
The FOX LOGO is a simple and useful utility to backup, change and delete the boot time Logo. See “FOX LOGO” for details.

FOX DMI
The FOX DMI is a full Desktop Management Interface viewer, and it provides three DMI data formats. See “FOX DMI” for details.

Microsoft DirectX 9.0
Use it to install Microsoft DirectX 9.0.

Adobe Acrobat Reader

Installs Adobe® Acrobat® Reader that is used for viewing and printing the PDF document.

Norton Internet Security

Installs Norton® Internet Security to protect your PC from being affected by viruses.

3. Foxconn WebSite

Click it to visit Foxconn's website.

4. Browse CD

Click it to browse the CD content.

AEGIS PANEL

Aegis Panel, is a Windows innovation tool which provides settings of OC gear, overclocking, fan control and alarm function. It also displays system monitoring information such as fan speed, temperature, voltage and CPU clock etc..

The powerful features are:

HW Monitor(Hardware Monitor Information)
Overclocking
OC Gear (Optional)
Configuration

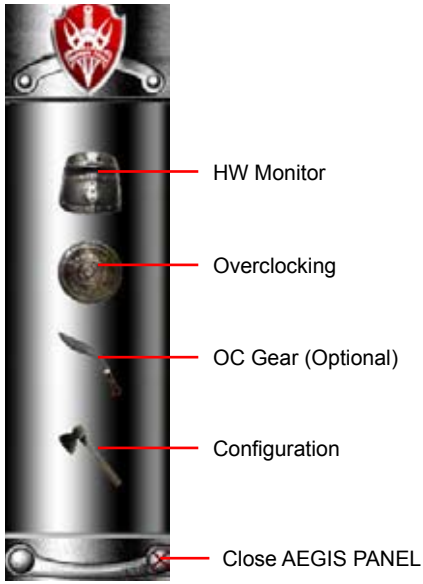
Supported Operating Systems :

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

Using AEGIS PANEL:

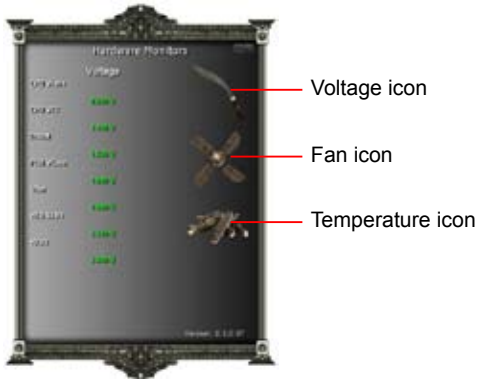
1. Main Panel

When AEGIS Panel is running, a main menu appears at the right hand side of the screen. This menu will disappear if you remove the mouse from it a few seconds later. If you move the mouse to touch the screen right where the menu stayed before, it will appear again.



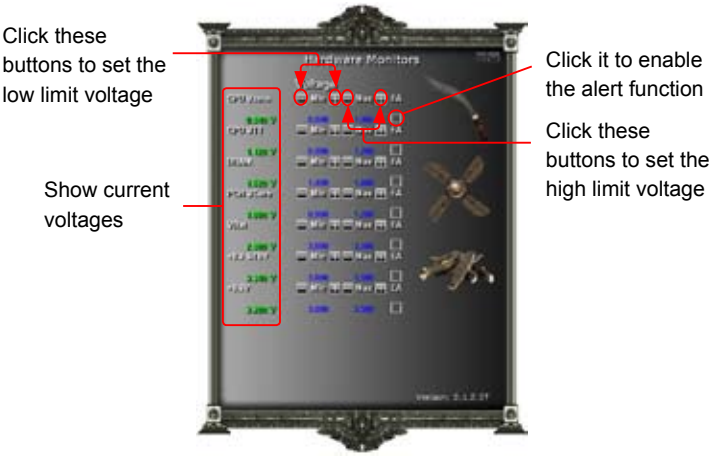
2. HW Monitor

Click on "HW Monitor" icon  , its panel appears. By moving the mouse on the voltage icon, it will display voltage information. Move the mouse on fan or temperature icon will show relative information accordingly.



2.1 HW Monitor - Voltage

Click on voltage icon  to get into the voltage setting menu. It allows you to set the low/high limits of Vcore, CPU_VTT, +3.3V, +12V, VCC 1.1V, DRAM and Vbat voltages, and to enable the alert function. If the current voltage value is lower than the low limit or higher than the high limit, then a buzzer sounds.



2.2 HW Monitor - Fan

Move the mouse on the fan icon  , its menu appears. Click on the fan icon to get into the fan setting menu. It allows you to set the low/high limits of the CPU, NB and System fan speeds, and to enable the alert function. If the current fan value is lower than the low limit or higher than the high limit, then a buzzer sounds.

Click these buttons to set the low limit fan speed

Show current fan speeds

Click it to enable the alert function

Click these buttons to set the high limit fan speed

Fan control has three operating modes:

By Full Speed:

Running at the full speed.

By Duty-Cycle:

The fan speed is controlled by setting the percentage to the fan duty (between 0% ~ 100%).

By Smart Fan:

Fan speed is controlled by the system automatically.

2.3 HW Monitor - Temperature

Move the mouse on the temperature icon  , its menu appears. Click on the temperature icon to get into the temperature setting menu. It allows you to set the low/high limits of CPU temperature, System temperature and NB temperature, and to enable the alert function. If the current temperature value is lower than the low limit or higher than the high limit, then a buzzer sounds.

Click these buttons to set the low limit CPU temperature

Show current temperatures

Click it to enable the alert function

Click these buttons to set the high limit CPU temperature

3. Overclocking

Click "Overclocking" icon  to enter the overclok setting menu. It allows you to adjust CPU clock, and to change the voltages of CPU, chipset and memory. After you set the values, click [Apply] button to apply it.

4. Configuration

Click "Configuration" icon  to configure Aegis function. You can enable or disable the launch of "Aegis Panel Ex" on startup. If enabled, the Aegis Panel will be automatically activated when the Windows operating system is running.

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

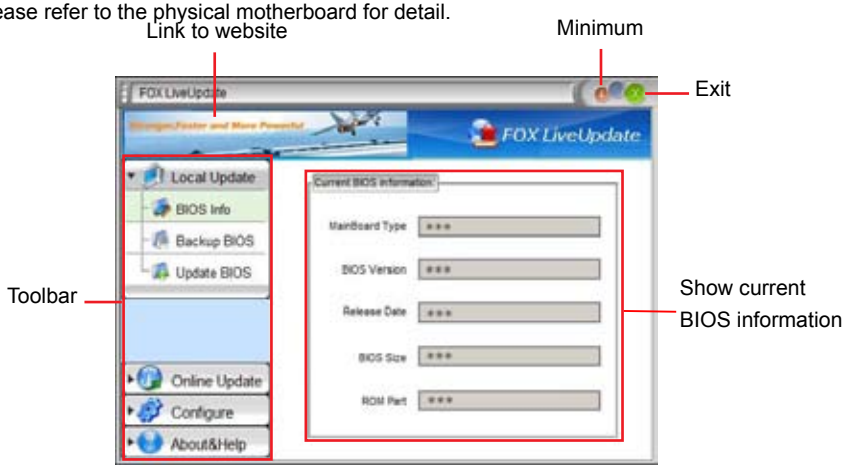
Using FOX LiveUpdate :

1. Local Update

1-1 Local Update - BIOS Information

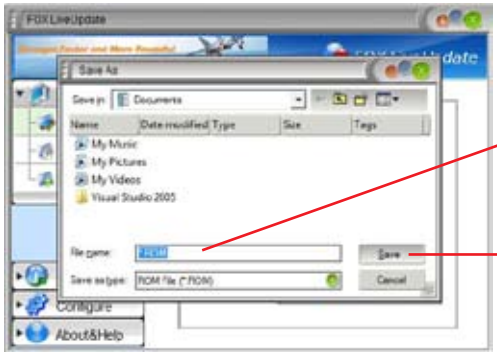
This page lets you know your system BIOS information.

*** : 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.

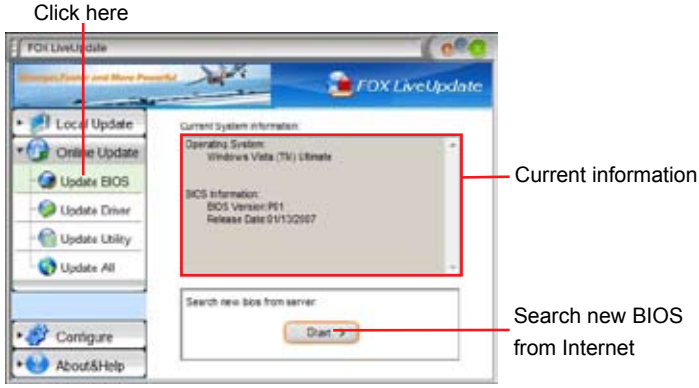
CAUTION

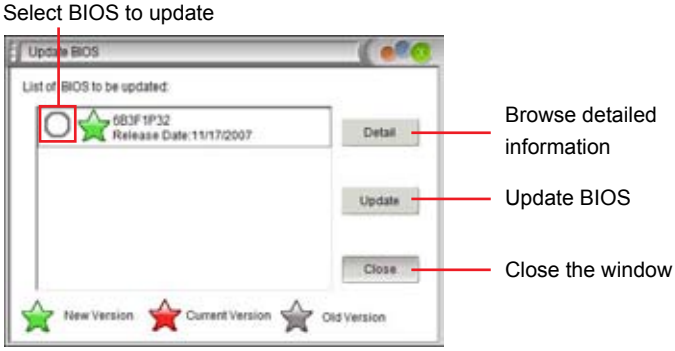
FOX LiveUpdate can automatically backup old BIOS before update. This feature can be enabled in the "Configure-System" setup. Please refer to "Configure-System" section for more detail. The default backup directory is C:\LiveUpdate_Temp, but the backup file name will be automatically generated. It is 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

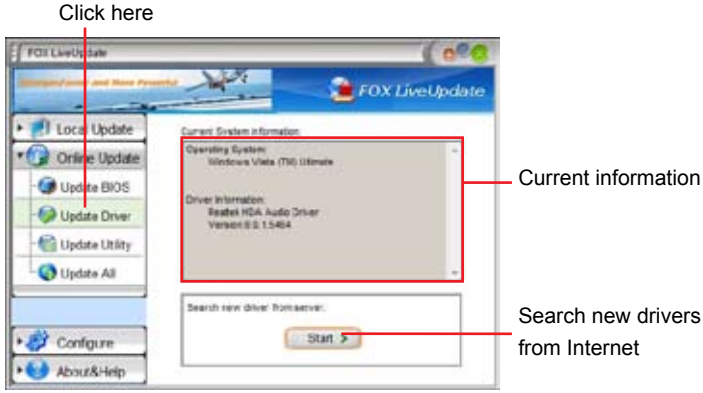
This page lets you update your system BIOS from Internet. Click “start”, it will search the new BIOS from Internet. Then follow the wizard to finish the update operation.

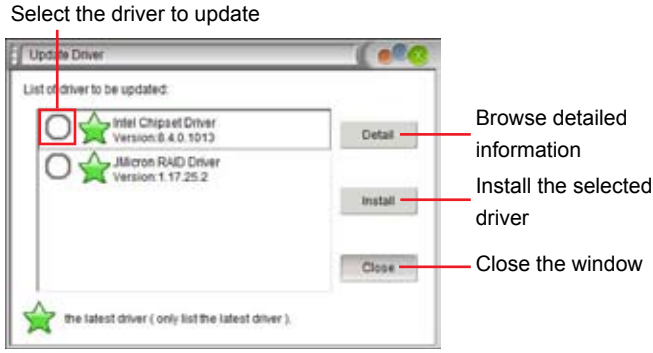




2-2 Online Update - Update Driver

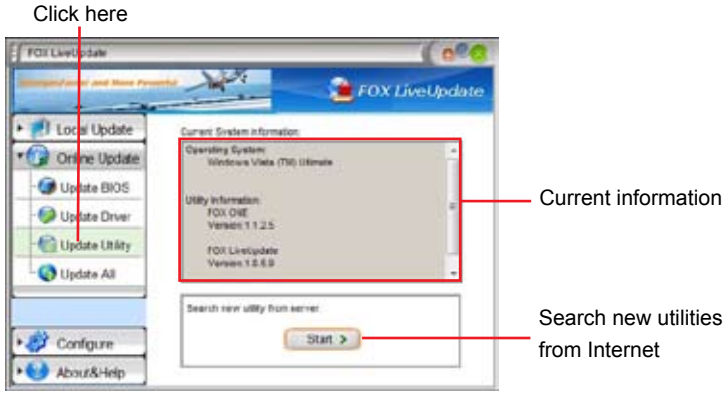
This page lets you update your system drivers from Internet. Click “start”, it will search the new drivers from Internet. Then follow the wizard to finish the update operation.

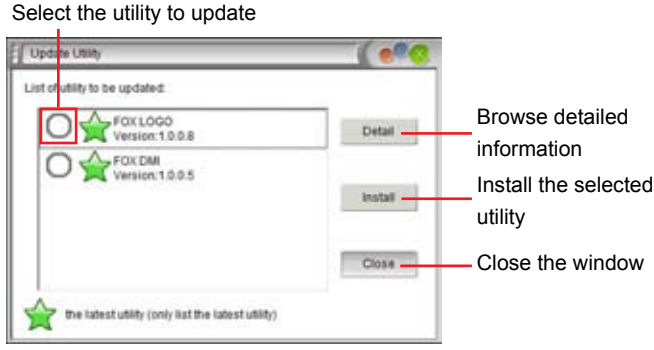




2-3 Online Update - Update Utility

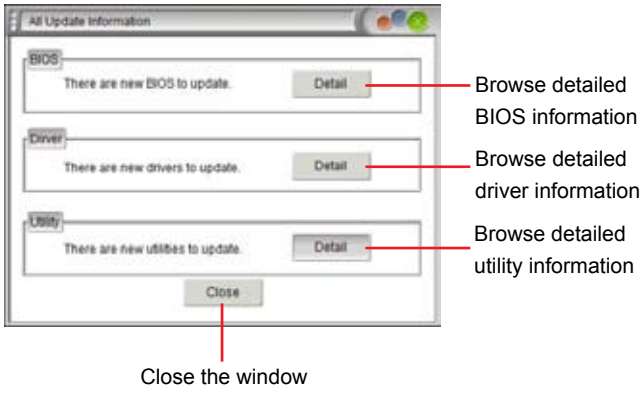
This page lets you update utilities from Internet. Click “start”, it will search the new utilities from Internet. Then follow the wizard to finish the update operation.





2-4 Online Update - Update All

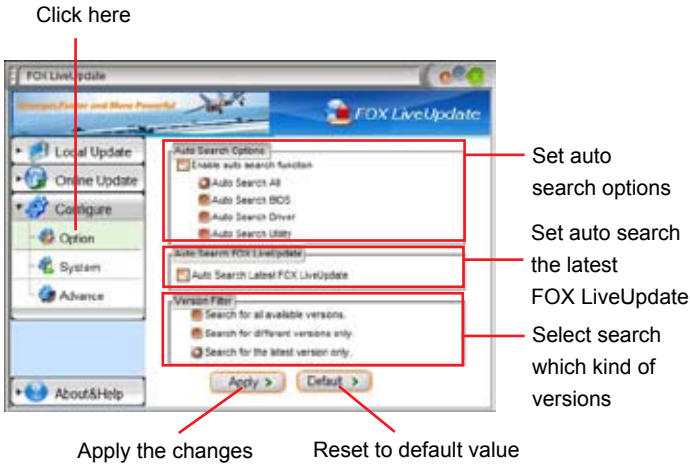
This page lets you update your system drivers from Internet. Click “start”, it will search all new BIOS/drivers/utilities from Internet. Then follow the wizard to finish the update operation.



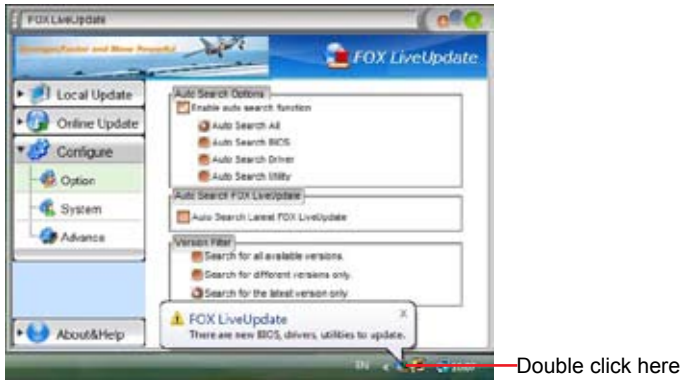
3. Configure

3-1 Configure - option

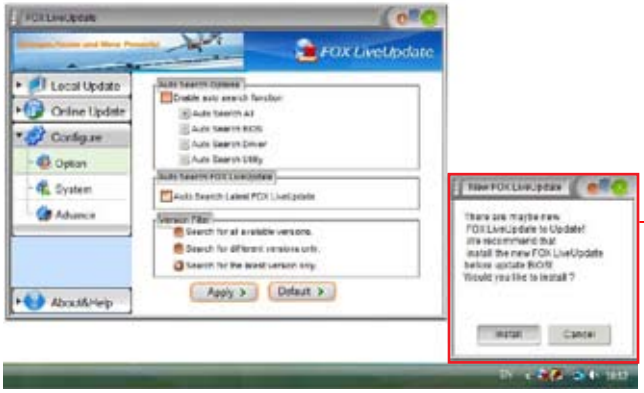
This page lets you set auto search options. After you enable the auto search function, FOX LiveUpdate will start its searching from Internet and if any qualified item found, it will pop out a message on the task bar to inform you to do the next step.



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

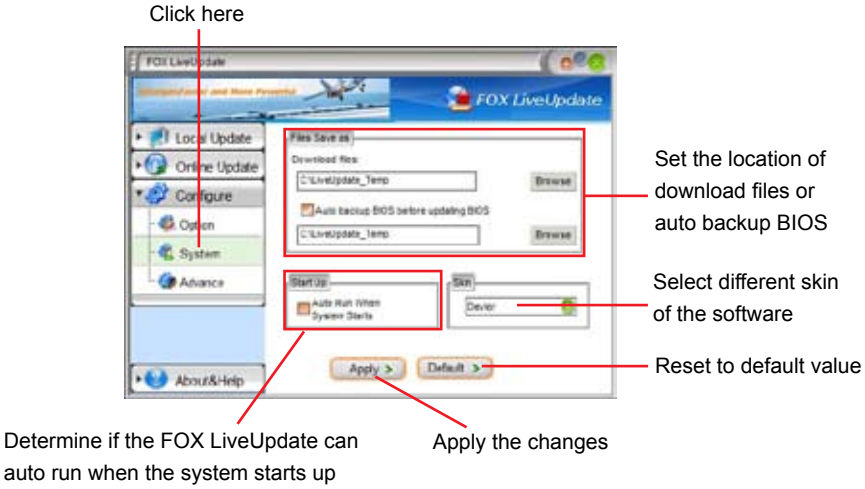


When you enable "Auto Search FOX LiveUpdate", if your FOX LiveUpdate version is older, it will auto search from internet and prompt you to install the new version.



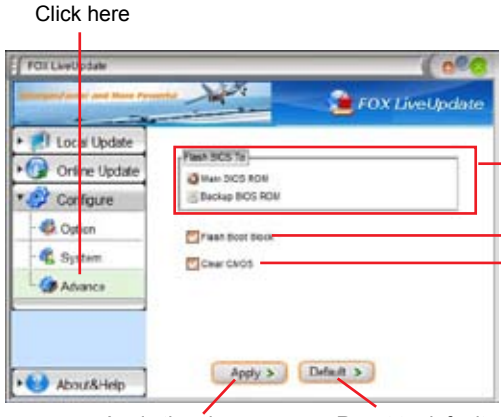
3-2 Configure - System

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.

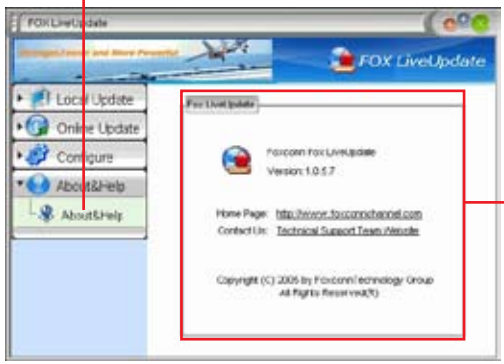


CAUTION

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 (640x480) 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 XP (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

Using FOX LOGO:

Main Page

Here use Inferno Katana as the example. The marketing name on Inferno Katana GTI's boot screen will show "Inferno Katana GTI".

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 :

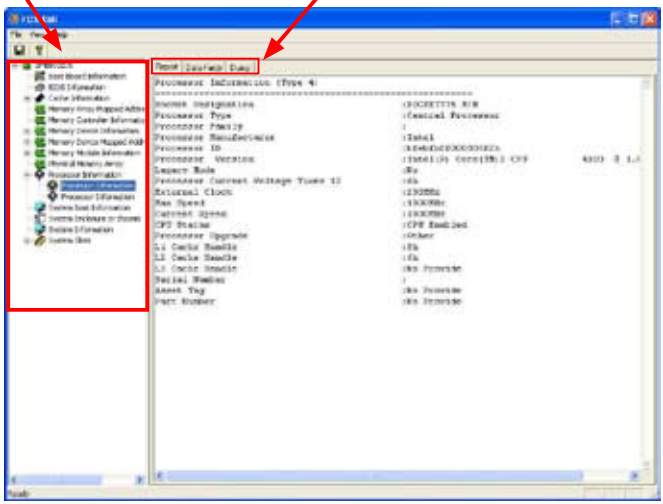
- Windows XP (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)

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

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® PCH. 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.

Recovery

This level copies data between a master and a recovery disk, so the capacity of the array is equal to the capacity of the smaller drive. It’s no need to set the strip size for Recovery, but you must select a sync mode to update the volume.

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
Recovery	2	Smaller	Read faster	Excellent	100% Data backup

Intel® Matrix Storage Manager

The Intel® Matrix Storage Manager 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 298GBs, one 139.7GB, and one 74.5GB. 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 Manager 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\RAID\Floppy\32bit**, click on **Raid-Tool** 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.

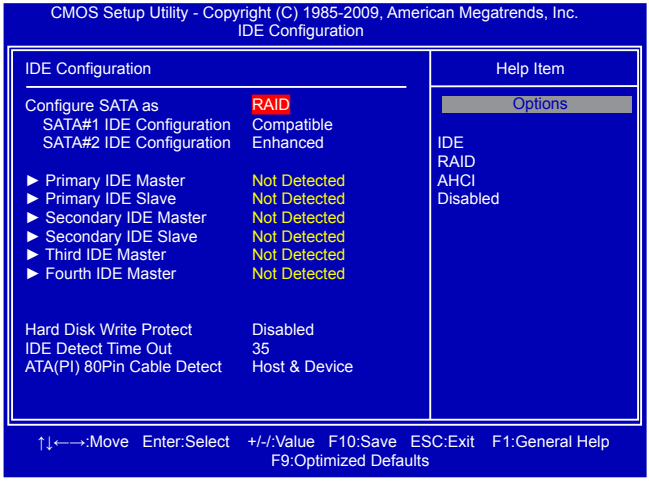
8. Format finished. Click "OK" to continue copying of RAID driver into this diskette.

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

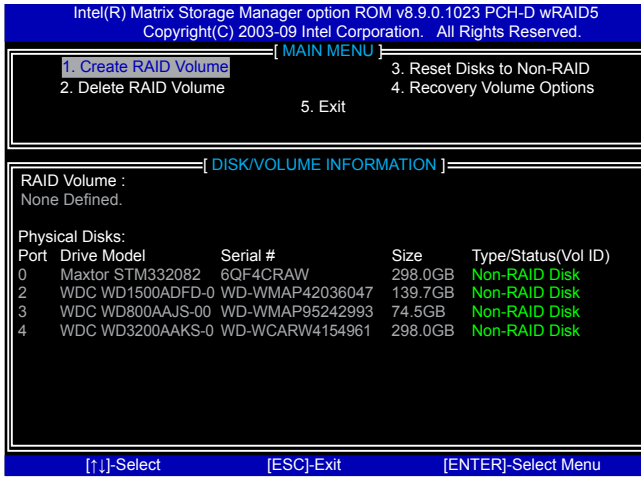
1. Enter the BIOS setup by pressing <DEL> key during the POST(Power On Self Test).
2. Select the “Advanced BIOS Features” from the “Main menu”, then select the “IDE Configuration” item and press <Enter> to go to the configuration items.
3. Select and Set the “Configure SATA as” option to [RAID].
4. Press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



5-3 Create RAID in BIOS

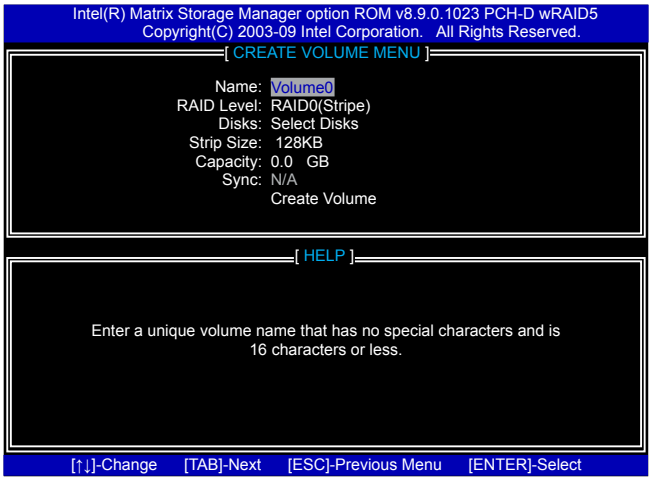
Enter RAID BIOS Setup

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.



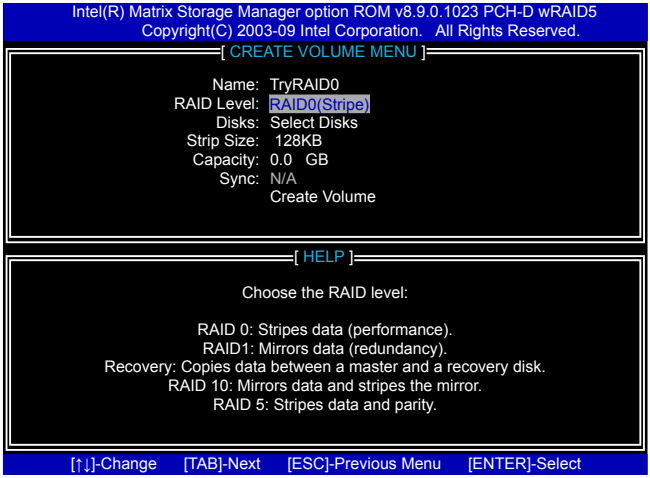
Create RAID Volume
Create RAID 0 (1st Volume)

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

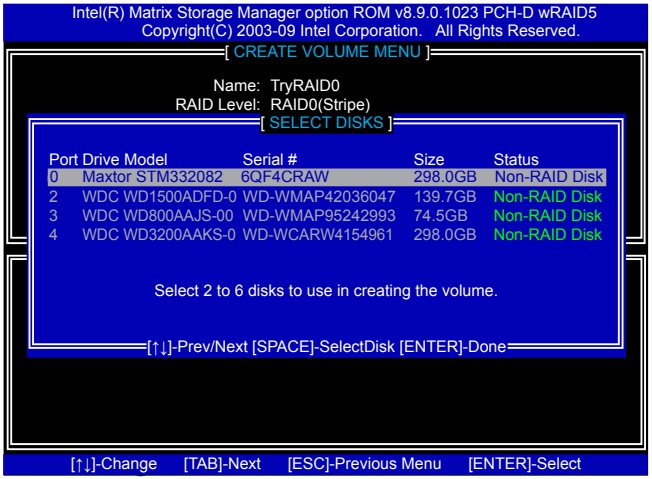


2. In "**Name**" item, you can input a device name for the RAID0 system and press <Enter> to apply it. Here, we name it as TryRAID0 to replace the default Volume0.

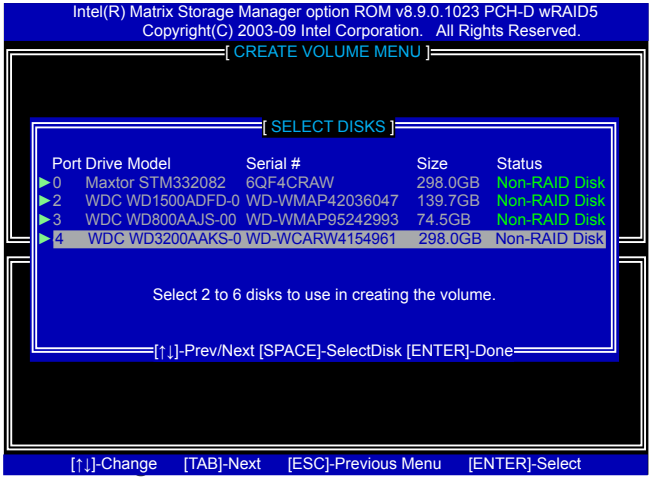
3. In "**RAID Level**" item, you can use Up or Down arrow key to make a selection. Select RAID0 (Stripe) and press <Enter>.



4. It then goes to "**Disks**" item. Press <Enter> to display the hard disks list for this RAID0 system.

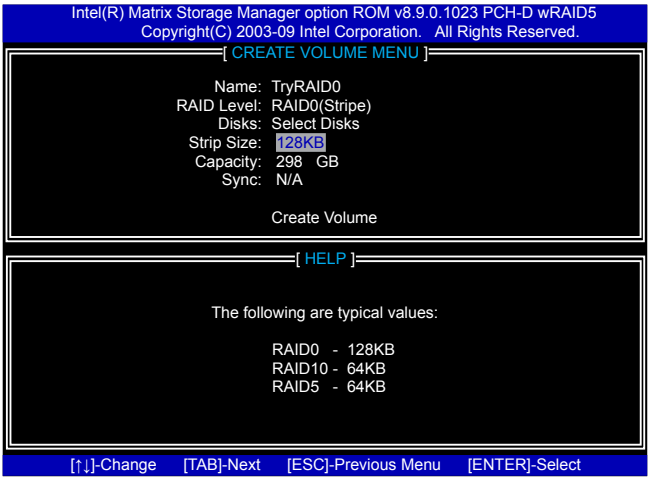


5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as RAID0, then press <Space> key to select them. A triangle sign will appear to indicate the drive selected. Here, we select all the four hard disks as an example. Press <Enter> key to finish the selection.

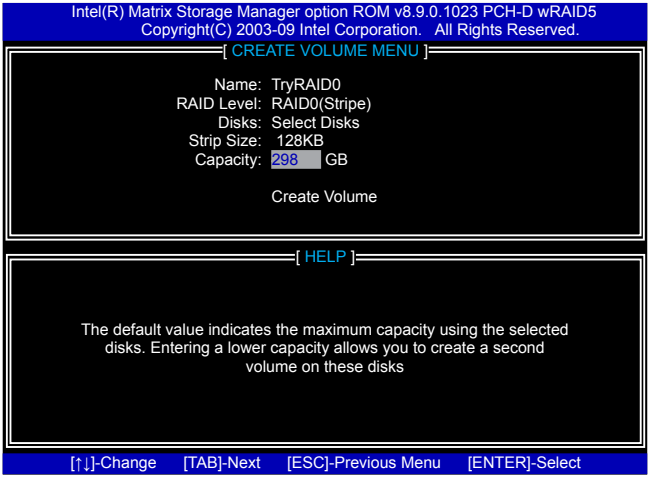


6. It is now entering “**Strip Size**” menu. Use Up or Down arrow key to select the desired strip size. The available values range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :
   16K - Best for sequential transfer.
   64K - Good general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

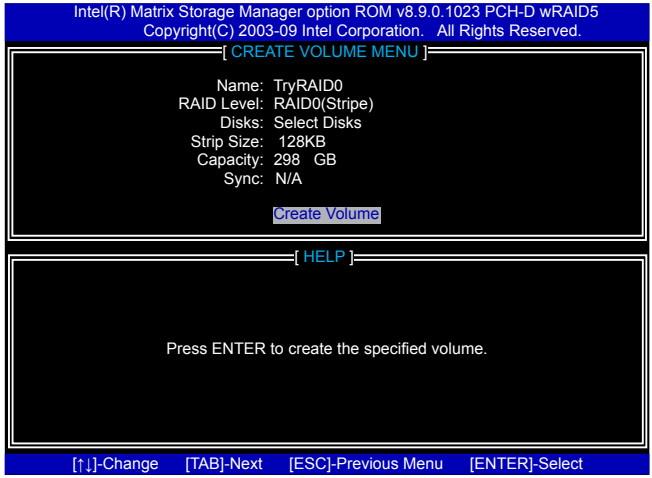
The default value is 128K for RAID0. Press <Enter>.



7. In “**Capacity**” item, the default value indicates the maximum capacity using the selected disks. 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 298GB here to build the first volume. Later, we will also describe how the second volume is generated. Input 298GB, and press <Enter>.

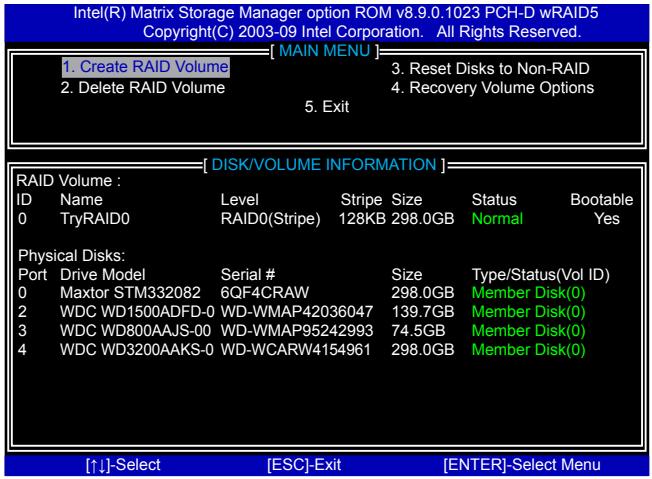


8. In “**Create Volume**” item, press <Enter>.



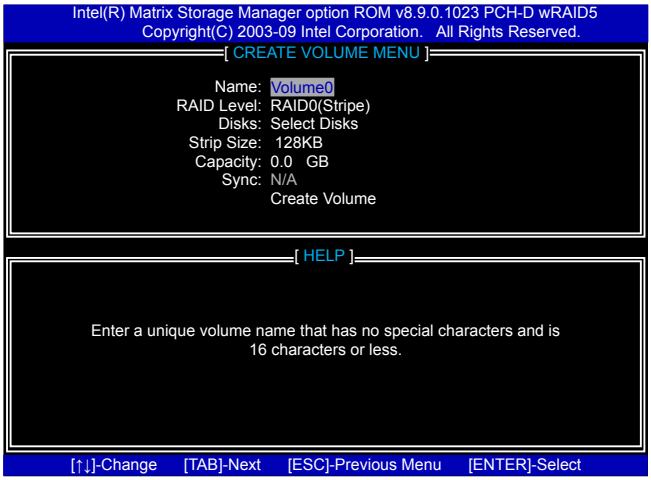
A warning message will appear :

9. Press <Y> to create the volume and return to the main menu, a 298GB RAID0 system is normally configured.



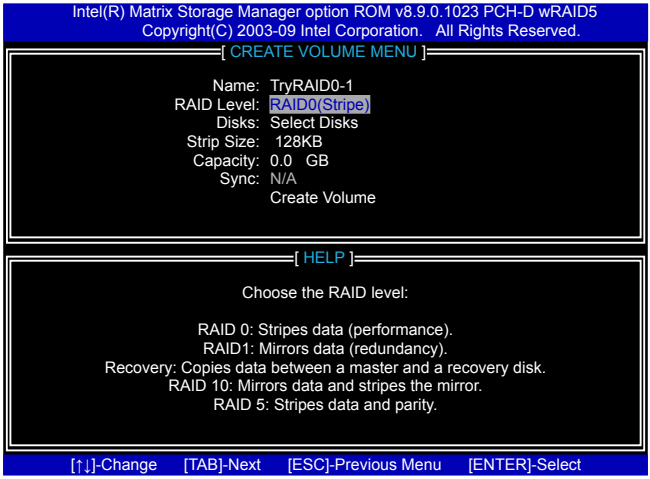
Create RAID0 (2nd Volume)

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

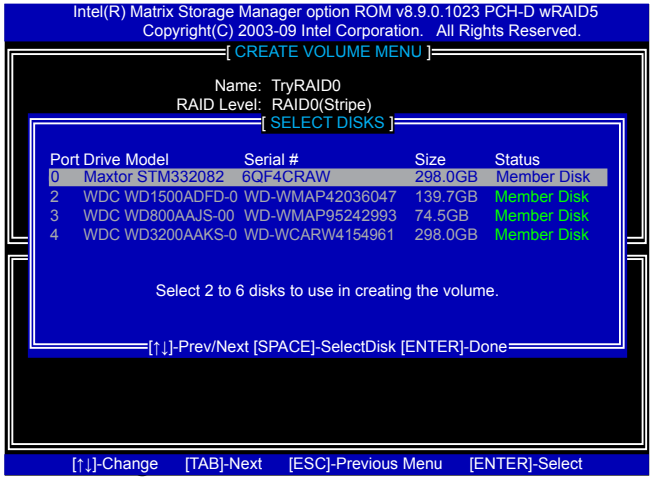


2. In "**Name**" item, we name it as TryRAID0-1 for second volume.
3. In "**RAID Level**" item, you can use Up or Down arrow key to make a selection, only RAID0, 1 can be selected. Select RAID0 (Stripe) and press <Enter>.

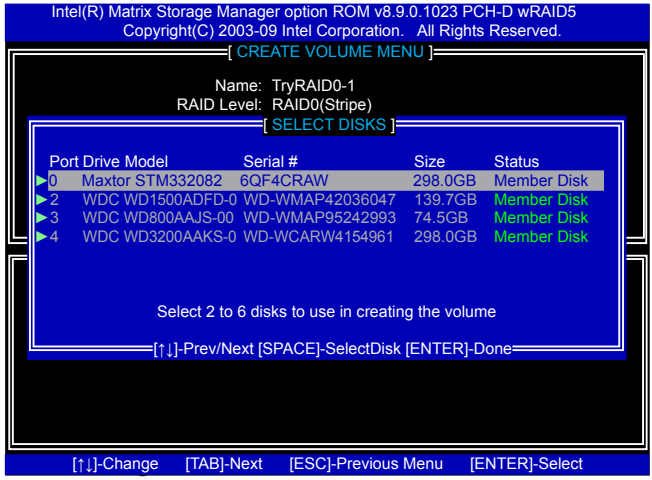
(Note : You also can try to select RAID1 for the second volume as an experiment here)



4. It then goes to “**Disks**” item. Press <Enter> to display the hard disks list 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. Triangle signs will appear to indicate the selections. Press <Enter> to continue.



6. It goes to “**Strip Size**” menu directly. Capacity automatically displays 512.2GB, and at this time, you can not input any value in capacity as there is no additional volume available.

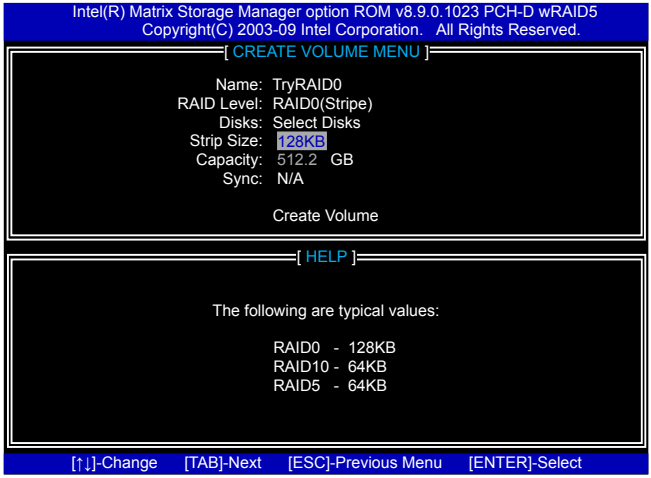
The available values of Strip Size range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :

16K - Best for sequential transfer.

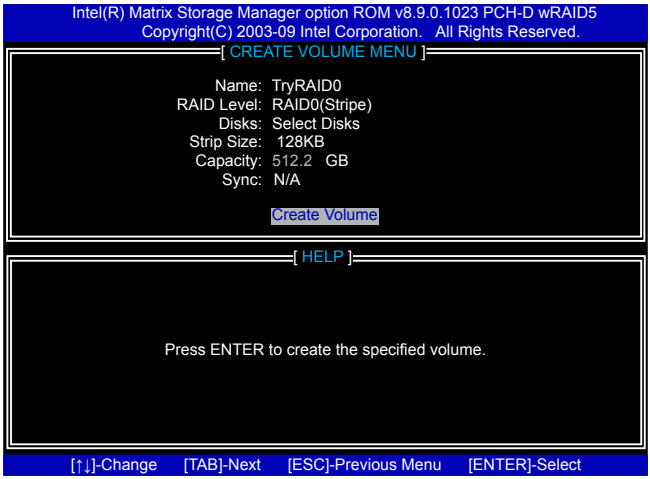
64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations .

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

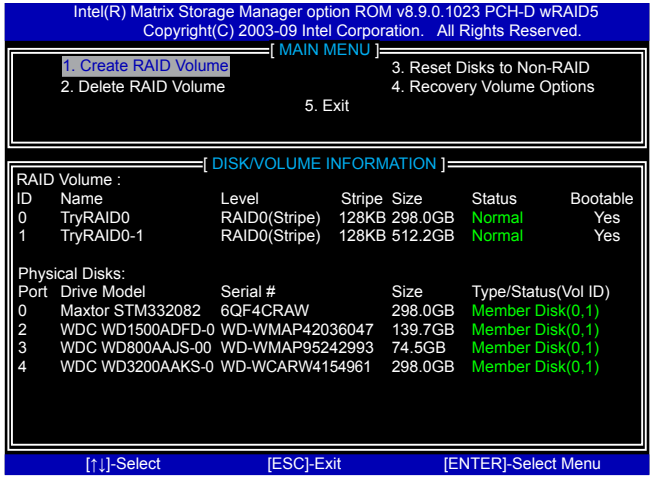


7. Select “**Create Volume**” and press <Enter>.



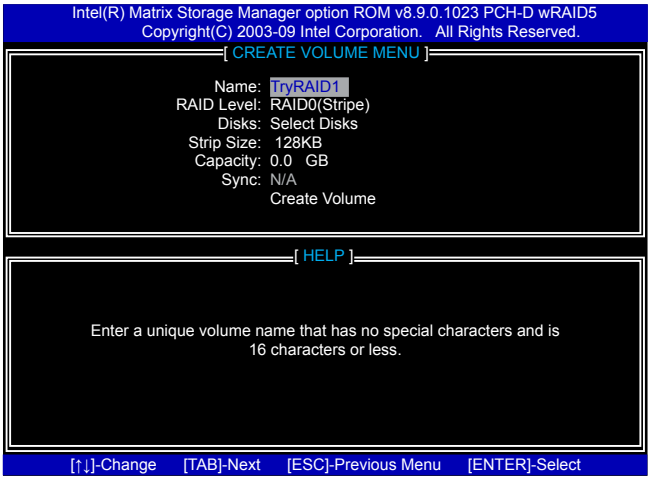
A message will appear :

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

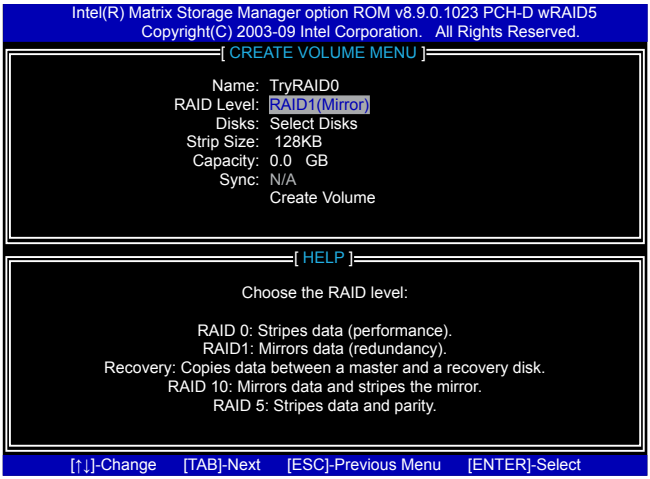


Create RAID 1

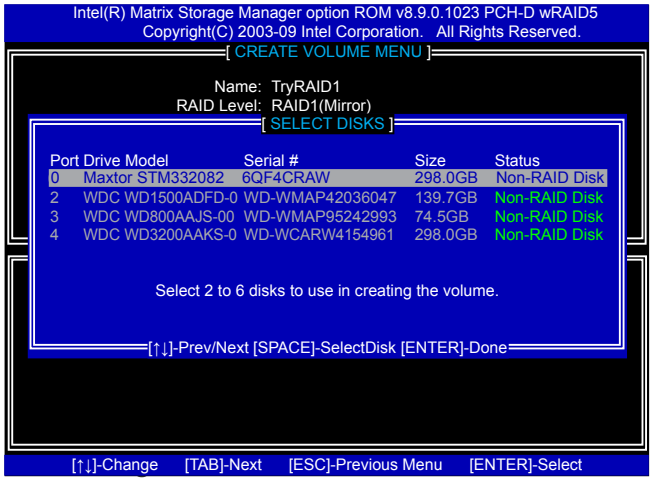
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID1 system and press <Enter> to apply it. Here, we name it as TryRAID1 to replace the default Volume0.



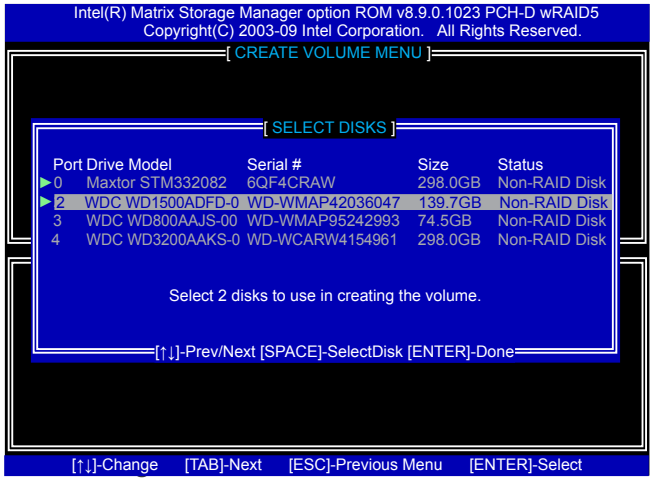
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select RAID1 (Mirror) and press <Enter>.



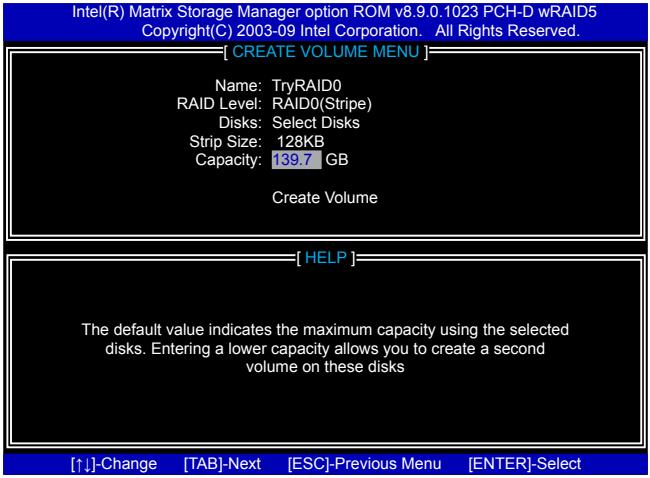
4. It then goes to “**Disks**” item. Press <Enter> to dispaly the hard disks list for this RAID1 system.



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 298GB and one 139.7GB hard disks. Press <Enter> key to finish the selection.

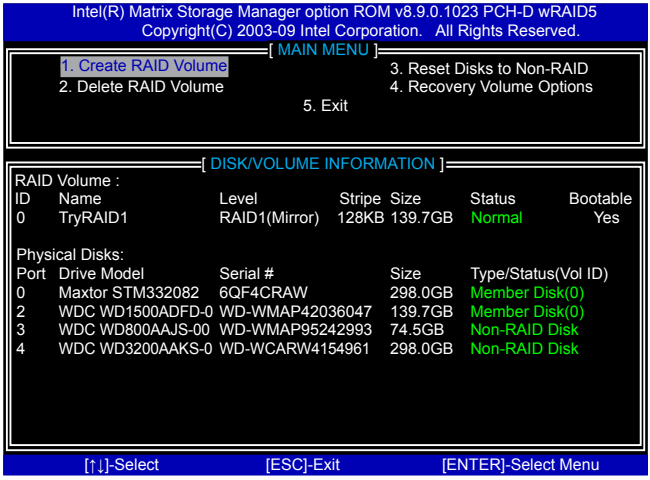


6. It will skip “**Strip Size**” menu for RAID1.



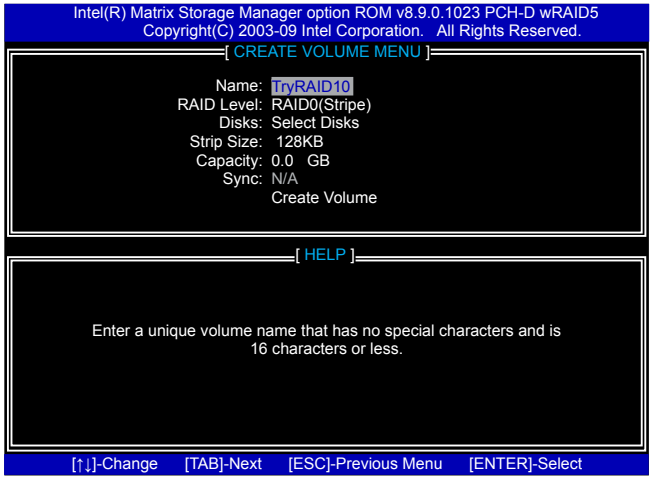
7. In “**Capacity**” item, use the default value, and press <Enter>. The size of the smaller hard disk 139.7GB is becoming the default value, and it indicates the maximum capacity.
8. Select “**Create Volume**” and press <Enter>. A warning message will appear:

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

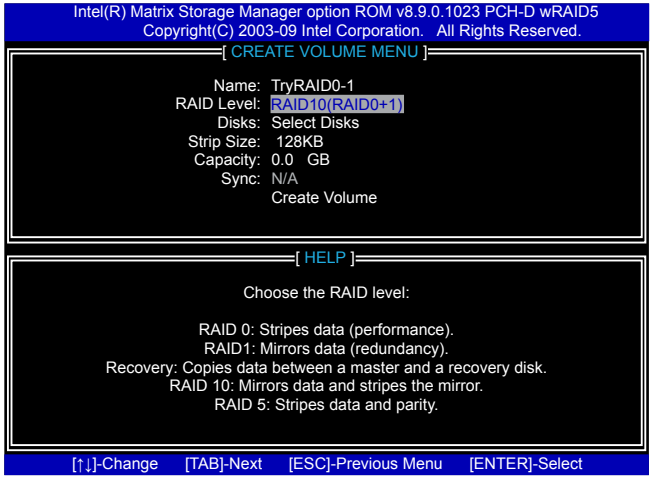


Create RAID 10 (0+1)

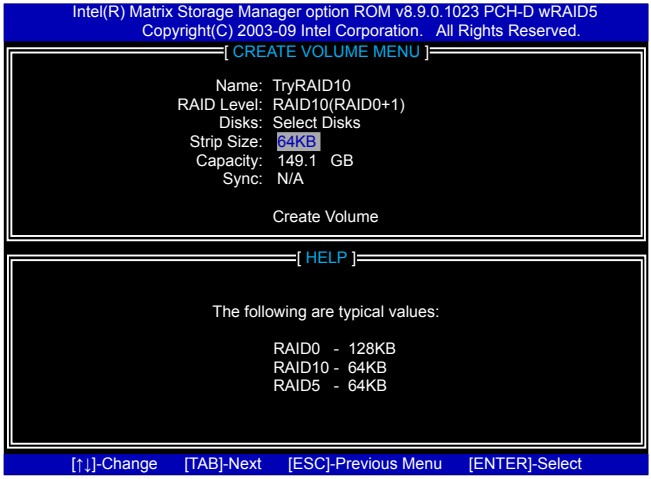
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID10 system and press <Enter> to apply it. Here, we name it as TryRAID10 to replace the default Volume0.



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

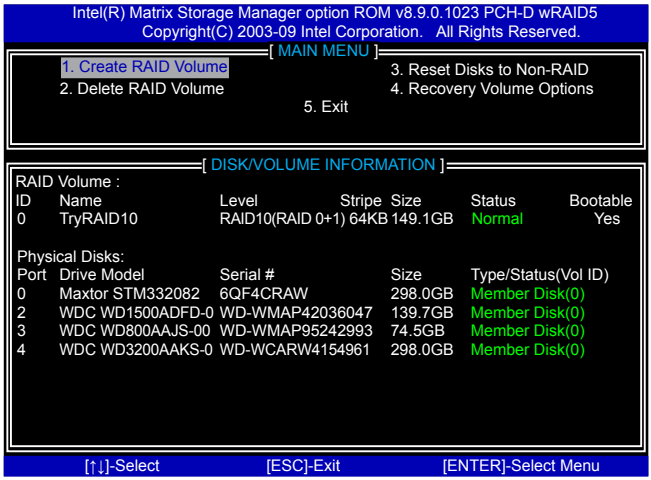


4. After exiting from "**RAID Level**", it goes directly to "**Stripe Size**" item. Because all four disks are selected for RAID10, so there is no need to go to **Disks** option.
5. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K.



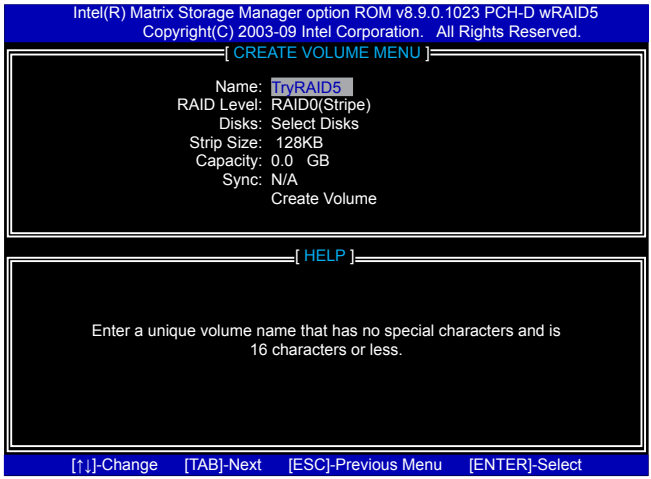
6. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice the smallest hard disk size, that is, 74.5GB * 2 = 149GB.
7. Select "**Create Volume**" and press <Enter>. A warning message will appear :

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

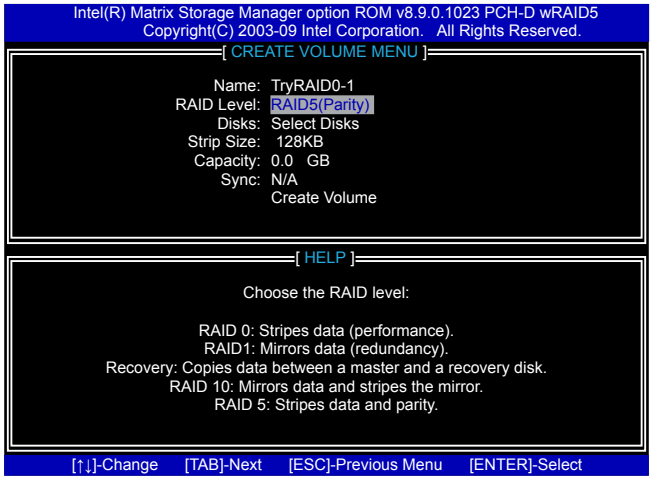


Create RAID5 (Parity)

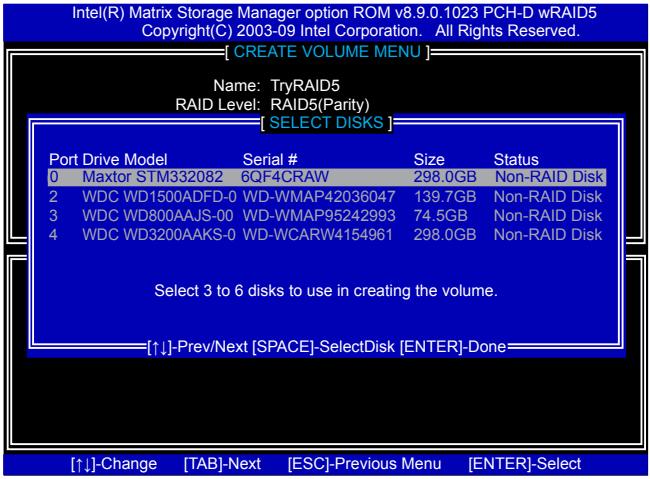
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID5 system and press <Enter> to apply it. Here, we name it as TryRAID5 to replace the default Volume0.



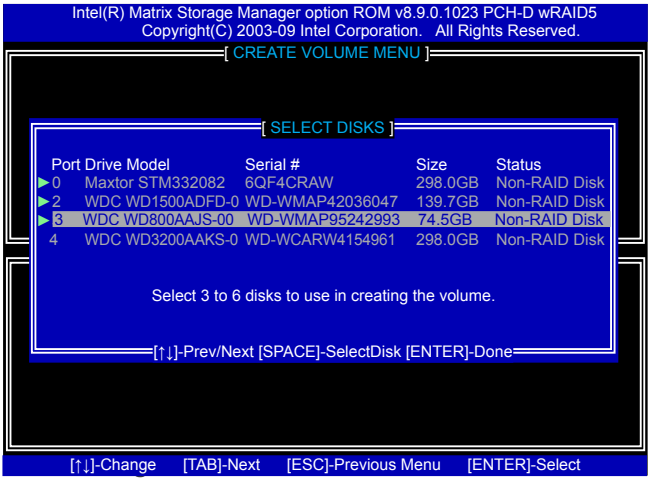
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select RAID5(Parity) and press <Enter>.



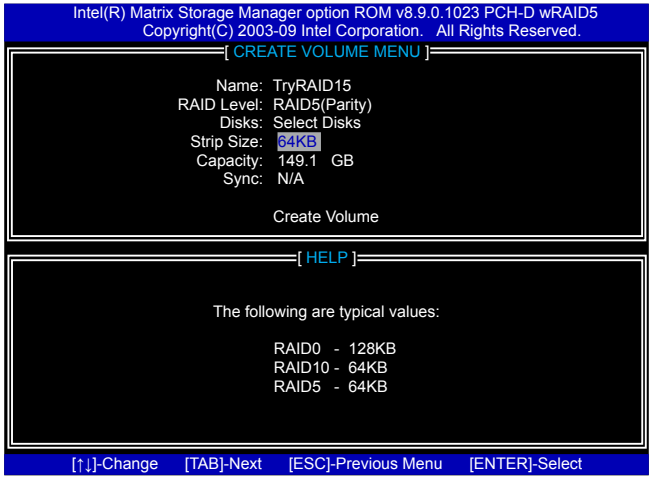
4. It then goes to "**Disks**" item. Press <Enter> to display the hard disks list for this RAID5 system.



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 298GB, 139.7GB and 74.5GB hard disks for an example. Press <Enter> key to finish the selection.

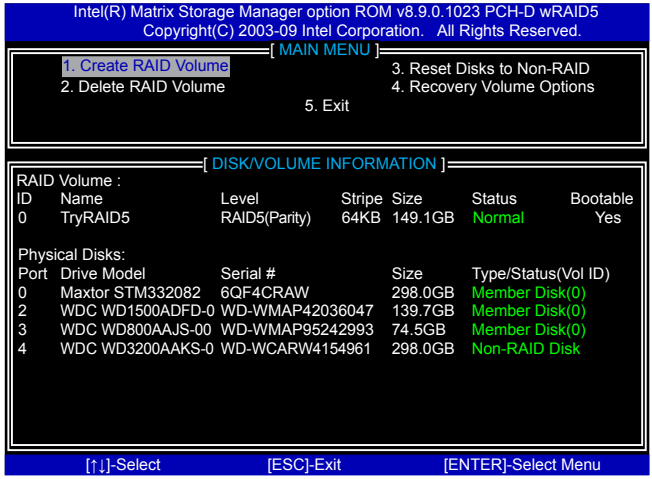


6. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K. Press <Enter>.



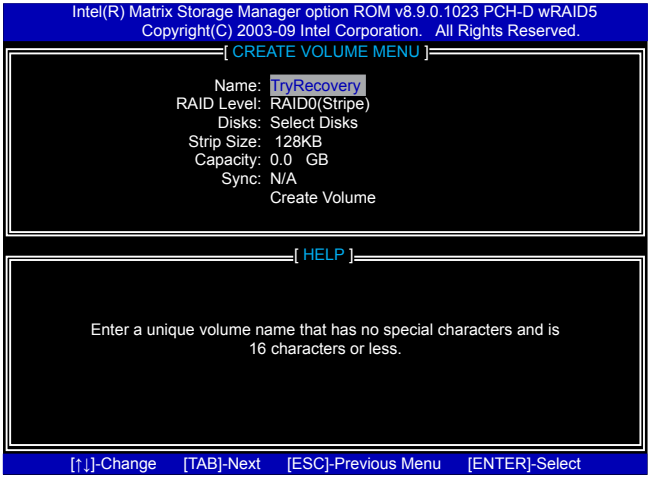
7. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice that of the smallest hard disk size, that is, 74.5GB * 2 = 149GB.
8. Select "**Create Volume**" and press <Enter>. A warning message will appear :

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

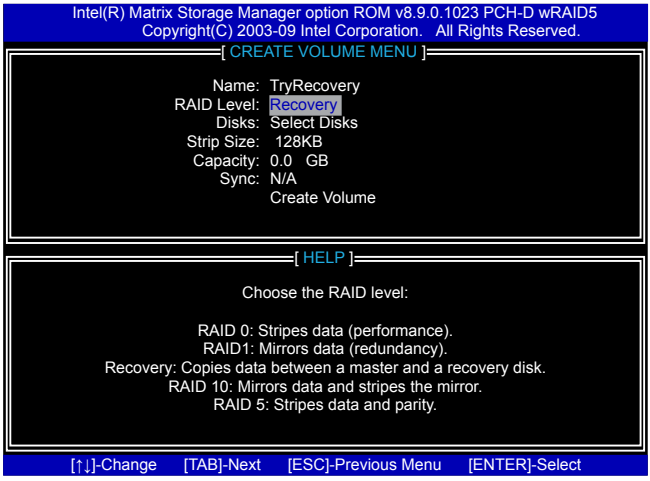


Create Recovery

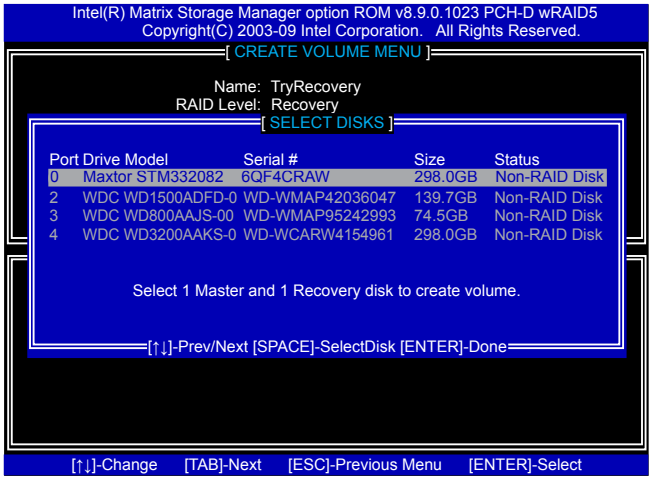
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the Recovery system and press <Enter> to apply it. Here, we name it as TryRecovery to replace the default Volume0.



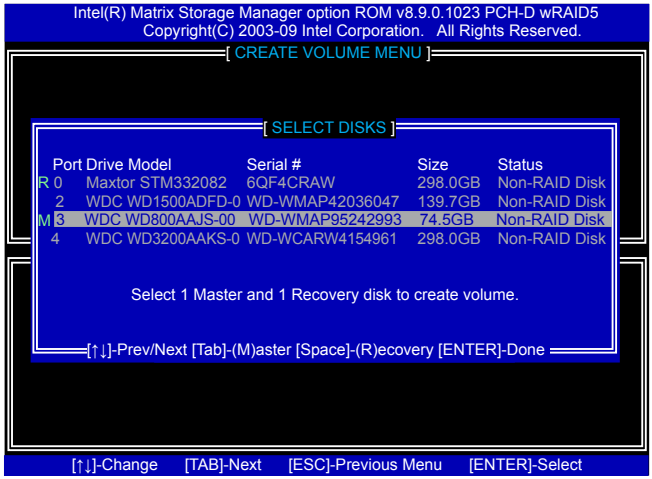
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select Recovery and press <Enter>.



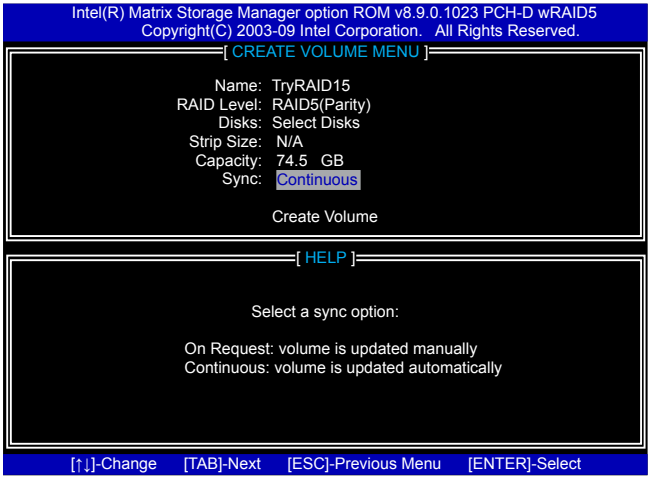
4. It then goes to "**Disks**" item. Press <Enter> to display the hard disks list for this Recovery system.



5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as Recovery, then press <Tab> key to select Master disk and press <Space> key to select Recovery disk. Here, we select 298.0GB as Recovery disk and 74.5GB as Master disk. Press <Enter> key to finish the selection.

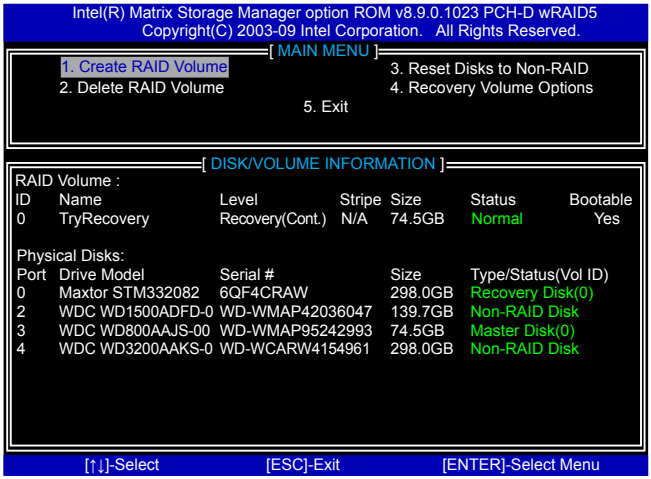


6. It will skip “Strip size” and “Capacity” items. The default “**Capacity**” value is the smaller hard disk size, that is 74.5GB. In “Sync” item, we suggest you select the “Continuous” value and press <Enter>.



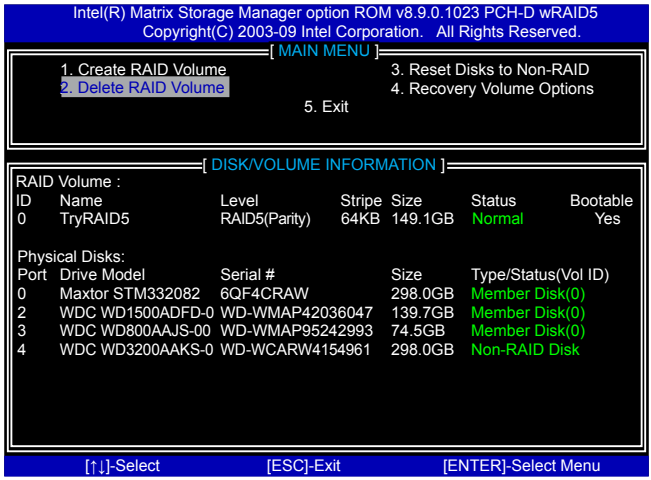
7. Select “**Create Volume**” and press <Enter>. A warning message will appear :

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

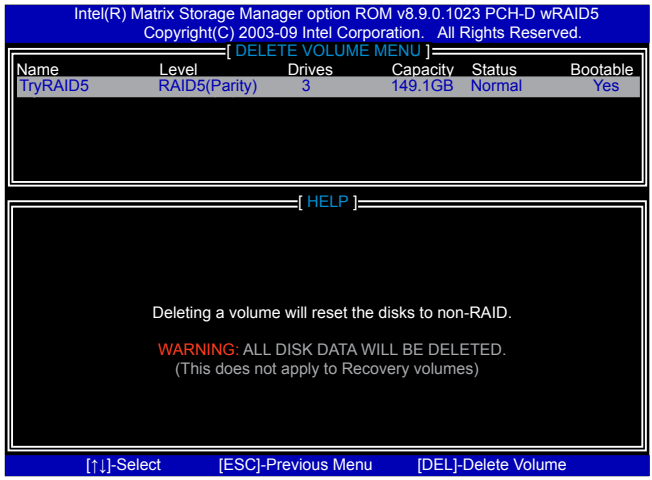


Delete RAID Volume

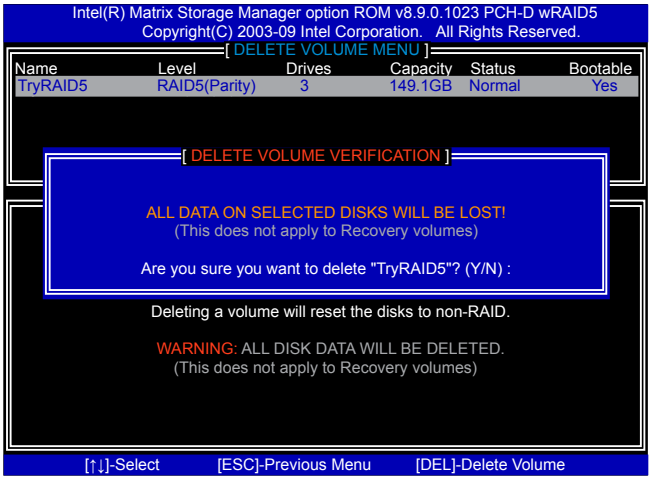
1. Take TryRAID5 for example. Select "**2. Delete RAID Volume**" in main menu and press <Enter>.



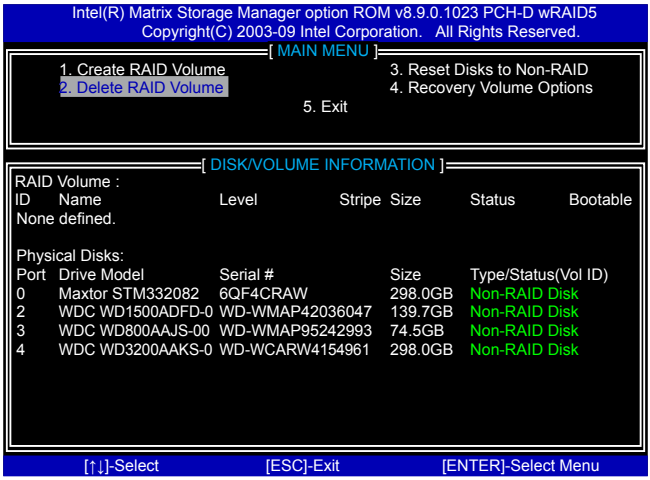
2. Use Up or Down arrow key to select the RAID set you want to delete. Here only one RAID5 is seen, so press <DEL> key to continue.



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



4. Return to Main Menu.

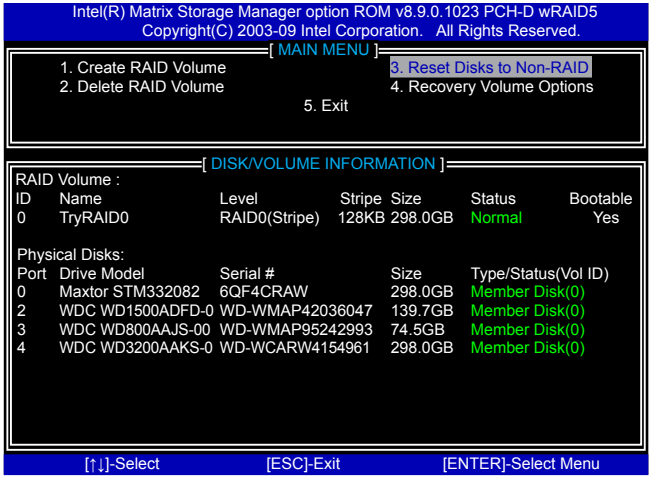


Reset Disks to Non-RAID

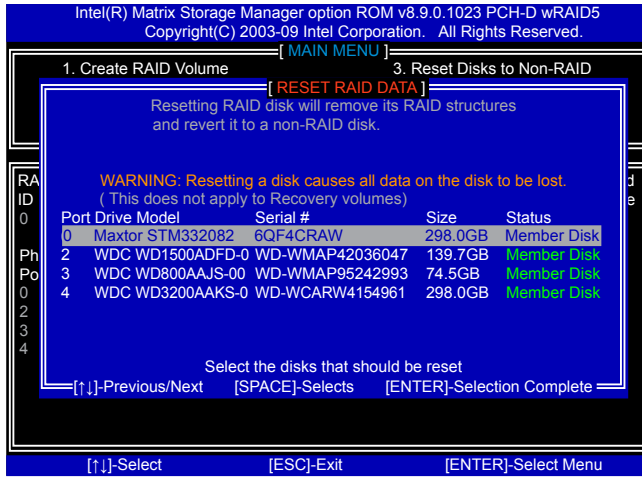
Reset RAID volume allows you to replace a failed disk with a new one, and the operating system will rebuild the data later. For RAID0, reset a hard disk would totally crash the system, but for RAID1, RAID10 and RAID5, they all can be rebuilt.
When rebuild is needed, you must first install a new hard 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.

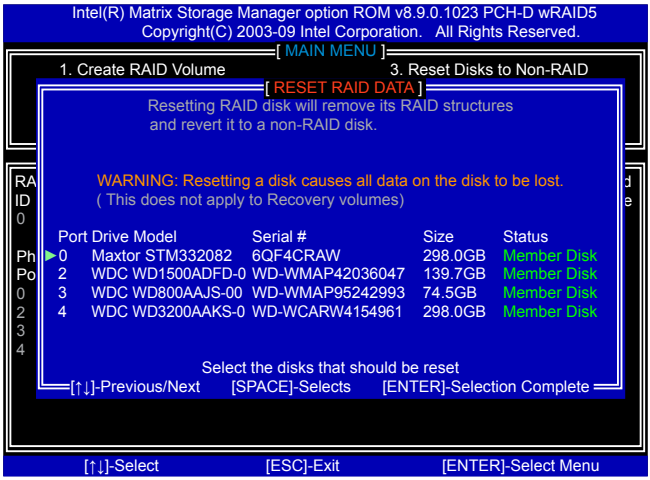
1. A TryRAID0 volume was built with four hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



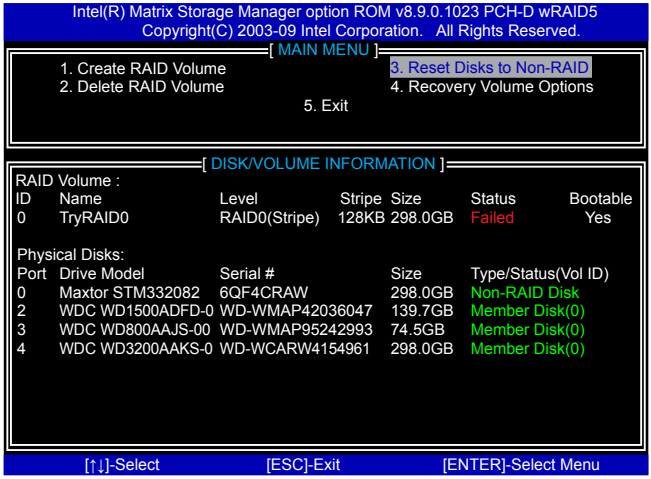
2. A warning message is displayed.



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

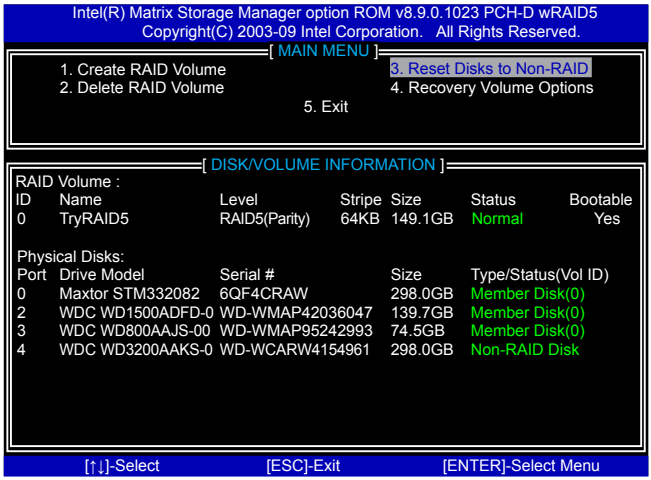


4. It goes back to Main menu with a "Failed" status of RAID0 volume.

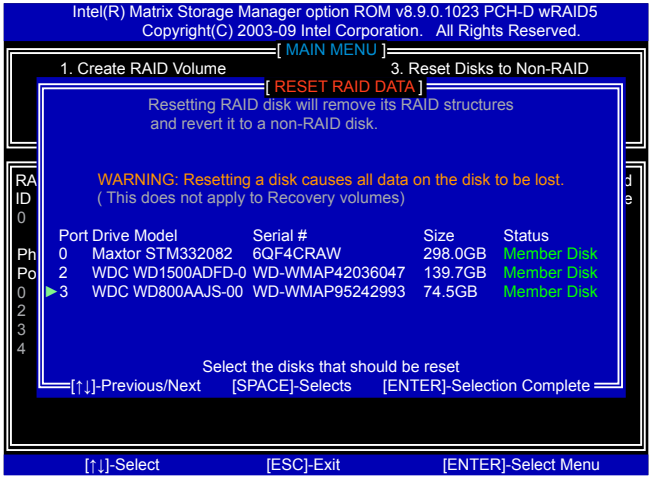


Example 2. Reset a RAID5 system

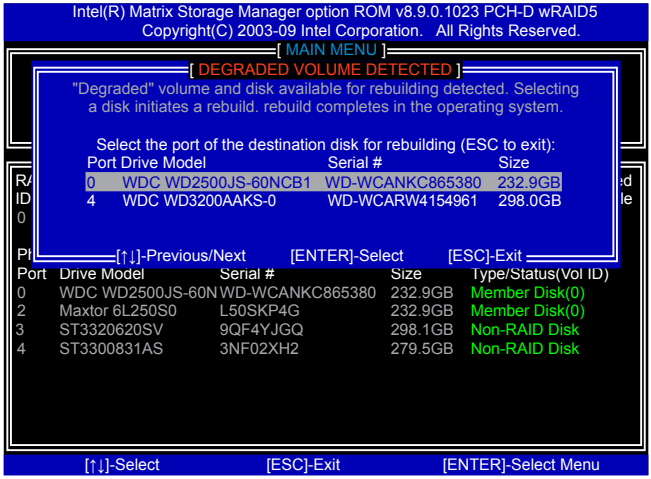
1. A TryRAID5 volume was built with three hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



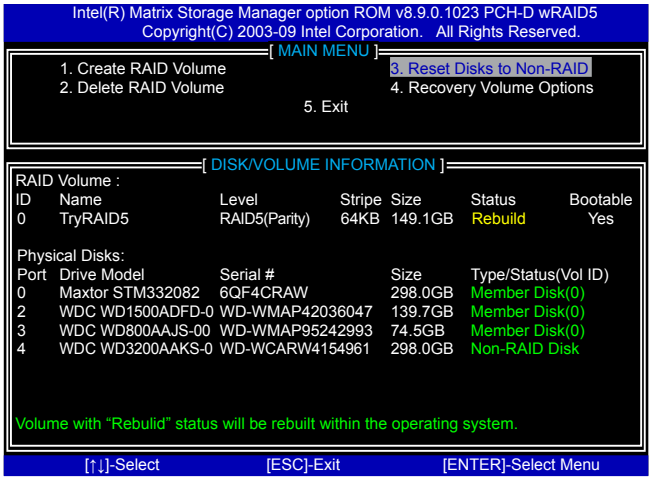
2. A warning message is displayed.
3. Select "**Port 3 - WDC WD800AAJS-00**" hard disk as the one to be reset. Press <Enter>. A double confirmation message pops out, press <Y> to confirm.



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.

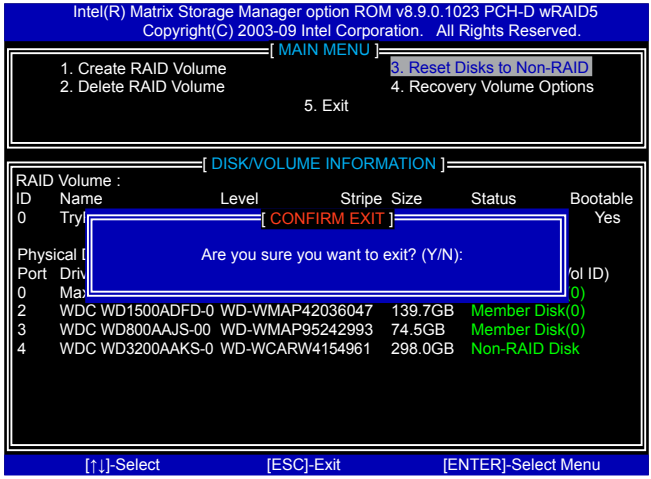


5. It goes back to Main menu with a "Rebuild" status of RAID5 volume. Eventually, a replacement hard disk has to join in and it always keeps three hard disks in the RAID5 system.
6. Operating System will perform the rebuilding later.



Exit RAID BIOS

1. Take TryRAID5 as an example, select "**5. Exit**" in main menu and press <Enter>. The screen displays :



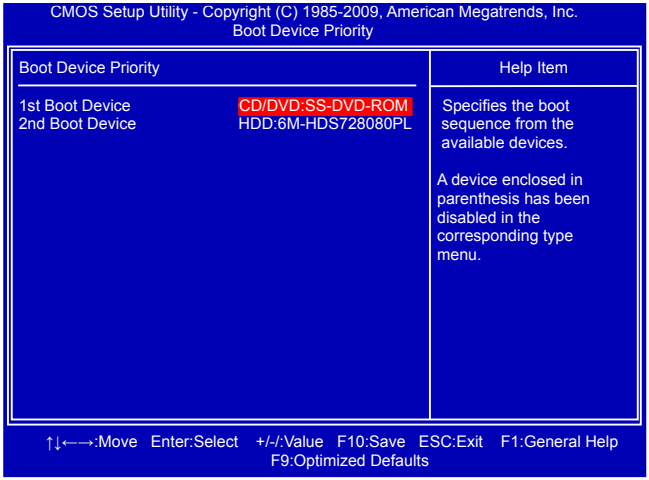
2. Press <Y> to exit Intel® Matrix Storage Manager program. The system will reboot.
3. Shut down the computer, remove the Non-RAID disk, and we will continue for Windows OS installation. If you do not remove irrelevant hard disk, Windows may detect it during the installation, and you could be confused.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

5-4 Install a New Windows XP

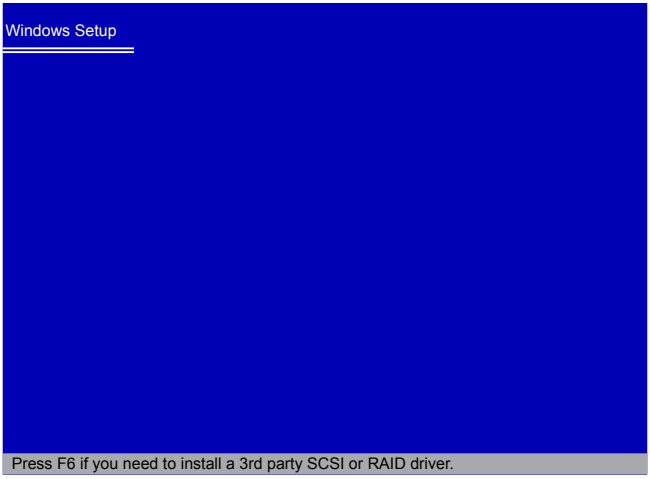
CAUTION

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.

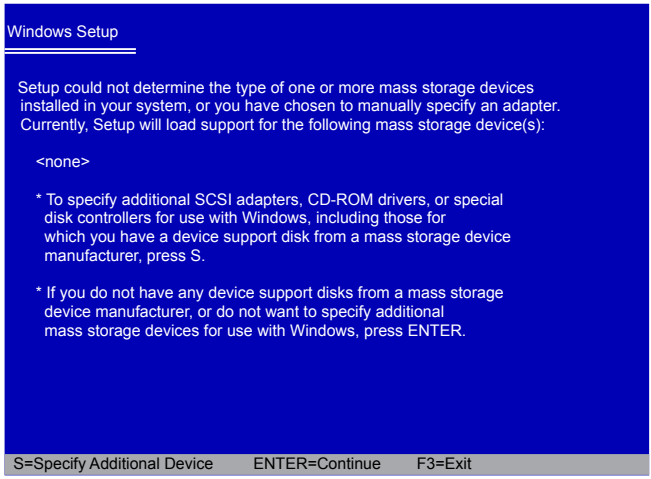
1. Press <DEL> to enter BIOS Setup during POST.
2. Insert the Windows installation CD into the optical drive.
3. Set the “1st Boot Device” to “CD/DVD ROM”, save changes and exit the BIOS setup.



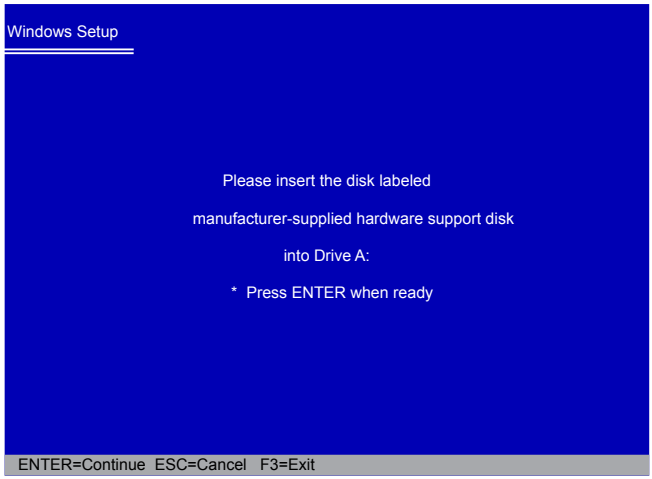
4. The computer will reboot, and it will start installing Windows Operating System. Watch the screen carefully, when the following picture appears, press <F6> key immediately. If you forgot to do this, PC will go to an fatal blue screen, and you may need to reboot the system again. PC may not respond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



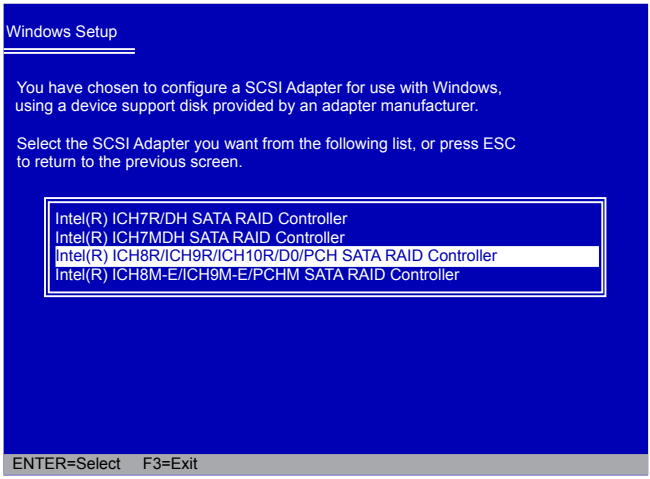
5. After some files are copied to your system, the following picture appears, press <S> to continue the specific driver installation.



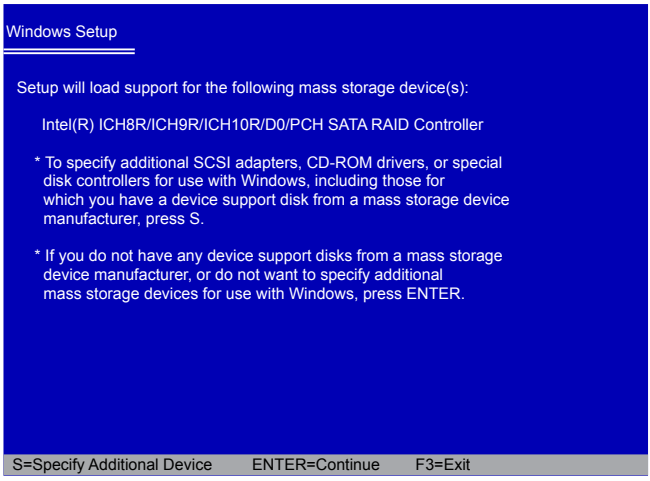
6. It will ask you to insert the RAID driver diskette into you floppy drive. Press <Enter> after it is done.



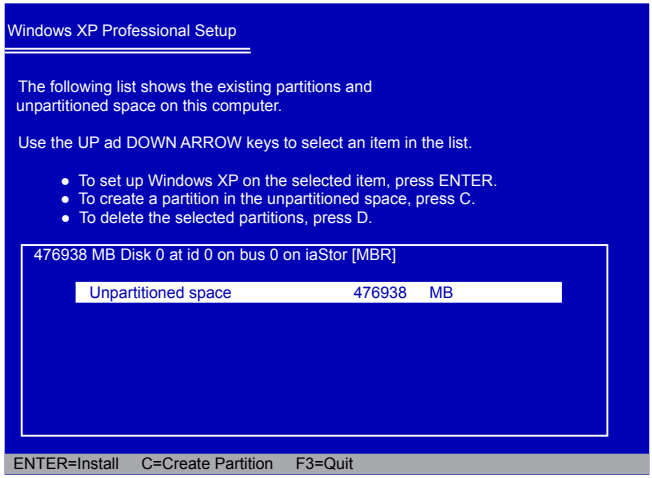
7. Depending on South Bridge chip of your system, select appropriate driver for it. Here, we choose Intel® ICH8R/ICH9R/ICH10R/D0/PCH SATA RAID Controller. Press <Enter> to select it.



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.

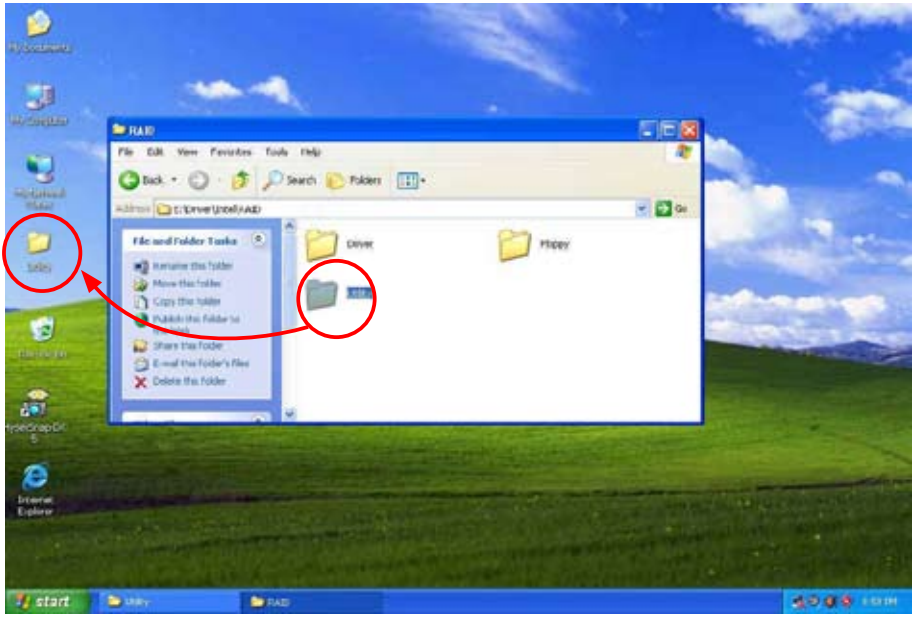
5-5 Existing Windows XP with RAID built as data storage

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.

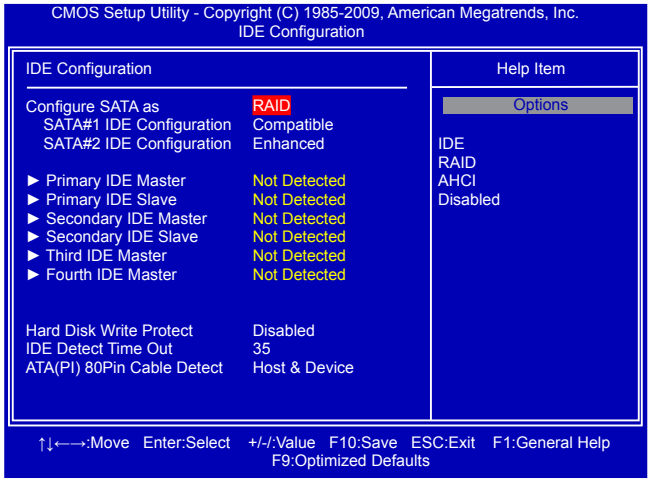
The conditions to install Intel® driver successfully, you need :
1. BIOS "SATA Mode" must be set to [AHCI] or [RAID].
2. You'd better have an IDE CD drive.

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.

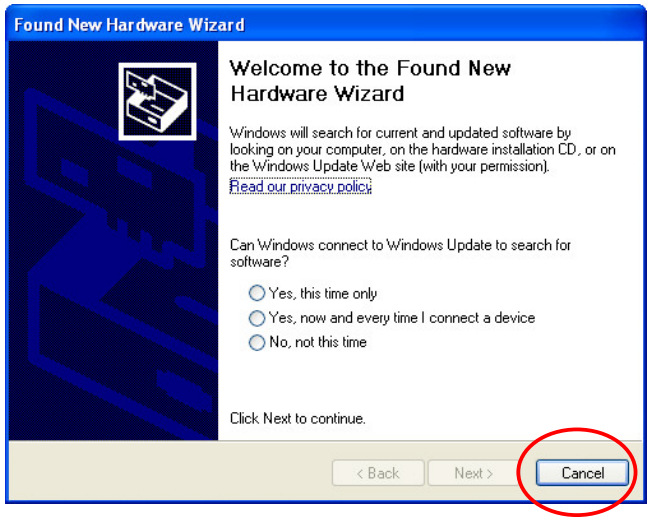
The correct steps are :
1. In current Windows XP system (no matter what SATA or IDE CD drive you have), browse the CD, copy the whole directory of Intel® Matrix Storage Manager setup program to your desktop. For example, drag and copy directory "**\Driver\Intel\RAID\Utility**" to your desktop.



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.

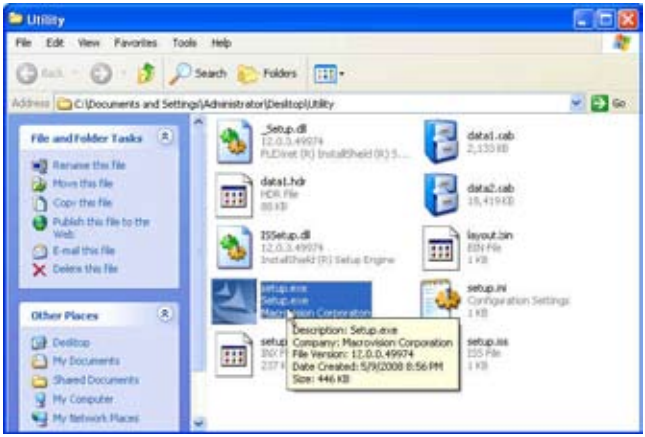


3. Copy section 5-3, Create RAID in BIOS.
   Press <CTRL><I> simultaneously to get into RAID BIOS set up (Intel® Matrix Storage Manager utility).
   Configure your new hard disks to RAID0, 1, 5 or 10. Exit RAID BIOS. PC will reboot.
4. The Windows XP is running again and a new hardware of RAID disk was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

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.

ATI® CrossFireX™ Technology

Introduction

ATI® CrossFireX™ technology takes advantage of the increased bandwidth of the PCI Express™ bus architecture, and features intelligent hardware and software solutions to deliver earth-shattering PC performance in a multi ATI® GPU solution. It allows up to four identical PCI Express™ x16 graphics cards.

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

- CrossFireX™ Ready motherboard, such as Foxconn's Inferno Katana/ Inferno Katana GTI.
- 2 or 3 CrossFireX™ graphics cards

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

Using CrossFireX™ Technology

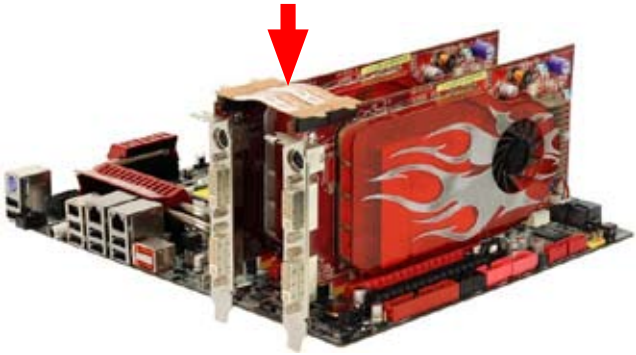
1. Please uninstall any existing graphics card drivers which would possibly create a conflict before attempting to install this display card.

2. Install the first Radeon CrossFireX™ graphics card to PCI-E1_16X slot.

3. Install the second Radeon CrossFireX™ graphics card to PCI-E2_16X slot.

4. If you want to use 3 graphics cards we recommend using the lower 2 PCIE 16x slots to keep the first card running at 8x lanes while the second and third will run at 4x each.

5. Align and firmly insert the CrossFire bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.



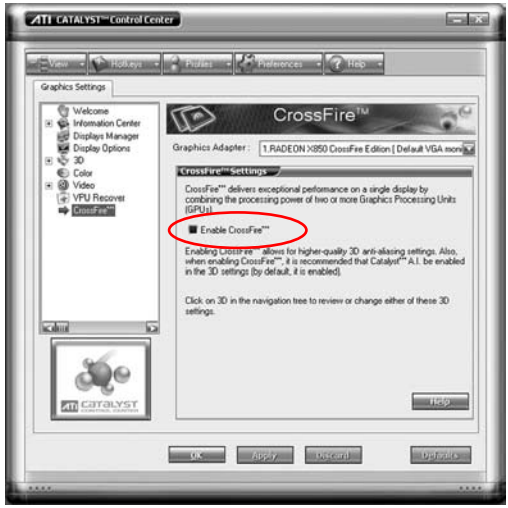
6. Power on your computer and get into OS (Windows® XP 32-bit with SP2 or Windows® XP Professional 64-bit Edition).

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 CrossFireX™ technology.

CAUTION

- Check AMD/ATI's Power supply recommendations to run CrossFireX™.

NVIDIA® SLI™ Technology

1. Introduction

NVIDIA® SLI™ (Scalable Link Interface) technology takes advantage of the increased bandwidth of the PCI Express™ bus architecture, and features intelligent hardware and software solutions to deliver earth-shattering PC performance in a multi NVIDIA® GPU solution.

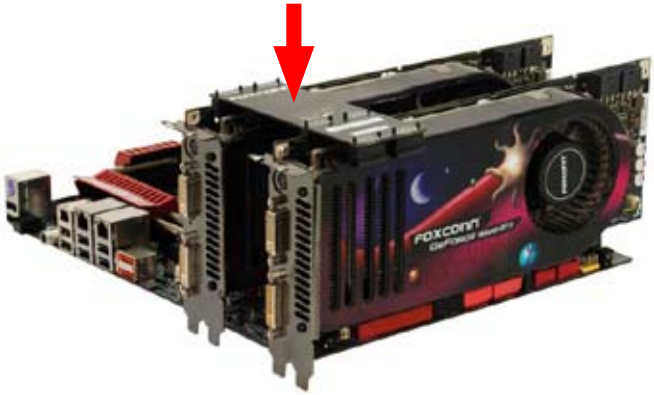
CAUTION

- In 2-way SLI mode, it needs two identical SLI-ready graphics cards.
- Make sure that all the graphics cards are certified by NVIDIA, different type of graphics cards will not work together properly.
- Make sure that your power supply unit can provide at least the minimum power required by your system.
- For the detailed Graphics Card support list on this motherboard, please visit the website: http://www.foxconnchannel.com

2. Graphics card configuration

2-1 Installing dual SLI-ready graphics cards

1. Install one graphics card into the PCI-E1_16X slot, the other into the PCI-E2_16X slot.
2. Align and firmly insert the 2-way SLI bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.



Appendix

3. Connect power extension cable from the power supply to the graphics card power connector separately.

4. Connect a monitor DVI-I cable to the graphics card.

2-2 Installing the graphics cards drivers

1. Power on your computer and boot into Operating System.
2. Install the NVIDIA graphics card drivers and restart your computer.

2-3 Enabling the NVIDIA® SLI™ technology

1. Right click on the empty space of Windows® and select "NVIDIA Control Panel" to open it.

If you cannot see the NVIDIA Control Panel item, select "Personalize", then follow the procedure below:

From the "Personalization" window, select "Display Settings".

Click "Advanced Settings" from the dialog box.

Select the NVIDIA GeForce tab, then click "Start the NVIDIA Control Panel".

2. When using two graphics cards:
   Select “Set SLI Configuration”, then click "Enable 2-way NVIDIA SLI", when done, click Apply to enable it.

Select the “3D Setting” tab and enable the “Show SLI Visual Indicators” item.

When using two graphics cards:
Just select “Set SLI Configuration”, then click "Enable SLI" and set the display, when done, click Apply.