Quantumian 1 Series

Motherboard

User’s Manual

FOXCONN®

Statement:

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Version:

User's Manual V1.0 for Quantumian 1 motherboard.
P/N: 3A2239900-000-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

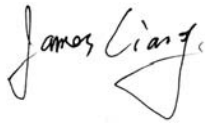
HON HAI PRECISION INDUSTRY COMPANY LTD
66 , CHUNG SHAN RD., TU-CHENG INDUSTRIAL DISTRICT,
TAIPEI HSIEN, TAIWAN, R.O.C.

declares that the product

Motherboard Quantumian 1

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/2011

Printed Name : James Liang

Declaration of conformity

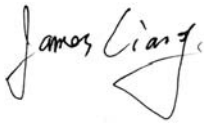
Trade Name:	FOXCONN
Model Name:	Quantumian 1
Responsible Party:	PCE Industry Inc.
Address:	458 E. Lambert Rd. Fullerton, CA 92835
Telephone:	714-738-8868
Facsimile:	714-738-8838

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

Supplementary Information:

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

Tested to comply with FCC standards.

Signature :  Date : 2011

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 Quantumian 1 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, Quantumian 1 enables you to unleash more power from your computer.

This chapter includes the following information:

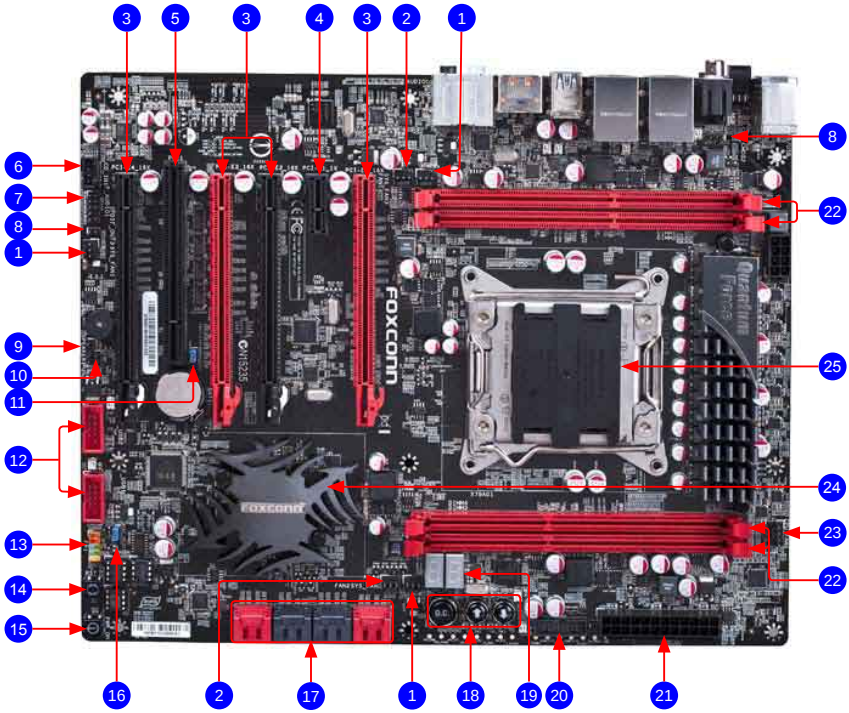
- Product Specifications
- Layout
- Back Panel Connectors

1-1 Product Specifications

CPU	Support LGA2011 socket for Intel® Sandybridge E series CPU For the latest CPU information, please visit: http://www.foxconnsupport.com/cpusupportlist.aspx
Chipset	Intel® X79
Memory	4 x 240-pin DDR3 DIMMs Support up to 32GB of system memory Quad channel DDR3 2400(oc*)/2133(oc*)/1866(oc*) /1600/1333/1066 (oc*: overclocking)
Expansion Slots	4 x PCI Express x16 slots - PCI-E1_16X support 16X bandwidth - PCI-E2_16X support 8X bandwidth - PCI-E3_16X support 16X/8X bandwith(shared 8X bandwith when PCI-E4_16X is installed devices) - PCI-E4_16X support 8X bandwidth 1 x PCI Express x1 slot 1 x PCI slot
Multi-GPU Support	Suppport NVIDIA® SLI™ Technology Suppport ATI® CrossFire™ Technology
Storage	Intel® X79 chipset -4 x SATA 2.0 connectors (3Gb/s data transfer rate) -2 x SATA 3.0 connectors (6Gb/s data transfer rate) ASM1601 SATA 3.0 controller -2 x SATA 3.0 connectors (6Gb/s data transfer rate) JMicron JMB362 SATA controller -2 x eSATA ports Support RAID 0, 1, 5,10, Recovery Support hot plug and NCQ (Native Command Queuing)
LAN	1 x Intel 82975V Gigabit Lan controller (PHY) 1 x Realtek 8111E Gigabit Lan controller Support 10/100/1000Mbps
Audio	Realtek ALC892 -High Definition Audio -2/4/5.1/7.1-channel -Support for S/PDIF Out -Support Jack-Sensing function
USB	Support hot plug Support up to 10 x USB 2.0 ports (6 rear panel ports, 2 onboard USB headers supporting 4 extra ports) Support USB 2.0 protocol up to 480Mb/s Support up to 4 x USB 3.0 ports (2 rear panel ports, 1 onboard USB header supporting 2 extra ports) Support USB 3.0 protocol up to 5Gb/s
Internal Connectors	1 x 24-Pin ATX power connector 1 x 8-pin ATX 12V power connector

	1 x CPU FAN header (4-pin) 3 x System FAN headers (3-pin) 2 x FAN headers (3-pin) 1 x Front pannel header 1 x Front Audio header 1 x CD-IN header 1 x Speaker header 4 x SATA 3.0 connectors 4 x SATA 2.0 connectors 2 x USB 2.0 headers 1 x USB 3.0 header 2 x SPDIF OUT headers
Onboard Button and LED	OC button Power On/Off button Reset button Debug LED
Back panel Connectors	1 x PS/2 Keyboard port 6 x USB 2.0 ports 1 x Clear CMOS button 1 x Optical S/PDIF out port 1 x Coaxial S/PDIF out port 2 x LAN ports 2 x USB 3.0 ports 2 x eSATA ports 6 ports audio jacks
Hardware Monitor	System voltage detection CPU/System temperature detection CPU/System fan speed detection CPU Overheating warning CPU/System fan speed control
PCI Express x1	Support PCI Express Gen2 5GT/S data rate Low power consumption and power management features
PCI Express x16	Support PCI Express Gen2 5GT/S data rate 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), S5 (soft - off) Support EuP function
Bundled Software	FOX LiveUpdate FOX LOGO FOX DMI
Operating System	Support for Microsoft® Windows® 7/Vista/XP
Form Factor	ATX Form Factor, 12 inches x 9.6 inches (30.5cm x 24.4cm)

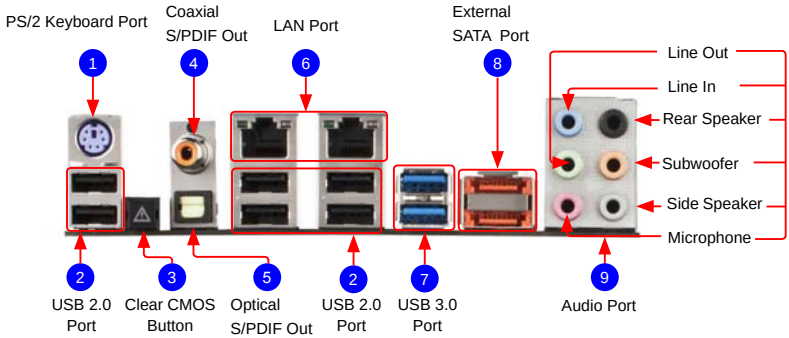
1-2 Layout



1. SYS_FAN Header
2. FAN Header
3. PCI Express x16 Slot
4. PCI Express x1 Slot
5. PCI Slot
6. CD_IN Connector
7. Front Audio Connector
8. SPDIF_OUT Connector
9. Speaker Connector
10. Clear CMOS Jumper
11. VBAT_Discharge Jumper
12. Front USB 2.0 Connector
13. Front Panel Connector
14. Reset Button
15. Power On/Off Button
16. BIOS-SELECT Jumper
17. SATA Connector
18. OC Button
19. Debug LED
20. Front USB 3.0 Connector
21. 24-pin ATX Power Connector
22. DDR3 DIMM Slot
23. CPU_FAN Header
24. Chipset: Intel® X79
25. LGA2011 CPU Socket

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

1-3 Back Panel Connectors



1. PS/2 Keyboard Port

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

2. USB 2.0 Port

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, press the CLS_CMOS button and hold there for a couple of seconds to clear CMOS.

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.

4. Coaxial S/PDIF Out Port

This connector 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.

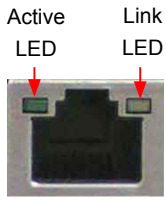
5. Optical S/PDIF Out Port

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

6. LAN Ports

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



7. USB 3.0

PortThe USB port supports the USB 3.0/2.0/1.0 specification. Use this port for USB devices such as an USB keyboard/mouse, USB printer, USB flash drive and etc. But you need to install the USB 3.0 driver in the Driver CD before using it.

8. External SATA Port

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

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
- Jumpers
- OnBoard Button
- OnBoard Debug LED

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 :

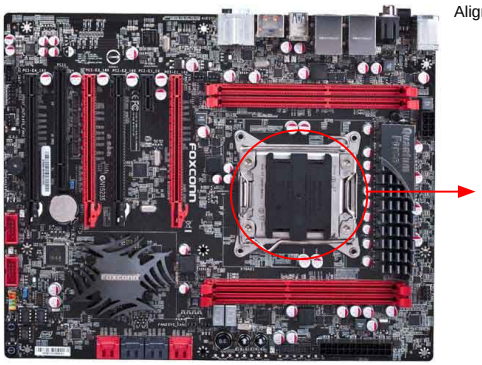
- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power supply before installing the CPU to prevent hardware damage.
- Locate the pin one of the CPU. The CPU cannot be inserted if oriented incorrectly. (Or you may locate the notches on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

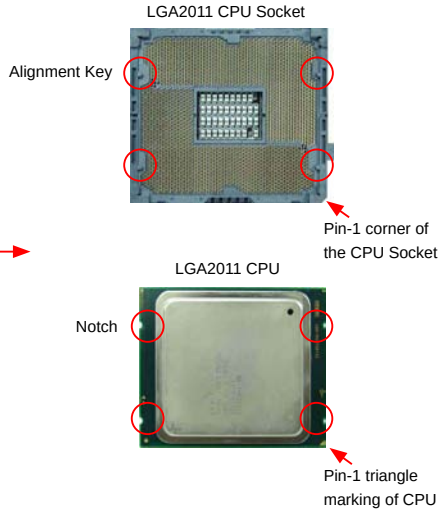
Hyper-Threading Technology System Requirements:
(Go to Intel's website for more information about the Hyper-Threading Technology)

- 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.

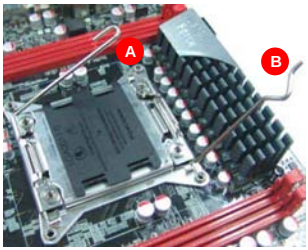




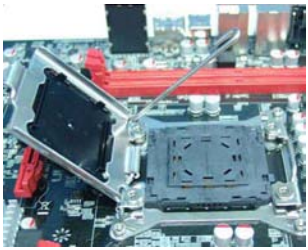
Follow the steps to install the CPU onto the CPU socket :

CAUTION

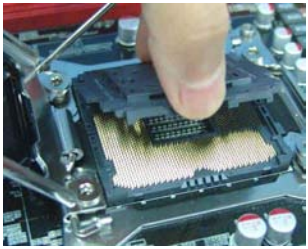
Before installing the CPU, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the CPU.



1. Release the CPU socket lever.

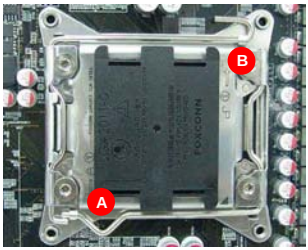


2. Lift the metal cover on the CPU socket.



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.

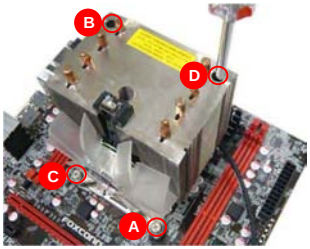
6. Remove the upper protective cover.

Install the CPU Cooler

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

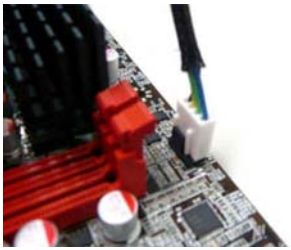
1. Apply and spread an even thermal grease on the surface of CPU.

2. Remove the fan cover before installing cooler.



3. Place the cooler on top of the installed CPU, and fix the four screws in diagonal sequence to secure the cooler in place.

4. Replace the fan cover.



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

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.and please select Quad channel first to achieve optimum performance.
- 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.

Quad Channel Memory Configuration

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

Quad channels:
Channel 0 : DIMM1
Channel 1 : DIMM2
Channel 2 : DIMM3
Channel 3 : DIMM4

The combinations of DIMM modules are :

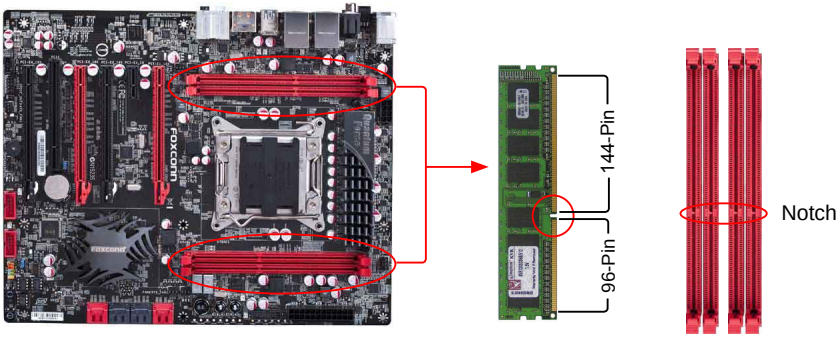
Channel	Slots Combination
Single Channel	Any DIMM(DS/SS)
Dual Channel	Any combination of two DIMMs (DS/SS)
Triple Channel	Any combination of three DIMMs (DS/SS)
Quad Channel	Four DIMMs (DS/SS)

(DS : Dual Side, SS : Single Side)

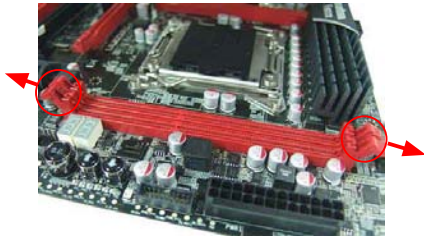
Installing a Memory

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.



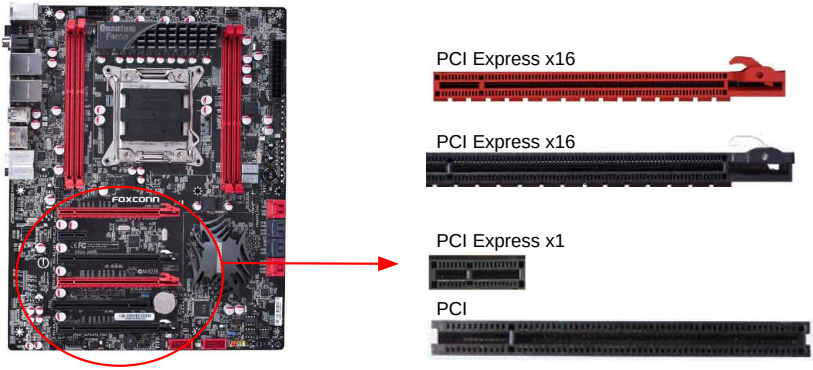
Step 1:
Spread the clips at both ends of the memory socket. Place the memory module onto the socket, then put your fingers on top edge of the module, and push it down firmly and seat it vertically into the memory socket.

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.

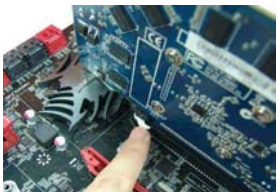


Follow the steps below to correctly install your expansion card in the expansion slot.

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

Installing and Removing a PCI Express x16 Graphics Card :

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



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

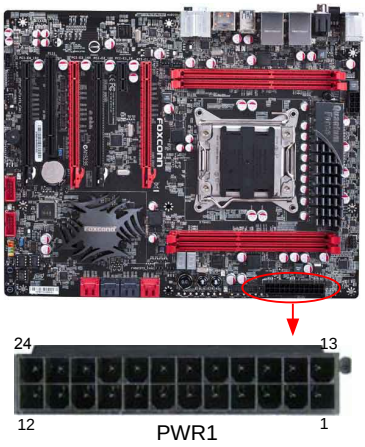
2-4 Install other Internal Connectors

Power Connectors

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

24-pin ATX Power Connector : PWR1

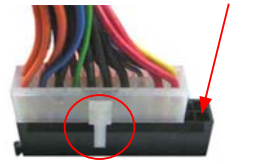
PWR1 is the ATX power supply connector. Make sure that the power supply cable and pins are properly aligned with the connector on the motherboard. Firmly plug the power supply cable into the connector and make sure it is secure.



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

CAUTION

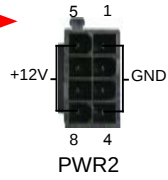
We recommend you using a 24-pin power supply. If you are using a 20-pin power supply, you need to align the ATX power connector according to the picture.



20-Pin Power

8-pin ATX 12 V Power Connector : PWR2

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



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

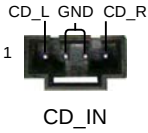
CAUTION

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

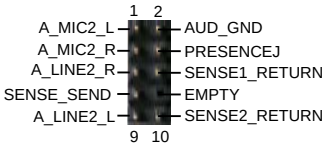
Audio Connector : CD_IN

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



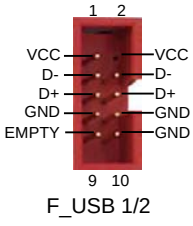
Audio Connector : F_AUDIO

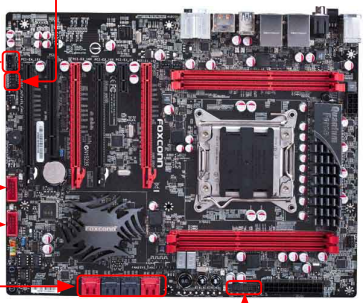
The audio connector supports HD Audio standard. It provides the Front Audio output choice.



USB 2.0 Connectors : F_USB1/2

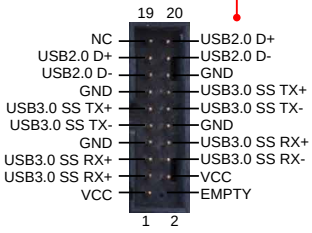
These connectors comply with USB 2.0 specification, you can get USB ports by connecting the USB module cable to any of these connectors.





USB 3.0 Connectors : USB 3.0

This connector complies with the USB 3.0 specification, and is for the additional USB 3.0 ports.

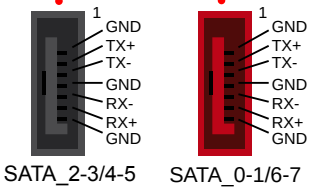


Serial ATA 2.0 Connectors : SATA_2-3/4-5

These connectors are used to connect with SATA 2.0 Hard Disk drives or optical disc devices.

Serial ATA 3.0 Connectors : SATA_0-1/6-7

These connectors are used to connect with SATA 3.0 Hard Disk drives.



Front Panel Connector : FP1

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

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

Reset Switch (RESET-SW)
Attach the connector to the Reset switch on the front panel of the case; the system will restart when the switch is pressed.

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

Power Switch Connector (PWR-SW)
Connect to the power button on the front panel of the chassis. Push this switch allows the system to be turned on and off rather than using the power supply button.

Speaker Connector : SPEAKER

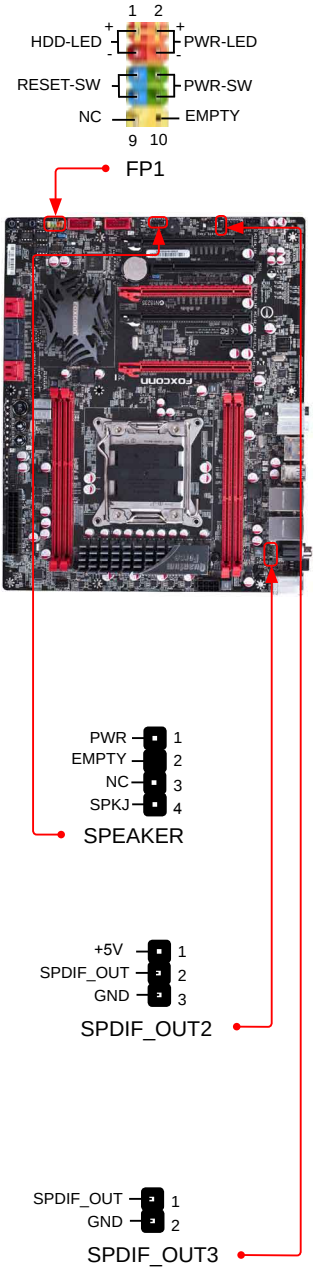
The speaker connector is used to connect speaker of the chassis.

S/PDIF Connector : SPDIF_OUT2

The connector is used for S/PDIF output.

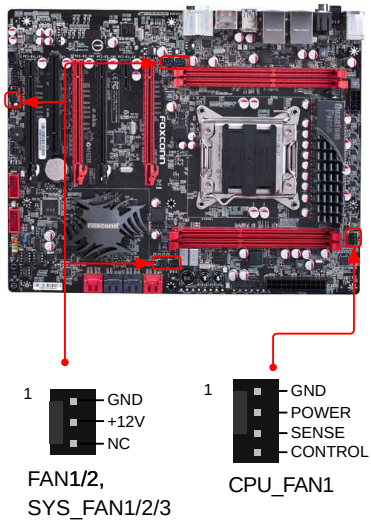
S/PDIF Connector : SPDIF_OUT3

The connector is used for S/PDIF output.



Fan Connectors : CPU_FAN, FAN1/2, SYS_FAN1/2/3

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



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.

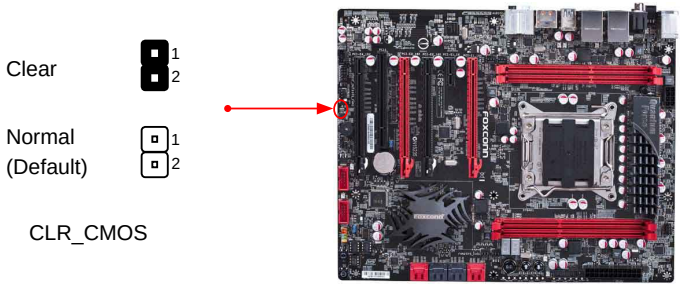
Jumper	Diagram	Definition	Description
1	1	Closed	Set Pin 1 and Pin 2 closed
	1	Open	Set Pin 1 and Pin 2 Open
1	1	1-2	Set Pin 1 and Pin 2 closed
	1	2-3	Set Pin 2 and Pin 3 closed

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.



WARNING!

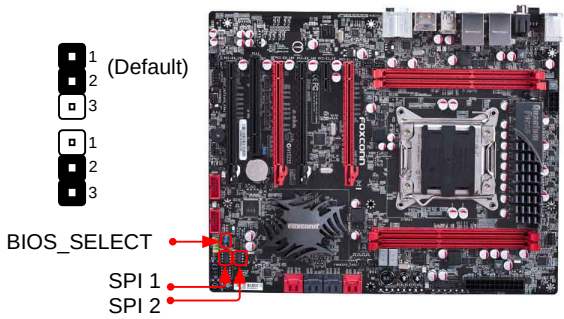
- Disconnect the power cable before adjusting the jumper settings.
- Do not clear the CMOS while the system is turned on.

BIOS Select Jumper: BIOS_SELECT

The jumper is used to select a BIOS ROM to boot from. You can refer to the following table for reference.

How to recover BIOS

When one of BIOS has been damaged, you can use another workable BIOS to boot to DOS.
Then switch the jumper to change to your bad BIOS.And then run the "AFUDOS" reflash program.



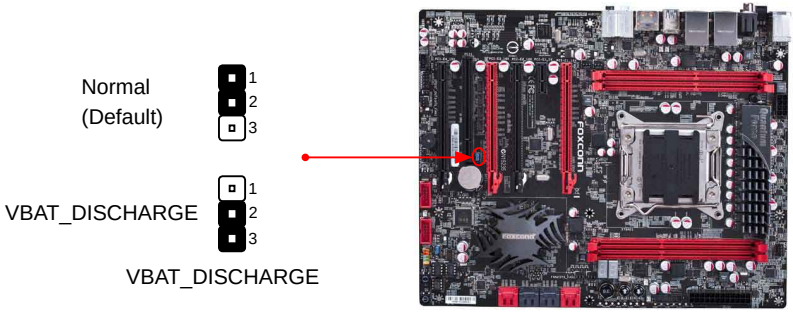
Definition	Description	Function
1-2(default)	Set Pin 1 and Pin 2 closed	Select SPI1 (BIOS ROM 1)
2-3	Set Pin 2 and Pin 3 closed	Select SPI2 (BIOS ROM 2)

CAUTION

Besides you are doing the BIOS recovery procedure, don't change the jumper setting when system is power on.

Discharge Battery Jumper: VBAT_DISCHARGE

Resetting the CMOS isn't always good enough since in more recent chipset versions some configuration settings stored in the Southbridge will not be reset or deleted by a CMOS reset. Additionally the CMOS reset can take up to several minutes depending on the board design and capacitance. To facilitate a complete configuration reset this jumper can be used to discharge the battery. The effect is identical to removing the battery. The result is a faster and complete CMOS and Southbridge configuration reset.



CAUTION

- Disconnect the power cable before adjusting the jumper settings.
- Do not discharge the battery while the system is turned on.
- Only suggest to use the jumper if a normal CMOS reset did not work.

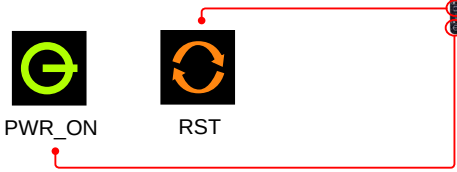
2-6 OnBoard Button

Power on Button: PWR_ON

Push the power on button to power on the system.

Reset Button: RST

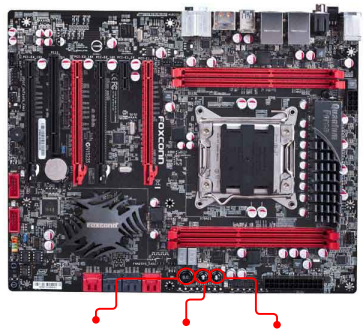
Push the reset button to reboot the system.



OC Switch Button: OC_SW1/2/3

You could press the three buttons to adjust the CPU clock directly, without to enter BIOS setup or any software. This process will not use any system resource, so there is no effect to the system performance.

- Normally the OC function is disabled. All the led lights on these buttons will be turned off.
- During booting, when the boot screen appears, press the OC_SW1 button to enter the OC mode and the led lights will turn on. At this moment the debug led will show “0.0”. It means the CPU current clock is 100MHz(Default).
- In the OC mode, pressing the OC_SW2 button will increase the CPU clock by 1 MHz per step, and the debug led code will increase 0.1 at the same time. The debug led code “0.1” means the CPU clock is 101 MHz.
- In the OC mode, pressing the OC_SW3 button will decrease the clock by 1 MHz per step. This project does not support a clock lower than 100MHz.

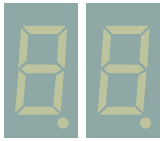


CAUTION

- When the OC function is enabled by OC_SW1, the overclocking items in BIOS or software will be availble. It is controlled by the onboard buttons completely.
- We do not guarantee the system will keep stable status In the overclocking mode.

2-7 OnBoard Debug LED

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



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
- Advanced
- Quantum BIOS
- Boot
- Security
- Save & Exit

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

Enter BIOS Setup

The BIOS is the communication bridge between hardware and software, correctly setting up the BIOS parameters is critical to maintain optimal system performance. Power on the computer, when the message "**Press <DEL> to enter setup, Press <F11> to enter boot menu**" appears at the bottom of the screen, you can press <DEL> key to enter Setup.

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

Use the arrow right/left keys to select a specific function and go to the submenu. Each function is explained below:

Main

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

Advanced

The advanced system features can be set up through this menu.

Quantum BIOS

Some special proprietary features can be set up through this menu.

Boot

Boot features can be set up through this menu. You can set the boot device priority and enable "Quiet Boot" feature here.

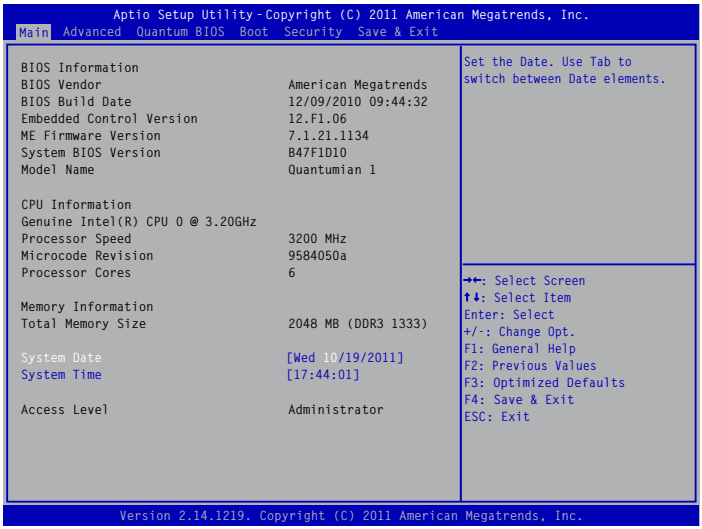
Security

The Administrator/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.

Save&Exit

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. You also can save or discard the changes and exit BIOS setup here.

Main



BIOS Information

► **BIOS Vendor**

This item shows the BIOS vendor information.

► **BIOS Build Date**

This item shows the BIOS building date and time.

► **Embedded Control Version**

This item shows the embedded control version.

► **System 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.

► **ME Firmware Version**

This item shows the ME firmware version.

► **Model Name**

This item shows the model name of this product.

CPU Information

► **Genuine Intel(R) CPU 0 @ 3.00GHz**

This item shows the current CPU name.

► **Processor Stepping**

This item shows the processor stepping value.

► **Microcode Revision**

This item shows the microcode revision number.

► **Processor Cores**

This item shows the CPU number.

Memory Information

► **Total Memory Size**

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

► **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.

► **System Time**

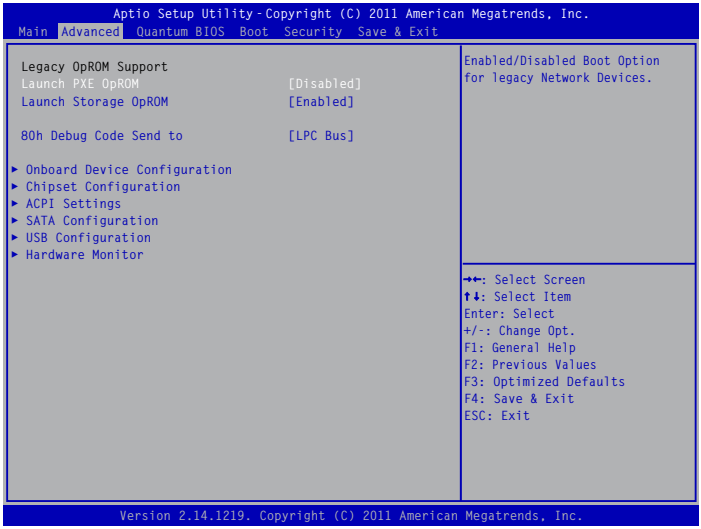
This item allows you to configure the desired time. Use [ENTER], [TAB] or [SHIFT-TAB] to select a field. Use [+] or [-] to input the value.

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

► **Access Level**

It displays your current access level. If you enter system with a user password, it will dispaly “User”. If no password is set or you enter system with administrator password, this item will dispaly “Administrator”.

Advanced



Legacy OpROM Support

► **Launch PXE OpROM**

This item is used to enable or disable boot option for legacy network devices.

► **Launch Storage OpROM**

This item is used to enable or disable boot option for legacy mass storage devices with option ROM.

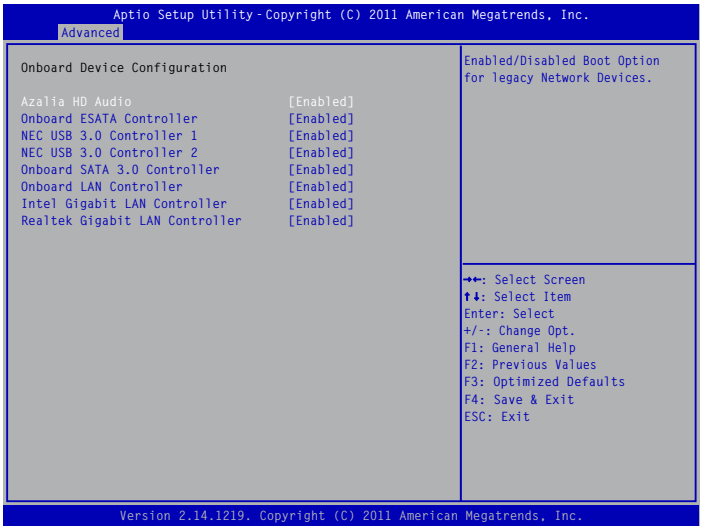
► **80h Debug Code Send to**

The legacy I/O 80h debug port message will send to LPC bus or PCI bus as your selection.

► **Onboard Device Configuration/Chipset Configuration/ACPI Settings/SATA Configuration/USB Configuration/Hardware Monitor**

Press [Enter] to go to the submenu.

Onboard Device Configuration



► **Azalia HD Audio**

This item is enable or disable the Azalia HD audio.

► **Onboard ESATA Controller**

This item allows you to enable or disable the onboard ESATA ports.

► **NEC USB3.0 Controller 1/2**

This item allows you to enable or disable the NEC USB3.0 controller.

► **Onboard SATA 3.0 Controller**

This item allows you to enable or disable the onboard SATA 3.0 controller.

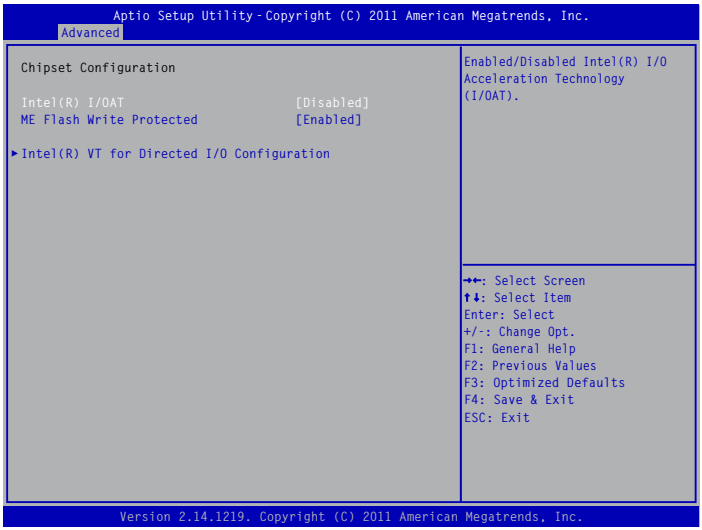
► **Intel Gigabit LAN Controller**

This item allows you to enable or disable the Intel Gigabit LAN controller.

► **Realtek Gigabit LAN Controller**

This item allows you to enable or disable the Realtek Gigabit LAN controller.

Chipset Configuration



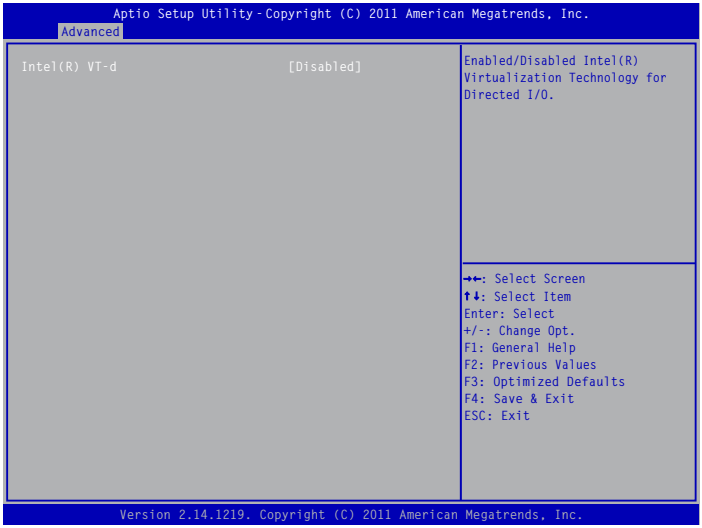
► **Intel(R) I/OAT**

This item is used to enable or disable Intel(R) I/O acceleration technology.

► **ME Flash Write Protected**

This item is used to enable or disable the ME flash write protected control.

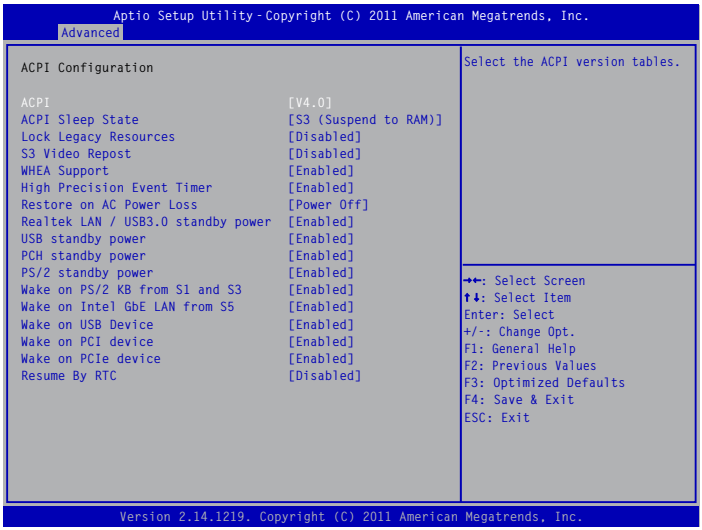
Intel(R) VT for Directed I/O Configuration



► **Intel(R) VT-d**

This item is used to enable or disable the VT-d feature. Intel® Virtualization Technology for Directed I/O (VT-d) can help end users improve security and reliability of the systems and also improve performance of I/O devices in virtualized environment.

ACPI Configuration



► **ACPI**

This item is used to select the ACPI version.

► **ACPI Sleep State**

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.

► **Lock Legacy Resources**

This item is used to enable or disable lock of legacy resources.

► **S3 Video Repost**

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

► **WHEA Support**

This item is used to enable or disable Windows Hardware Error Architecture(WHEA).

► **High Precision Event Timer**

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

► **Restore on AC Power Loss**

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

► **Realtek LAN / USB3.0 standby power**

This item is used to enable or disable the Realtek LAN/USB3.0 standby power. Disabling this function will reducing system power consumption when computer go into standby mode or power off state.

► **USB standby power**

This item is used to enable or disable the USB standby power. Disabling this function will reducing system power consumption when computer go into standby mode or power off state.

► **PCH standby power**

This item is used to enable or disable the PCH standby power. Disabling this function will reducing system power consumption when computer go into standby mode or power off state.

► **PS/2 standby power**

This item is used to enable or disable the PS/2 standby power. Disabling this function will reducing system power consumption when computer go into standby mode or power off state.

► **Wake on PS/2 KB from S1 and S3**

This item is used to enable or disable PS2 key board wake up from S1 and S3 state.

► **Wake on Intel GbE LAN from S5**

This item is used to enable or disable Intel GbE LAN wake up from S5 state.

► **Wake on USB Device**

This item is used to enable or disable USB devices wake up system from S3,S4 state.

► **Wake on PCI Device**

This item is used to enable or disable PCI devices wake up system from S3,S4,S5 state.

► **Wake on PCIe Device**

This item is used to enable or disable PCIe devices wake up system from S3,S4,S5 state.

► **Resume by RTC**

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

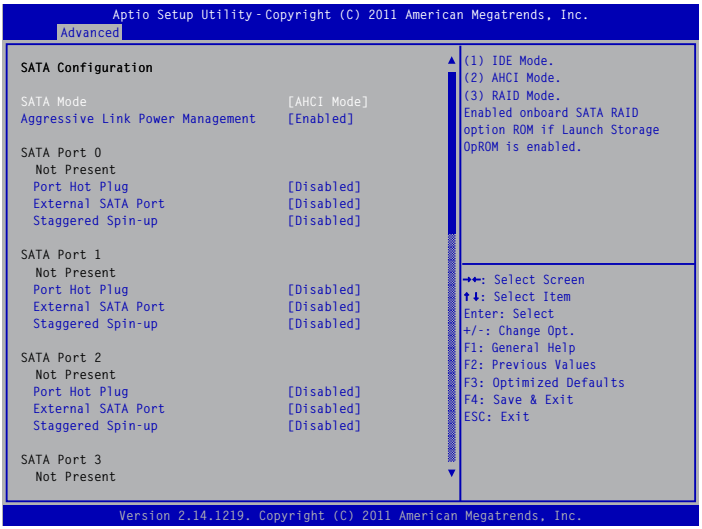
► **RTC Alarm Date(Days)**

When Resume by RTC is enabled, select a specific date to generate a wake up.

► **RTC Alarm Time(HH:MM:SS)**

When Resume by RTC is enabled, select a specific time to generate a wake up.

SATA Configuration



► **SATA Mode**

This item is used to set the operating mode of your SATA ports. Setting options: [Disabled]; [IDE Mode]; [AHCI Mode]; [RAID Mode].

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

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

ister 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.

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

► **Aggressive Link Power Management (Appears when "SATA Mode" is set to [AHCI Mode])**

The SATA controller supports auto-generating link requests to the partial or slumber states when there are no commands to process. This item is used to enable or disable this function. When enabled, the SATA controller will aggressively enter a lower link power state (partial or slumber) based upon the setting of the ASP bit (bit 27).

► **Serial-ATA Controller 0 (Appears when "SATA Mode" is set to [IDE Mode])**

Serial-ATA Controller 0 are the SATA ports 1, 2, 3, 4 of the motherboard. This item allows you select the mode of the SATA ports. Setting values are: [Disabled], [Compatible], [Enhanced].

► **Serial-ATA Controller 1 (Appears when "SATA Mode" is set to [IDE Mode])**

Serial-ATA Controller 1 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].

We will use SATA Port 0 as an example to explain the SATA ports features:

► **SATA Port 0/1/2/3/4/5**

This item shows the SATA device information connected to Port 0/1/2/3/4/5.

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

The hot plug function allows for device detection without power being applied and ability to connect and disconnect devices without prior notification to the system. This item is used to enable or disable hot plug function for SATA hard disks when in RAID/AHCI mode.

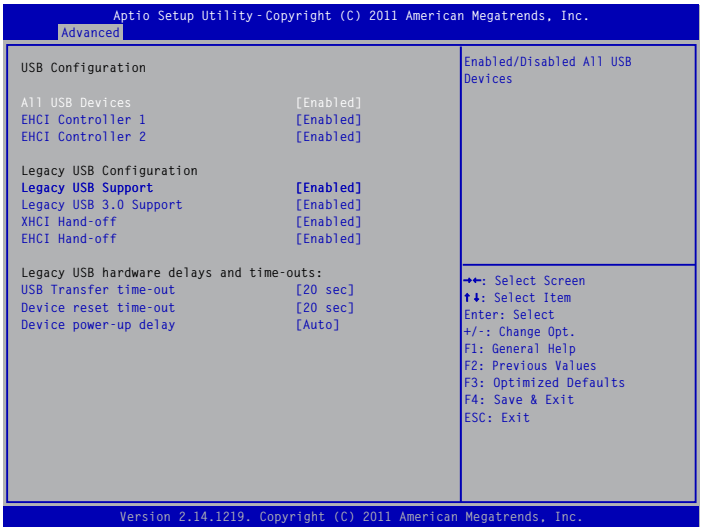
► **External SATA Port (Appears when "SATA Mode" is set to [AHCI Mode])**

This item is used to allow an outside the box connection of up to 2 meters (when using the cable defined in SATA-IO) or not.

► **Staggered Spin-up (Appears when "SATA Mode" is set to [AHCI Mode])**

This item is used to select if the SATA controller supports staggered spin-up on its ports, for use in balancing power spikes. This value is loaded by platform BIOS prior to OS initialization.

USB Configuration



► **All USB Devices**

This item is used to enable or disable all USB devices.

► **EHCI Controller 1/2**

This item is used to enable or disable USB 2.0(EHCI) support.

► **Legacy USB Support**

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

[Enabled]: This option will enable the legacy USB support.

[Disabled]: This option will keep USB devices available only for EFI applications.

[Auto]: This option will disable the legacy support if no USB devices are connected.

► **Legacy USB 3.0 Support**

This item is used to enable or disable legacy USB 3.0(XHCI) controller support.

► **XHCI Hand-off**

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

► **EHCI Hand-off**

This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

► **USB Transfer time-out**

This item is used to select a time-out value for Control,Bulk and Interrupt Transfers. Default value is [20 sec].

► **Device reset time-out**

This item is used to select the USB mass storage device start unit command time-out. Default value is [20 sec].

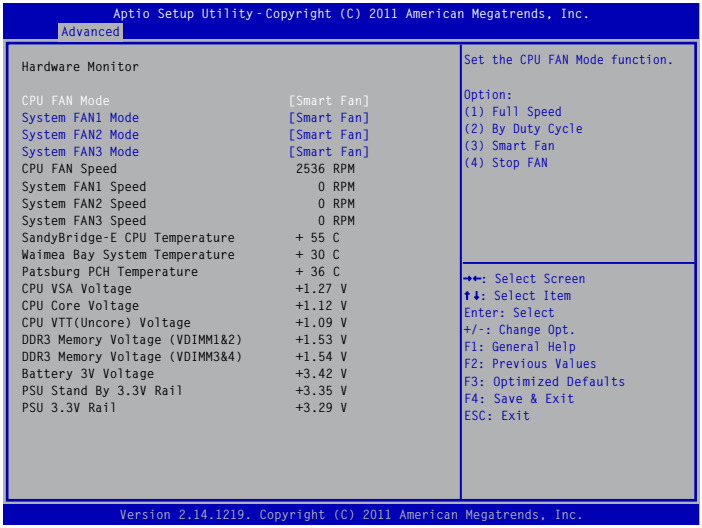
► **Device power-up delay**

This item is used to set the maximum time the device will take before it can report itself to the host controller.

[Auto] : This is default option. For a root port, the default time is 100ms. For a hub port, the delay is taken from hub descriptor.

[Manual]: you can change the time you want by the following item.

Hardware Monitor



►CPU FAN Mode / System FAN1 Mode / System FAN2 Mode / System FAN3 Mode

These item are used to select the mode of CPU FAN / System FAN1 / System FAN2 / System FAN3. The default option is: [Smart Fan].

►CPU FAN Speed / System FAN1 Speed / System FAN2 Speed / System FAN3 Speed

This item shows the current speed of CPU FAN / System FAN1 / System FAN2 / System FAN3.

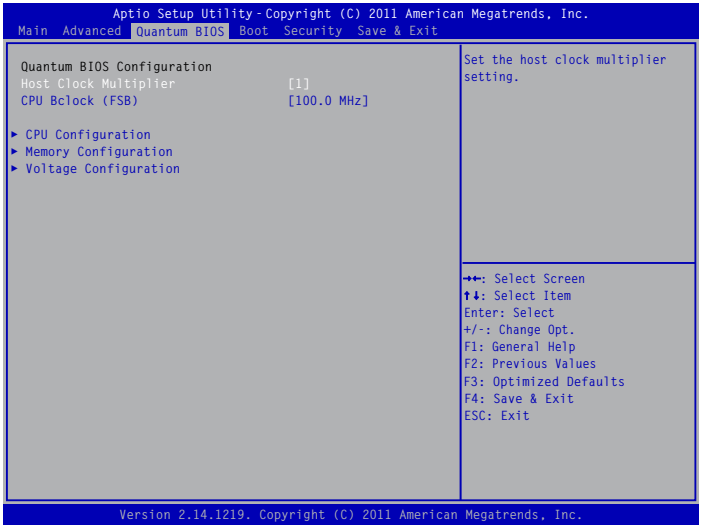
►SandyBridge-E CPU Temperature/ Waimea Bay System Temperature/ Patsburg PCH Temperature

This items show the related temperature information the BIOS automatically detects.

► CPU VSA Voltage / CPU Core Voltage / CPU VTT(Uncore) Voltage / DDR3 Memory Voltage (VDIMM1&2) / DDR3 Memory Voltage (VDIMM3&4) / Battery 3V Voltage / PSU Stand By 3.3V Rail / PSU 3.3V Rail

This items show the related voltage information the BIOS automatically detects.

Quantum BIOS



► **Host Clock Multiplier**

This item allows you to set the host clock multiplier.

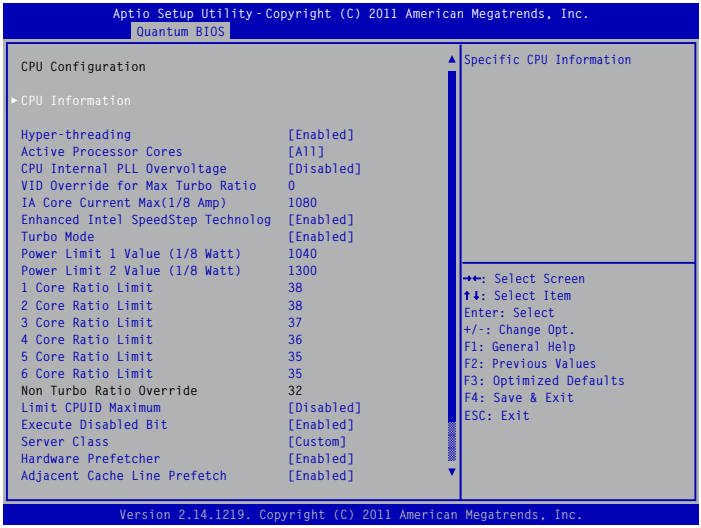
► **CPU Bclock(FSB)**

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 [100 MHz].

► **CPU Configuration / Memory Configuration / Voltage Configuration**

Press <Enter> to go to relative submenu.

CPU Configuration



► **Hyper-threading**

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 the 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.

► **CPU Internal PLL Overvoltage**

This item is used to enable or disable CPU internal PLL overvoltage for overclocking.

► **VID Override for Max Turbo Ratio**

This item is used to set VID override for max Turbo Ratio in 1/256 volts.

► **IA Core Current Max(1/8 Amp)**

This item is used to set IA Core current max value for factory long duration power limit. Default value is get from CPU MSR.

► **Enhanced Intel SpeedStep Technolog**

You can enable/disable the EIST (Processor Power Management, PPM) through this item.

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

► **Turbo Mode**

You can enable/disable the Turbo mode.

► **Power Limit 1 Value(1/8 Watt)**

When the “Turbo Mode” is enabled, this item is used to set the power limit 1 value. you can change the number by pressing “+/-” keys or input the number you want directly.

► **Power Limit 2 Value (1/8 Watt)**

When the “Turbo Mode” is enabled, this item is used to set the power limit 2 value. Default value is get from CPU MSR. you can change the number by pressing “+/-” keys or input the number you want directly.

► **1-Core/2-Core/3-Core/4-Core/5-Core/6-Core Ratio Limit**

When the “Turbo Mode” is enabled, this limit is for 1/2/3/4/5/6 core active. 0 means using the factory-configured value.

► **Limit CPUID Maximum**

This item is used to enable or disable CPUID maximum value limit configuration. It should be [Disabled] for WinXP.

► **Execute Disabled Bit**

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

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

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

managers can free IT resources for other initiatives.

► **Server Class**

This item is used to use the Intel recommended prefech settings. Default option is:[Custom].

► **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 Prefetch (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.

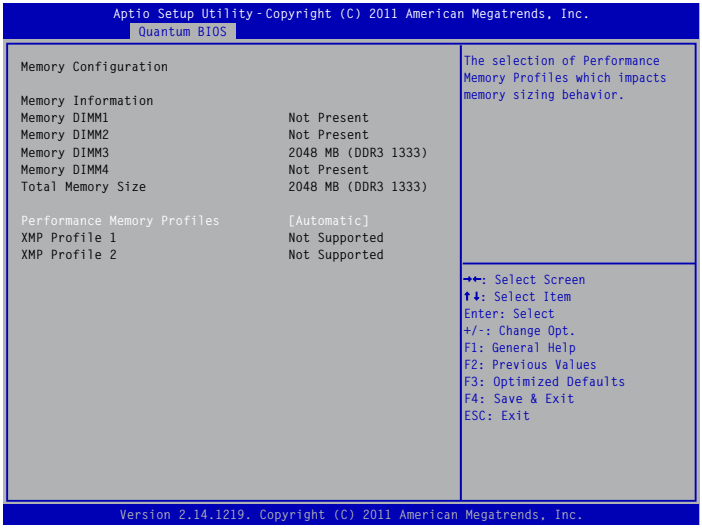
When enabled, the processor will retrieve the currently requested cache line, as well as the subsequent cache line.

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

► **Power Technology**

This item is used to enable or disable the power management features. Default value is:[Energy Efficient].

Memory Settings



► **Performance Memory Profiles**

This item is used to select performance memory profiles which impacts memory sizing behavior.

The following items appear only when the option is set to "Manual".

► **CAS# Latency(tCL)**

This item dispalys the CAS Latency time. The CAS Latency is the number of clock cycles that elapse from the time the request for data is sent to the actual memory location until the data is transmitted from the module.

► **Row Precharge Time(tRP)**

This item dispalys the DRAM RAS precharge time (in clock cycles).

► **RAS# to CAS# Delay(tRCD)**

This item dispalys the delay time (in clock cycles) between the CAS and RAS strobe signals.

► **RAS# Active Time(tRAS)**

This item dispalys the precharge delay time (in clock cycles).

► **Write Recovery Time(tWR)**

This item allows you to select the write recovery time (in clock cycles).

► **Row Refresh Cycle Time(tRFC)**

This item allows you to select the minimum refresh recovery time (in clock cycles).

► **Write to Read Delay (tWTR)**

This item allows you to set minimum Write-to-read delay (in clock cycles).

► **Active to Active Delay (tRRD)**

This item allows you to set Active to Active Delay (in clock cycles).

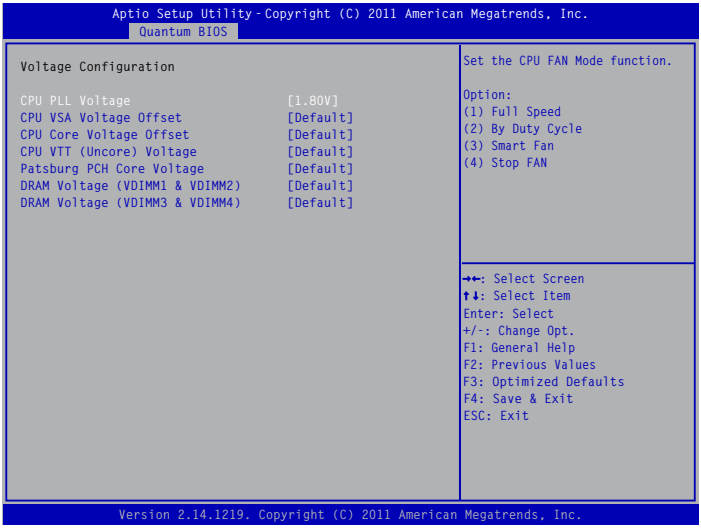
► **Read CAS# Precharege(tRTP)**

This item is used to set the read CAS to precharge time (in clock cycles).

►**Four Active Window Delay(tFAW)**

This item is used to set the four active window delay time (in clock cycles).

Voltage Configuration



► **CPU PLL Voltage**

This item is used to set DRAM Voltage. The default voltage is 1.80V.

►**CPU VSA Voltage Offset**

This item is used to set the CPU VSA voltage offset.

► **CPU Core Voltage Offset**

This item is used to set the CPU Core voltage offset.

► **CPU VTT (Uncore) Voltage**

This item is used to select the CPU VTT (Uncore) voltage. [Default] means the voltage is according to your CPU model. It can be 1.005V or 2.011V.

►Patsburg PCH Core Voltage

This item is used to set the CougarPoint PCH Core Voltage.

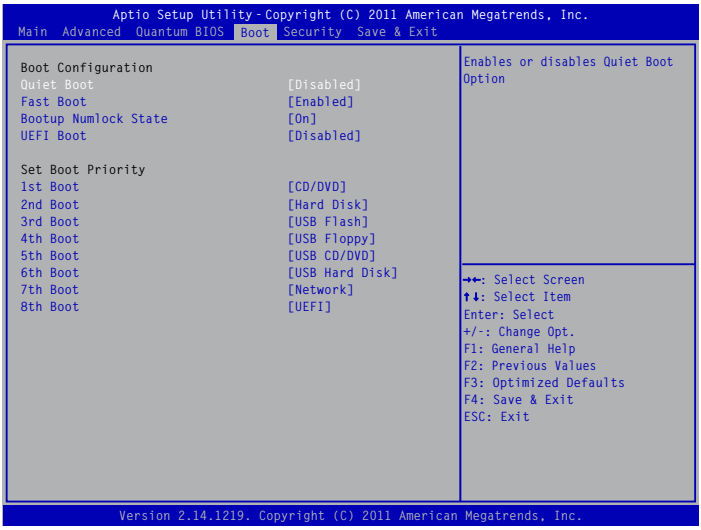
►DRAM Voltage (VDIMM1 & VDIMM2)

This item is used to set the DRAM voltage. The maximum available for adjustment is 2.307V. Adjusting the voltage beyond the memories default voltage could result in damage to memory controller.

►DRAM Voltage (VDIMM3 & VDIMM4)

This item is used to set the DRAM voltage. The maximum available for adjustment is 2.307V. Adjusting the voltage beyond the memories default voltage could result in damage to memory controller.

Boot



► **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.

► **Fast Boot**

This item is used to enable or disable boot with initialization of a minimal set of devices required to launch active boot option. This is no effect for BBS boot options.

► **Bootup Numlock State**

This item is used to select the keyboard numlock state. The defaulte setting is [On].

► **UEFI Boot**

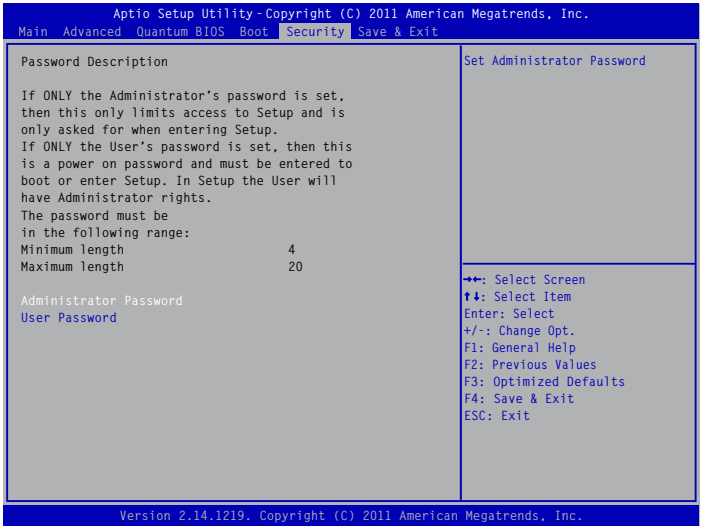
This item is used to enable or disable boot from the UEFI Devices.

Set Boot Priority

► **1st/2nd/3rd/4th/5sth/6th/7th/8th**

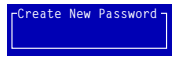
These items are used to configure the priority for boot devices.

Security



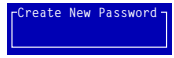
► **Administrator Password**

This item is used to install or change administrator password. After you input administrator password, it then will ask you to confirm the password.

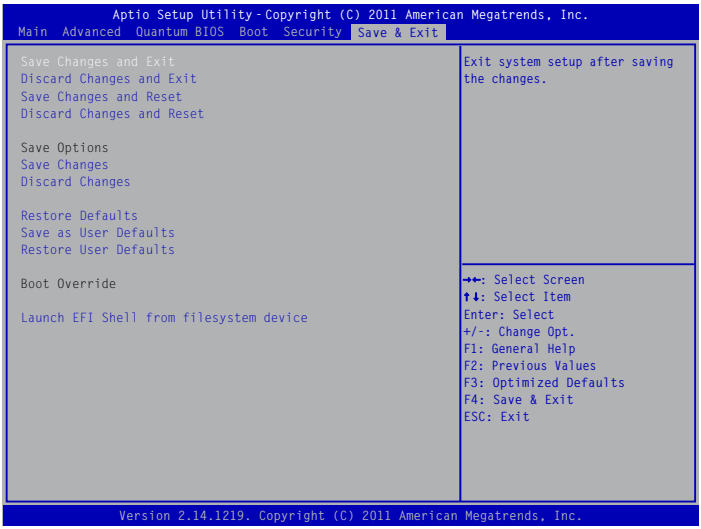


► **User Password**

This item is used to install or change user password.



Save & Exit



► **Save Changes and Exit**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to save your changes and exit, select [No] or <ESC> to return to the main menu.

► **Discard Changes and Exit**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to exit setup utility without saving your modifications, select [No] or <ESC> to return to the main menu.

► **Save Changes and Reset**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to save your changes and reset computer, select [No] or <ESC> to return to the main menu.

► **Discard Changes and Reset**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to exit setup utility and reset computer without saving your modifications, select [No] or <ESC> to return to the main menu.

► **Save Changes**

If you select this option and press <Enter>, a message will be displayed in the center of the screen. Select [Yes] to save your changes, select [No] or <ESC> to return to the main menu.

► **Discard Changes**

If you select this option and press <Enter>, a message will be displayed in the center of the screen. Select [Yes] to discard your modifications, select [No] or <ESC> to return to the main menu.

► **Restore 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 <Yes> and then press <Enter> to load the defaults. Select <No> 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 as User Defaults**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to save the changes done so far as user defaults, select [No] or <ESC> to return to the main menu.

► **Restore User Defaults**

If you select this option and press <Enter>, a message will be displayed in the screen. Select [Yes] to restore the user defaults to all the setup options, select [No] or <ESC> to return to the main menu.

►**Boot Override**

You can select the boot device through this item without changing the booting sequence in setup.

►**Launch EFI Shell from filesystem device**

This item is used to launch EFI shell application (Shellx64. efi) from one of the available filesystem devices.

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:

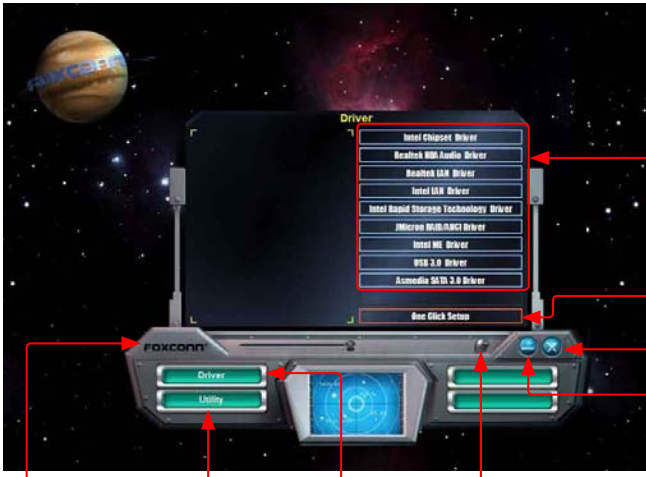
- Install driver and utility
- FOX LiveUpdate
- FOX LOGO
- FOX DMI

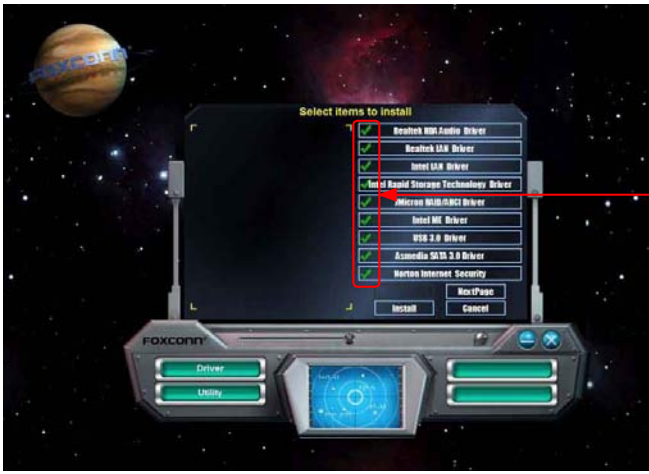
Install driver and utility

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

1. Driver

Use these options to install all the drivers for your system. You must click "Intel Chipset Driver" to install it first. After that, you can click ”One Click Setup” and then choose the items you want to install, or you can click on each individual driver to install it manually.





2. Utility

Use these options to install additional software programs.

CAUTION

The Driver and Utility items displayed above represent a Windows 7 based system. The appearance may change with different Operating Systems.

FOX LiveUpdate

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

Supporting Operating Systems :

- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)
- Windows 7 (32-bit and 64-bit)

CAUTION

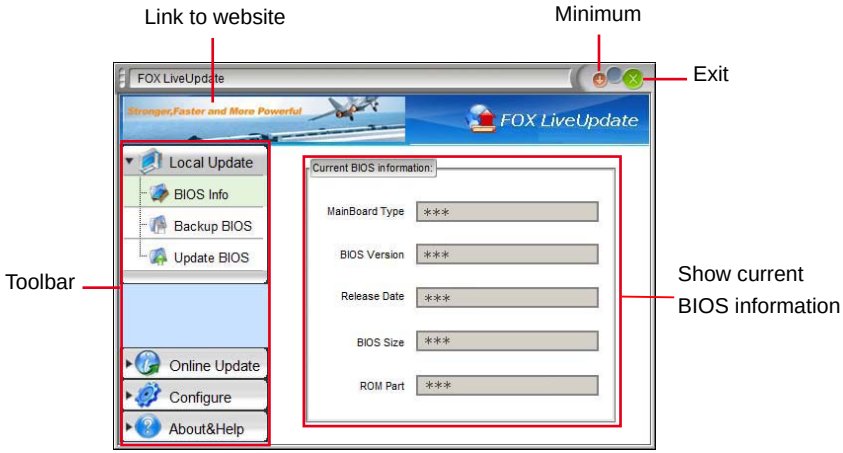
Please set the BIOS setting “BIOS Write Protect” or “Super BIOS Protect” to [Disabled] when running this application.

Using FOX LiveUpdate :

1. Local Update

1-1 Local Update - BIOS Information

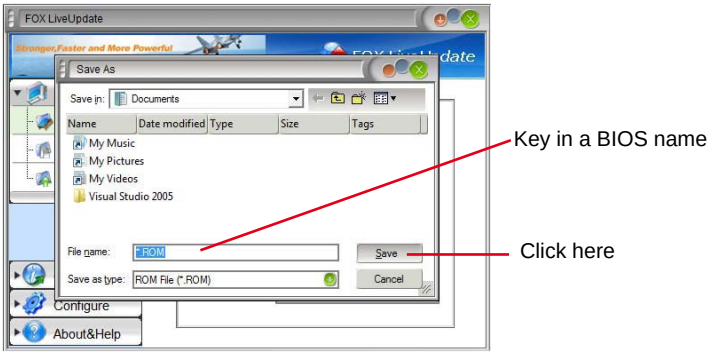
This page lets you know your system BIOS information.



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

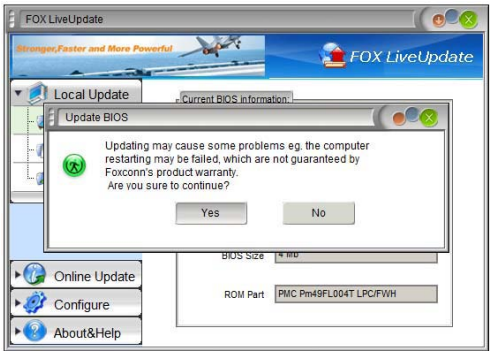
1-2 Local Update - Backup

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. 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.



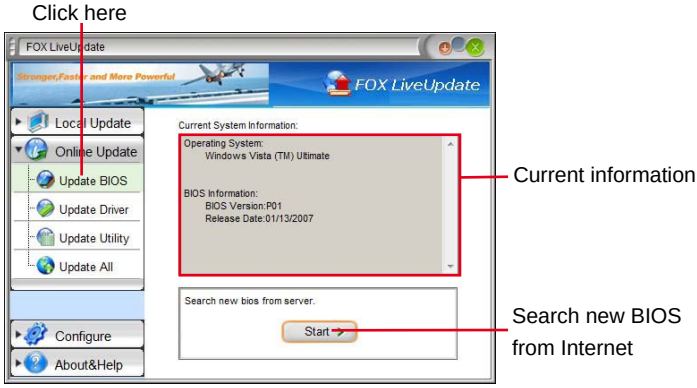
CAUTION

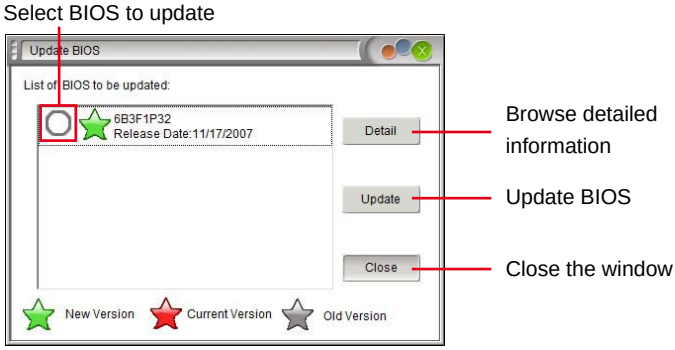
FOX LiveUpdate can automatically backup old BIOS before update. This feature can be enabled in the "Configure-System" setup. Please refer to "Configure-System" section for more detail. The default backup directory is C:\LiveUpdate_Temp, but the backup file name will be automatically generated. It is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

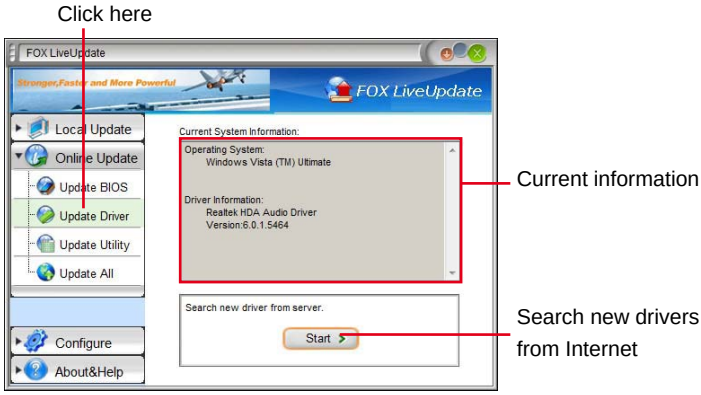
This page lets you update your system BIOS from Internet. Click “start”, it will search the new BIOS from Internet. Then follow the wizard to finish the update operation.

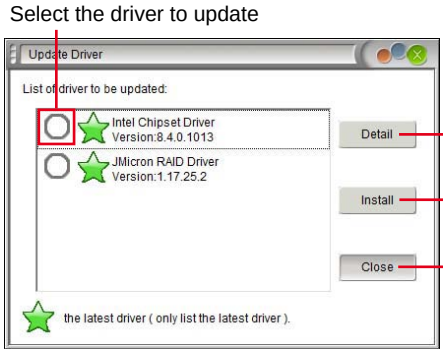




2-2 Online Update - Update Driver

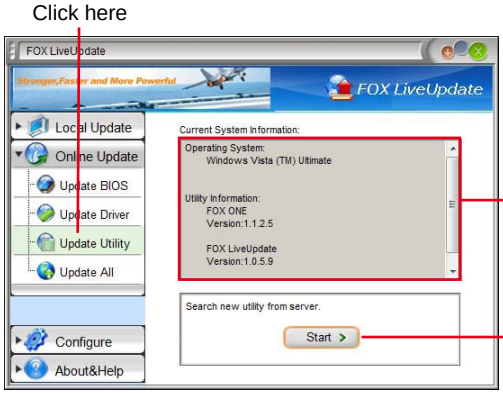
This page lets you update your system drivers from Internet. Click “start”, it will search the new drivers from Internet. Then follow the wizard to finish the update operation.

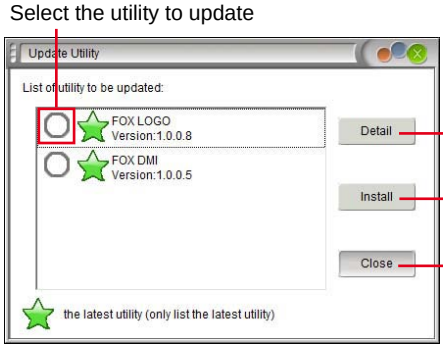




2-3 Online Update - Update Utility

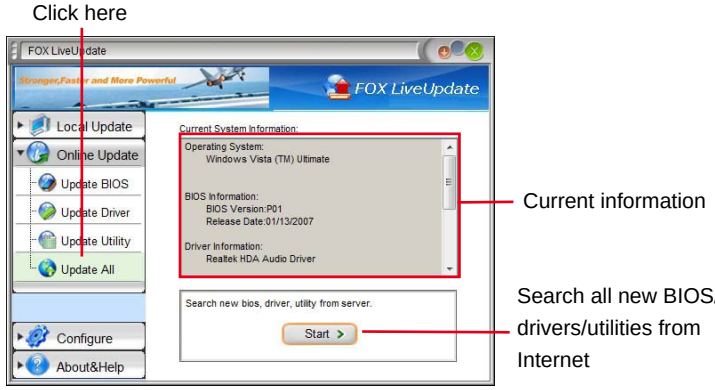
This page lets you update utilities from Internet. Click “start”, it will search the new utilities from Internet. Then follow the wizard to finish the update operation.

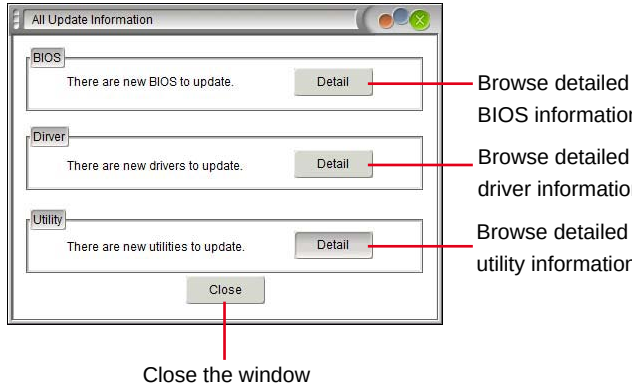




2-4 Online Update - Update All

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.

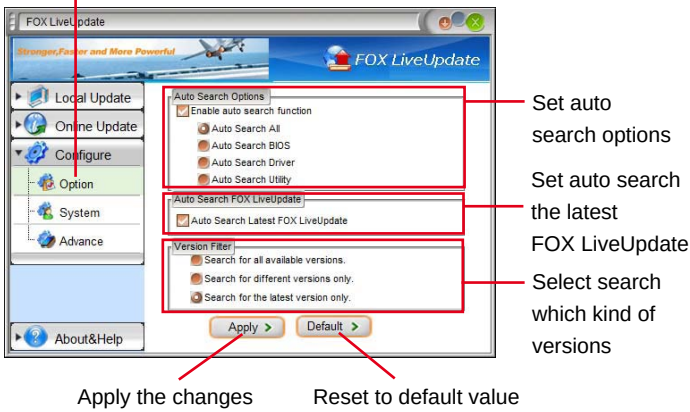




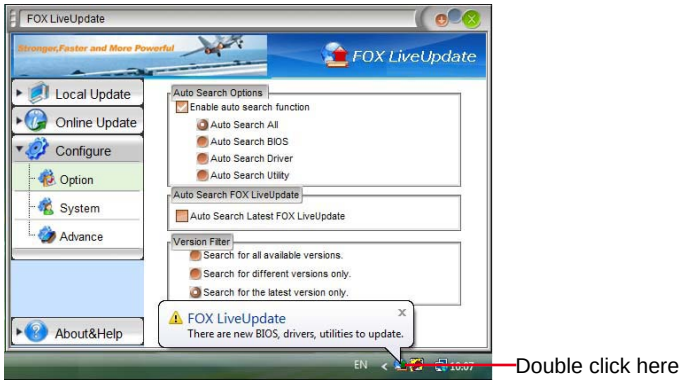
3. Configure

3-1 Configure - option

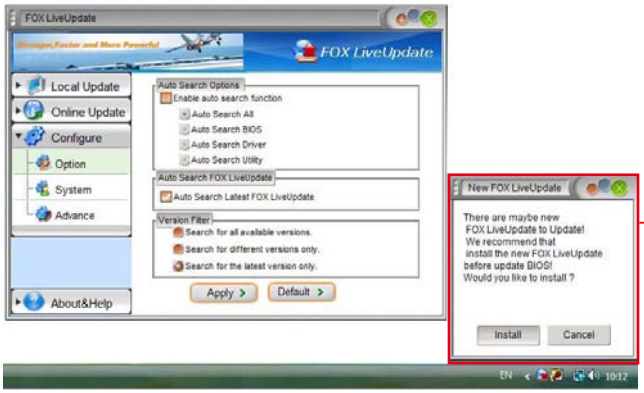
This page lets you set auto search options. After you enable the auto search function, FOX LiveUpdate will start its searching from Internet and if any qualified item found, it will pop out a message on the task bar to inform you to do the next step.



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



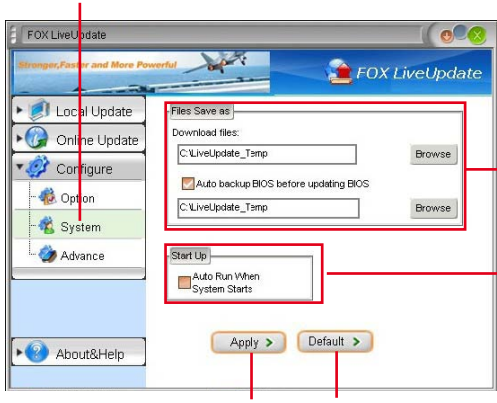
When you enable "Auto Search FOX LiveUpdate", if your FOX LiveUpdate version is older, it will auto search from internet and prompt you to install the new version.



Prompt you to install the new FOX LiveUpdate

3-2 Configure - System

This page lets you set the backup BIOS location and determine if the FOX LiveUpdate can auto run when the system starts up.

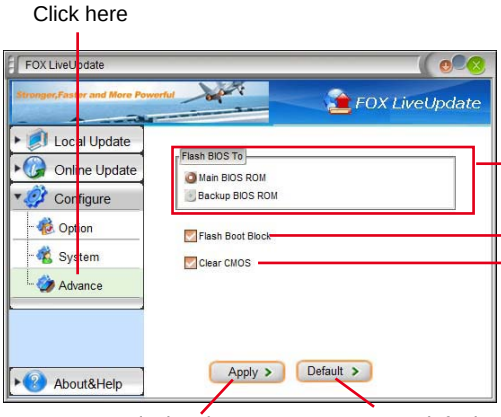


Set the location of download files or auto backup BIOS

Determine if the FOX LiveUpdate can auto run when the system starts up

3-3 Configure - Advance

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

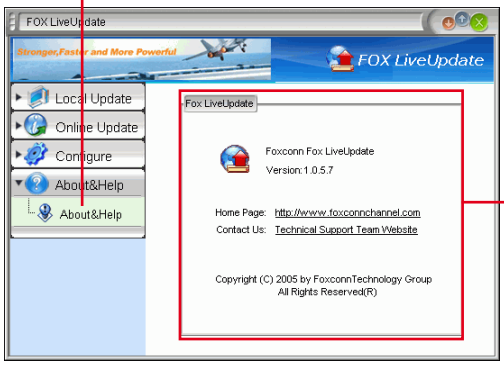


CAUTION

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

4. About & Help

This page shows some information about FOX LiveUpdate.



FOX LOGO

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

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

Supporting Operating Systems :

- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)
- Windows 7 (32-bit and 64-bit)

Using FOX LOGO:

Main Page

WARNING!

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

FOX DMI

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

Supporting Operating Systems :

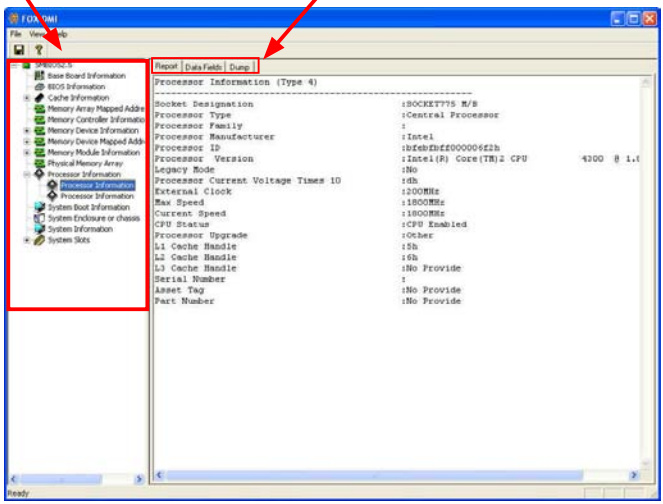
- Windows 2000
- Windows XP (32-bit and 64-bit)
- Windows 2003 (32-bit and 64-bit)
- Windows Vista (32-bit and 64-bit)
- Windows 7 (32-bit and 64-bit)

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 (Windows 7) in a brand new RAID system.
- Existing Windows XP (Windows 7) system with new RAID built as data storage.

It includes the following information :

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

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

Installing a new Windows XP (Windows 7) in a brand new RAID system.

1. Follow 5-1 to create a RAID driver diskette.
   (Windows 7 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.
6. Windows XP or Windows 7 Install CD.

Existing Windows XP (Windows 7) 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. (Windows 7 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® Rapid Storage Technology enterprise driver into your current Windows XP system. (Windows 7 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® Rapid Storage Technology enterprise

The Intel® Rapid Storage Technology enterprise 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 149.0GBs and two 74.5GBs. 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.

The topic will be introduced :

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

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® Rapid Storage Technology enterprise driver.**
- Set SATA mode in BIOS to AHCI, you can skip RAID BIOS creation steps, but the software driver installation of **Intel® Rapid Storage Technology enterprise** 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 7 has native RAID driver in itself, you can skip these steps.

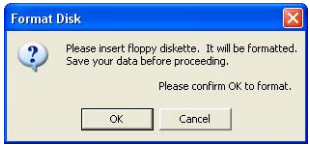
1. Find a PC, put a diskette into its floppy drive A:, this diskette will be formatted later. Put the driver CD into DVD-ROM drive.

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.

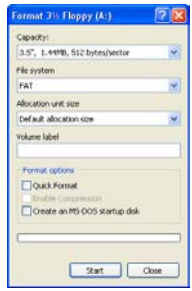
3. Click "GO" to start.

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

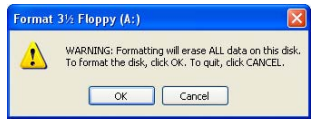
5. Insert a diskette, click "OK" to continue.



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

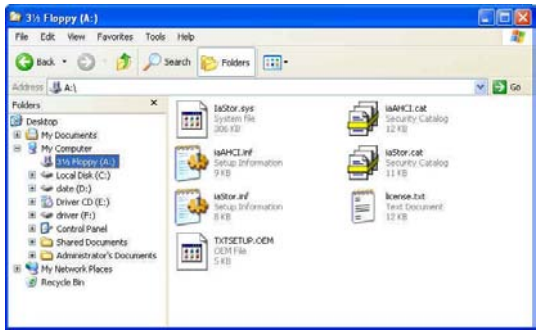


7. Click on "OK" to go through this warning message.



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

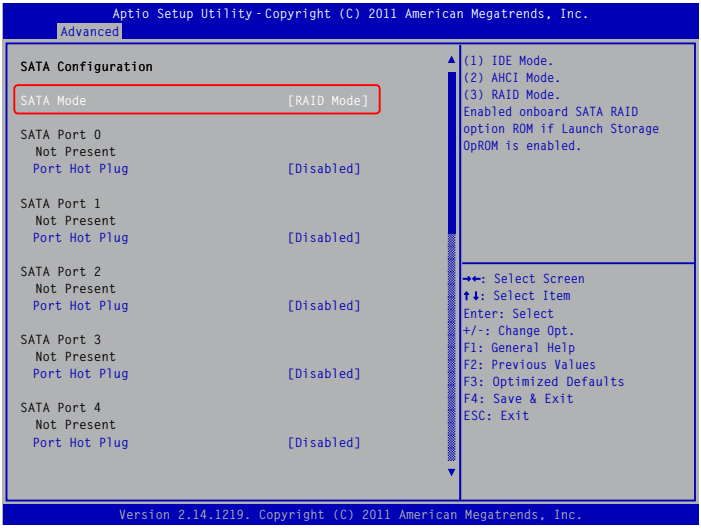
9. Check if the diskette contains the driver files.
   Later, when in the process of installing Windows XP in your RAID system, it will ask you to use this floppy diskette to provide driver for additional specific devices, for example, a RAID device.



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

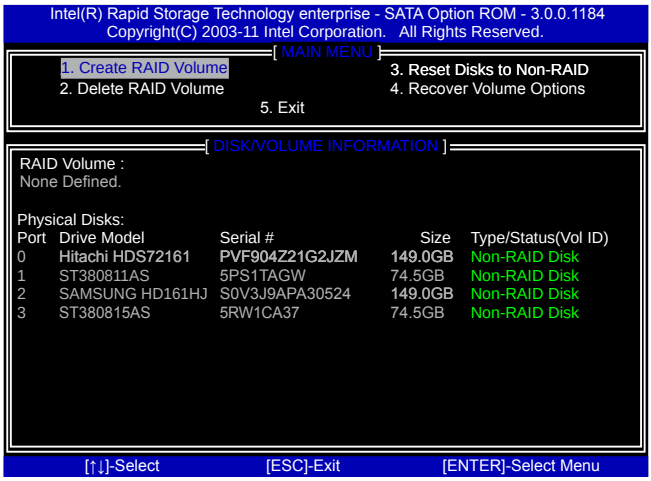
1. Enter the BIOS setup by pressing <DEL> key during the POST(Power On Self Test).
2. Use the arrow right/left keys to select the “Advanced” menu, then use the arrow up/down keys to select the “SATA Configuration” item and press <Enter> to go to the configuration items.
3. Press <Enter> to select and set the “SATA Mode” option to [RAID Mode].
4. Press <F4> to save the setting then PC will reboot itself.



5-3 Create RAID in BIOS

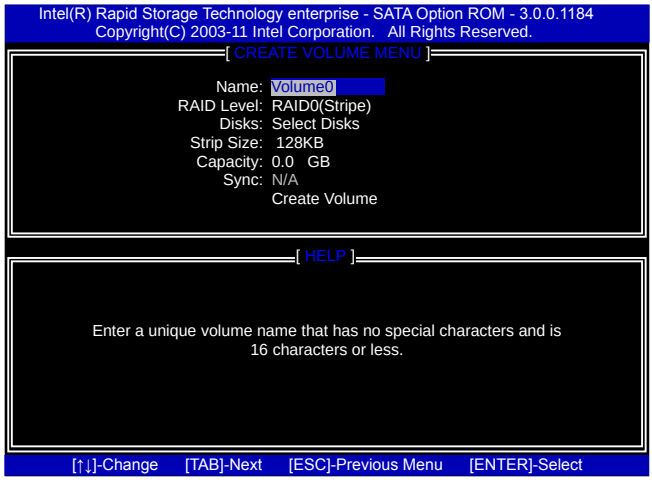
Enter RAID BIOS Setup

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



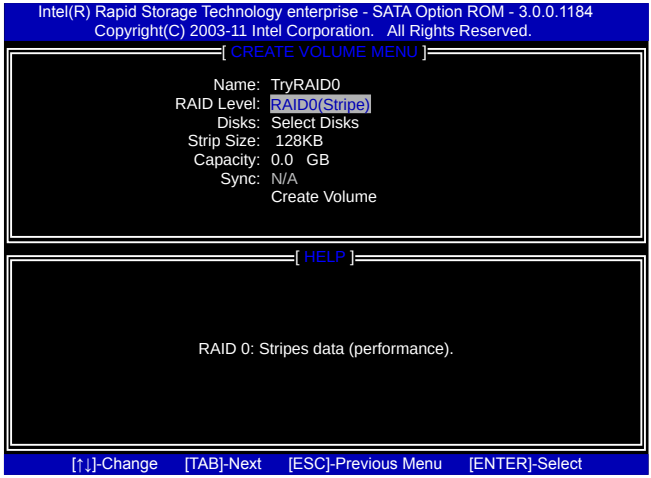
Create RAID Volume
Create RAID 0 (1st Volume)

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

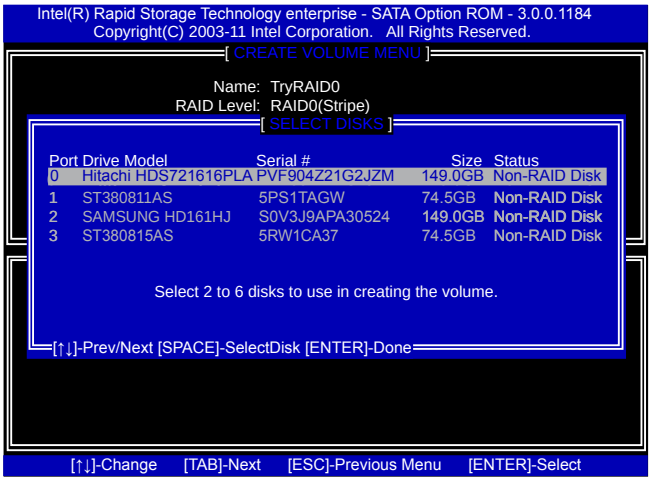


2. In "**Name**" item, you can input a device name for the RAID0 system and press <Enter> to apply it. Here, we name it as TryRAID0 to replace the default Volume0.

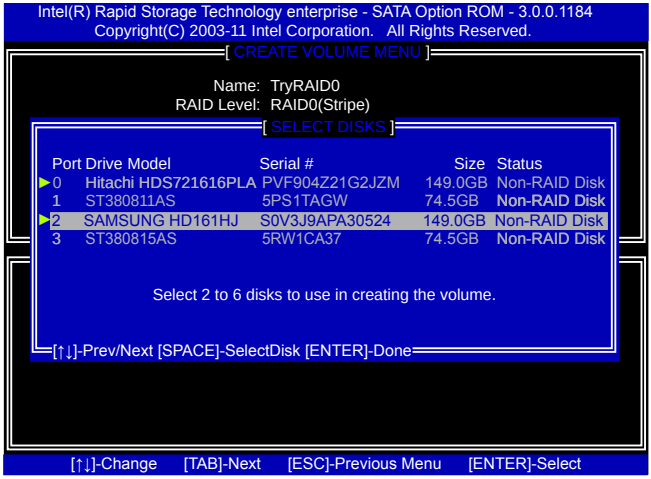
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select RAID0 (Stripe) and press <Enter>.



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

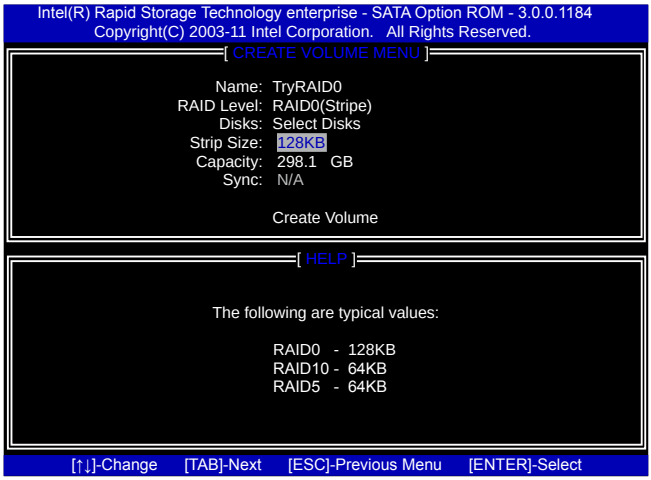


5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as RAID0, then press <Space> key to select them. A triangle sign will appear to indicate the drive selected. Here, we select two 149.0GB hard disks as an example. Press <Enter> key to finish the selection.

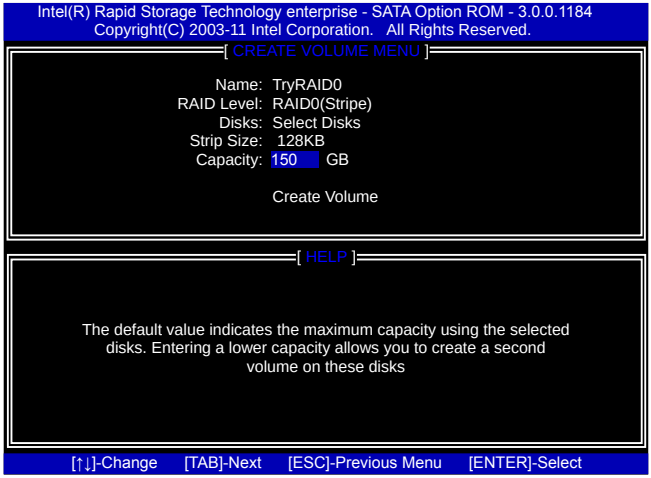


6. It is now entering “**Strip Size**” menu. Use Up or Down arrow key to select the desired strip size. The available values range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :
   16K - Best for sequential transfer.
   64K - Good general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

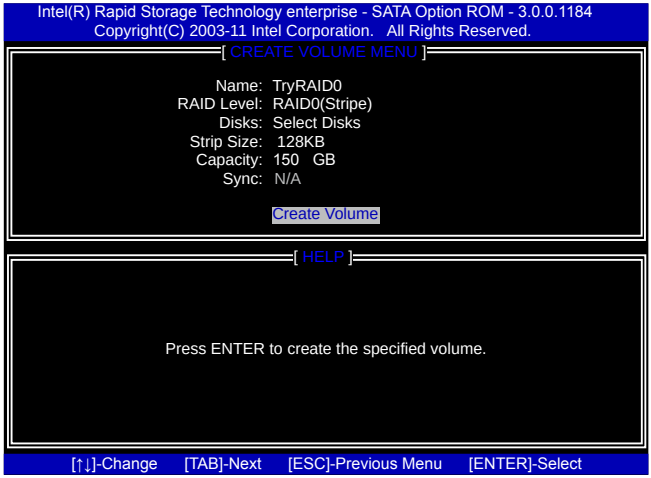
The default value is 128K for RAID0. Press <Enter>.



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 150GB here to build the first volume. Later, we will also describe how the second volume is generated. Input 150GB, and press <Enter>.

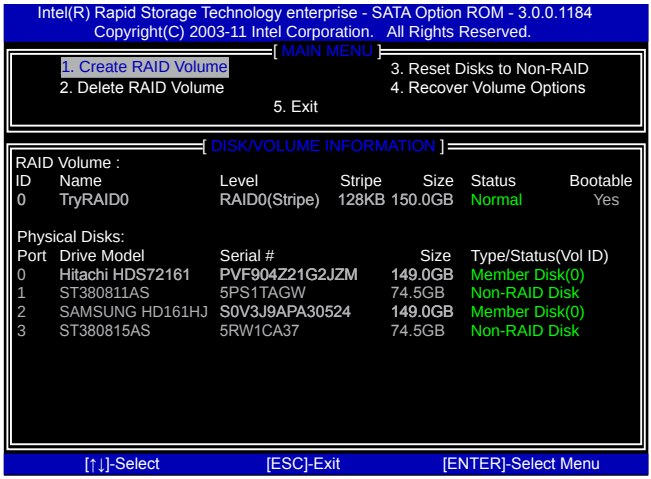


8. In “**Create Volume**” item, press <Enter>.



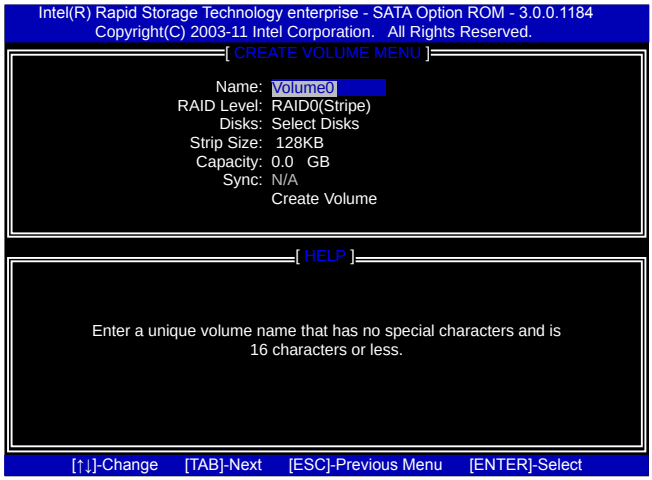
A warning message will appear :

9. Press <Y> to create the volume and return to the main menu, a 150GB RAID0 system is normally configured.



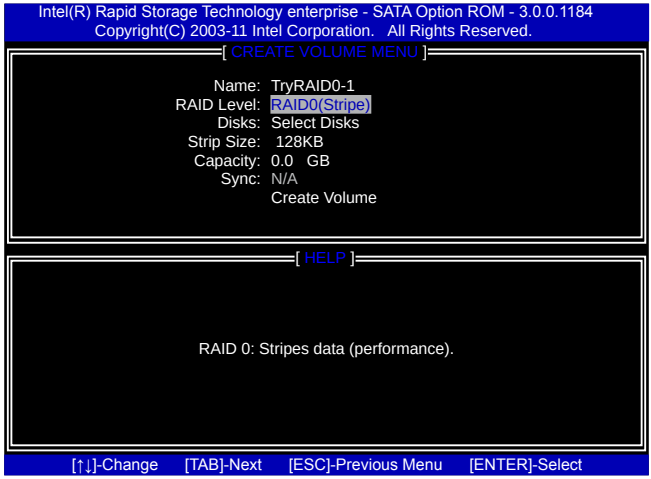
Create RAID0 (2nd Volume)

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

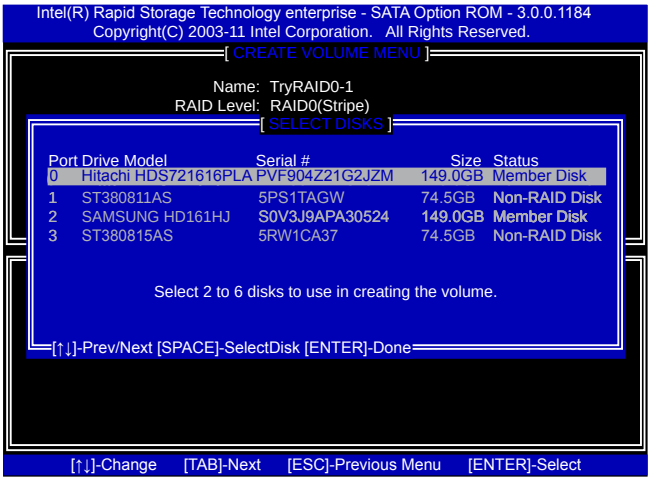


2. In "**Name**" item, we name it as TryRAID0-1 for second volume.
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection, only RAID0, 1 can be selected. Select RAID0 (Stripe) and press <Enter>.

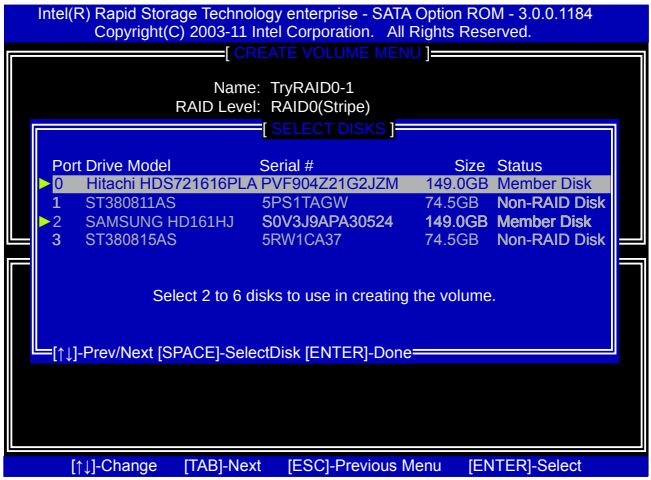
(Note : You also can try to select RAID1 for the second volume as an experiment here)



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. Two signs will appear to indicate the selections. Press <Enter> to continue.



6. It goes to “**Strip Size**” menu directly. Capacity automatically displays 148.1GB, and at this time, you can not input any value in capacity as there is no additional volume available.

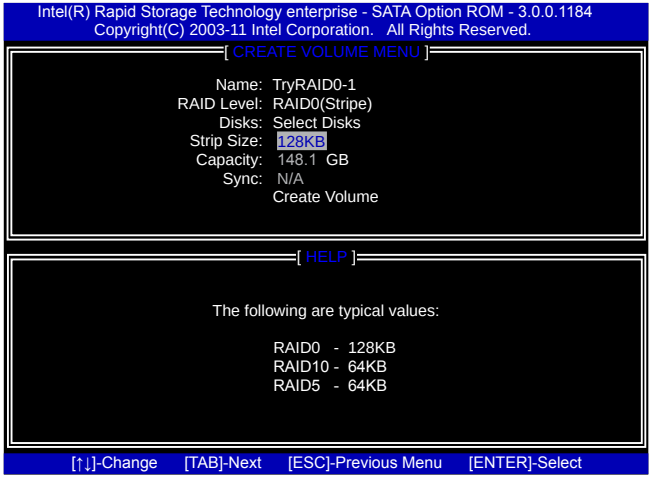
The available values of Strip Size range from 4KB to 128KB. The strip value should be selected based on different applications. Some suggested choices are :

16K - Best for sequential transfer.

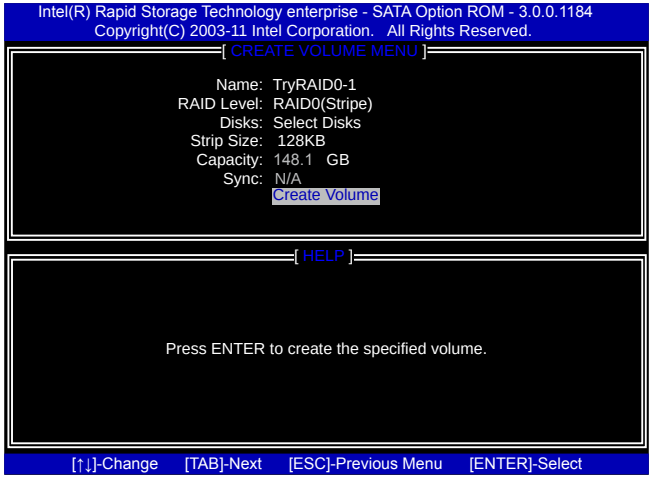
64K - Good general purpose strip size.

128K - Best performance for most desktops and workstations .

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

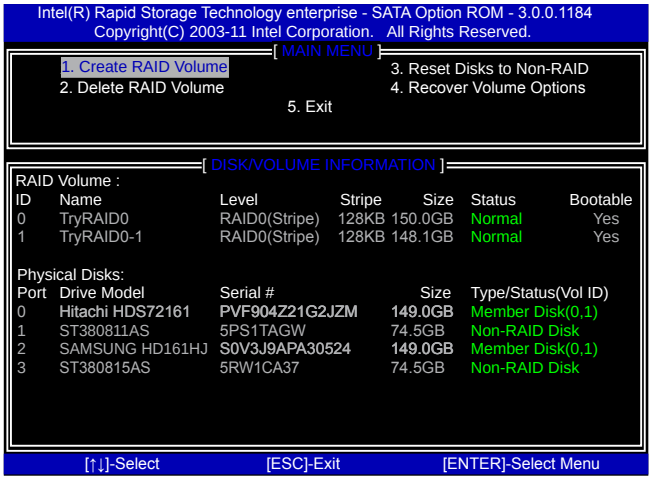


7. Select “**Create Volume**” and press <Enter>.



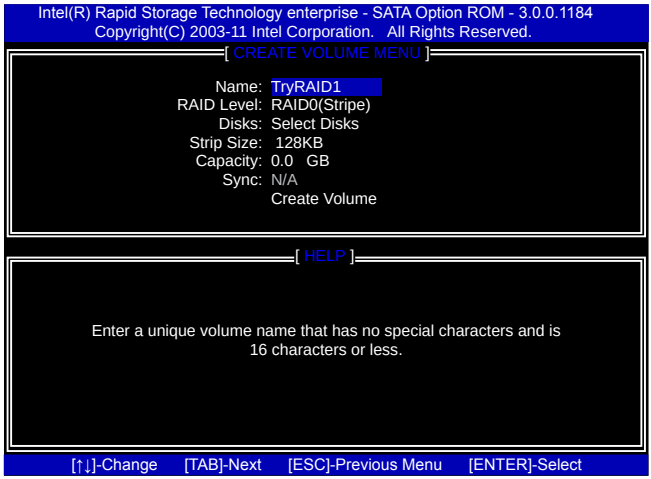
A message will appear :

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

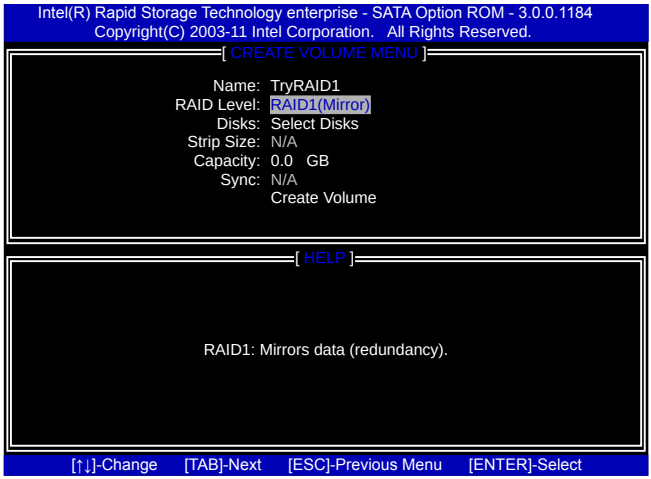


Create RAID 1

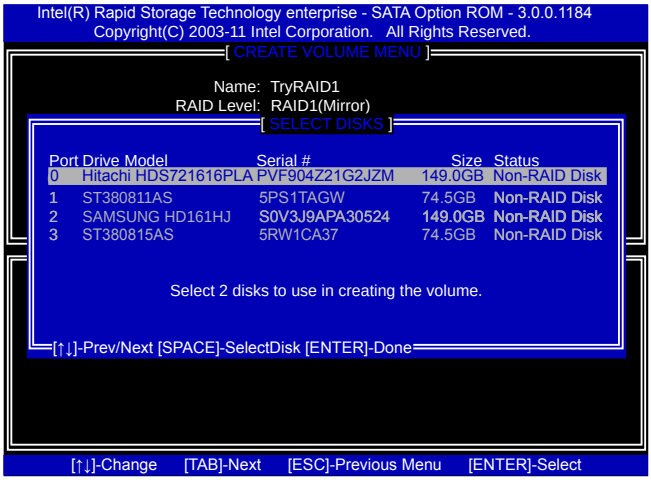
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID1 system and press <Enter> to apply it. Here, we name it as TryRAID1 to replace the default Volume0.



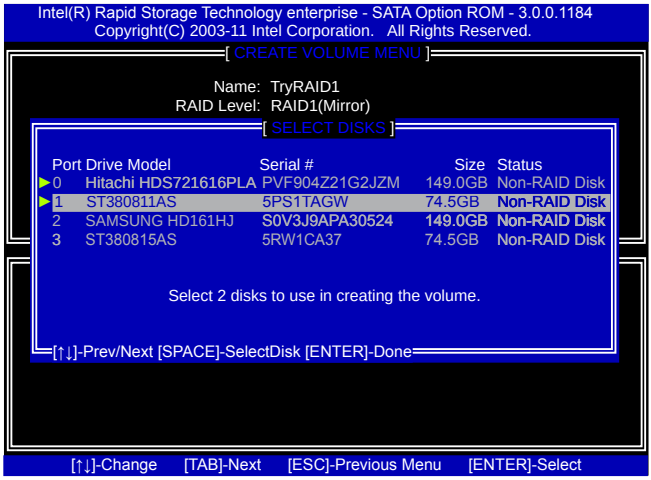
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select RAID1 (Mirror) and press <Enter>.



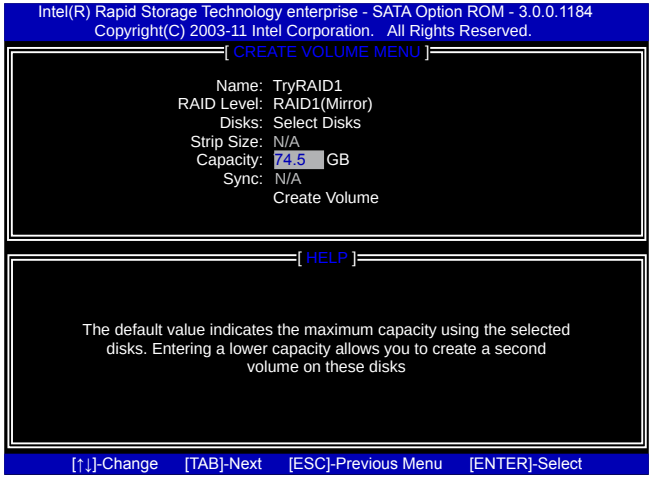
4. It then goes to “**Disks**” item. Press <Enter> to dispaly the hard disks list for this RAID1 system.



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 149.0GB and one 74.5GB hard disks. Press <Enter> key to finish the selection.

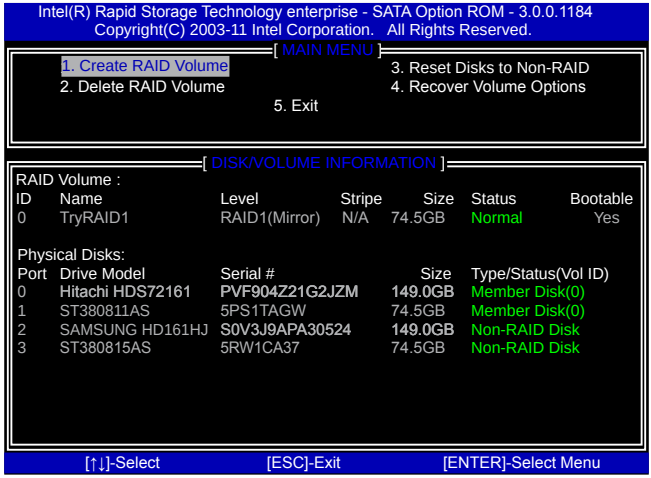


6. It will skip “**Strip Size**” menu for RAID1.



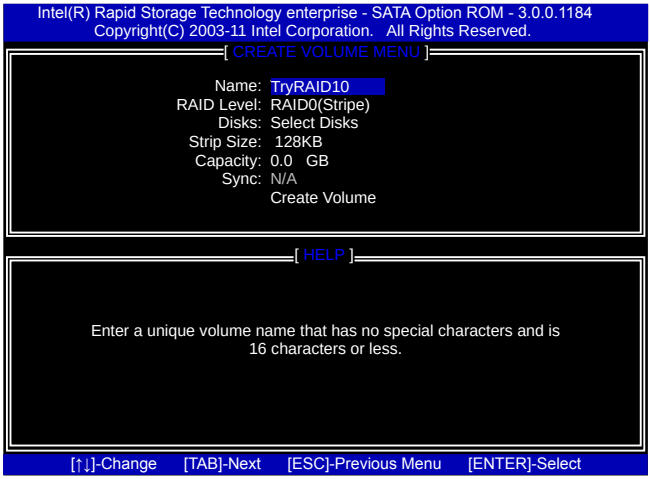
7. In “**Capacity**” item, use the default value, and press <Enter>. The size of the smaller hard disk 74.5GB is becoming the default value, and it indicates the maximum capacity.
8. Select “**Create Volume**” and press <Enter>. A warning message will appear:

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

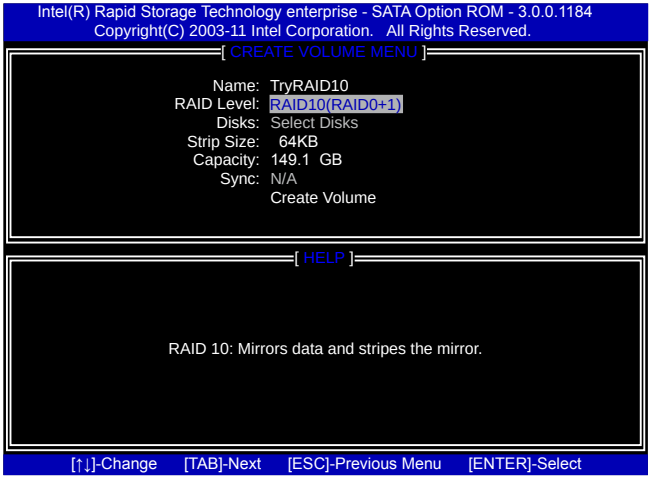


Create RAID 10 (0+1)

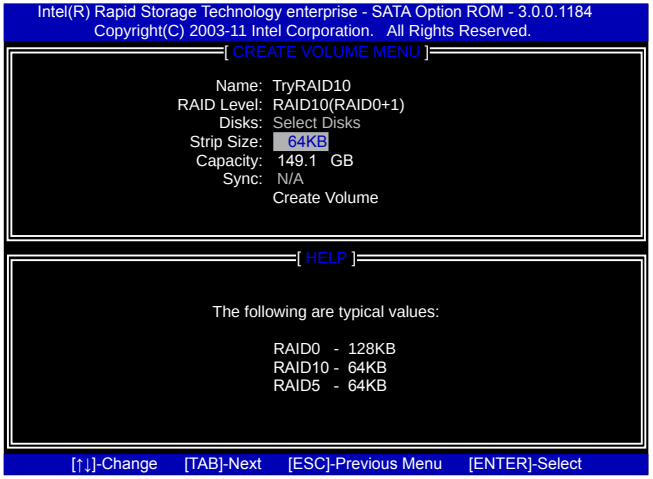
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID10 system and press <Enter> to apply it. Here, we name it as TryRAID10 to replace the default Volume0.



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

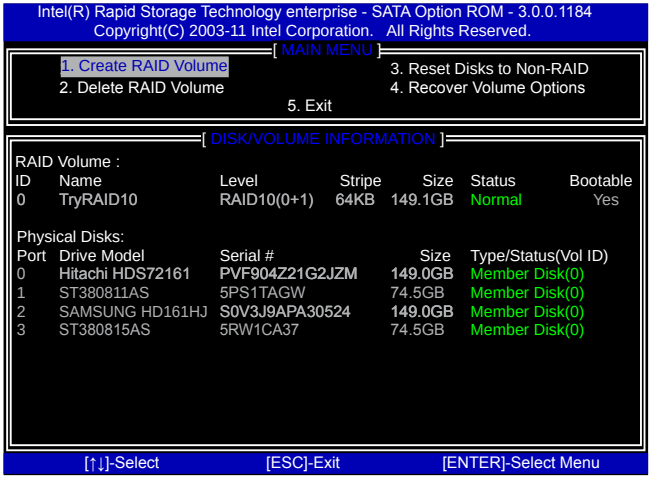


4. After exiting from "**RAID Level**", it goes directly to "**Stripe Size**" item. Because all four disks are selected for RAID10, so there is no need to go to **Disks** option.
5. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K.



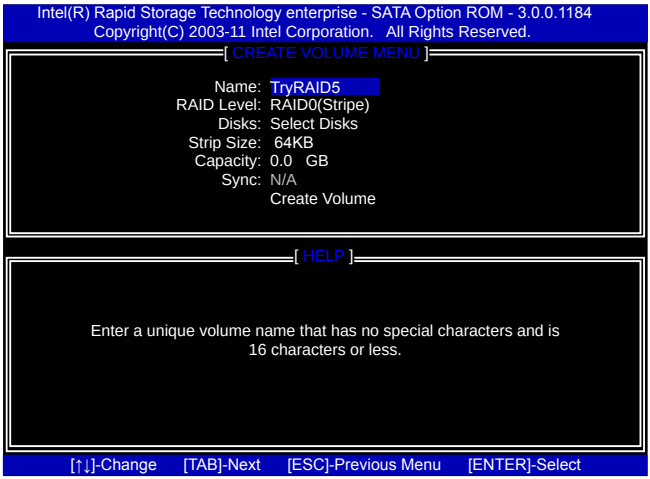
6. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice the smallest hard disk size, that is, 74.5GB * 2 = 149GB.
7. Select "**Create Volume**" and press <Enter>. A warning message will appear :

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

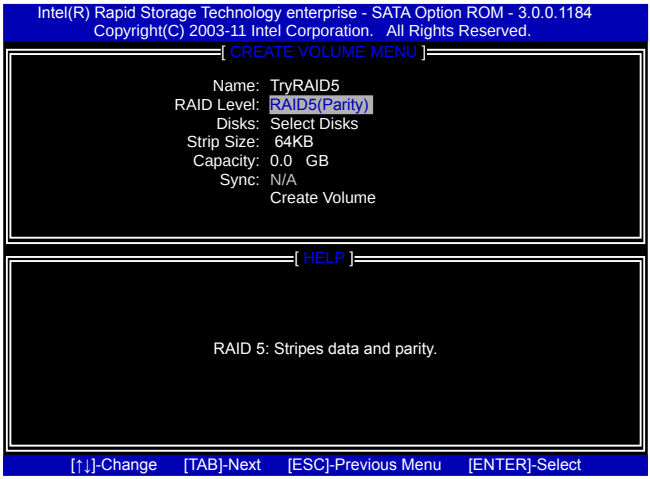


Create RAID5 (Parity)

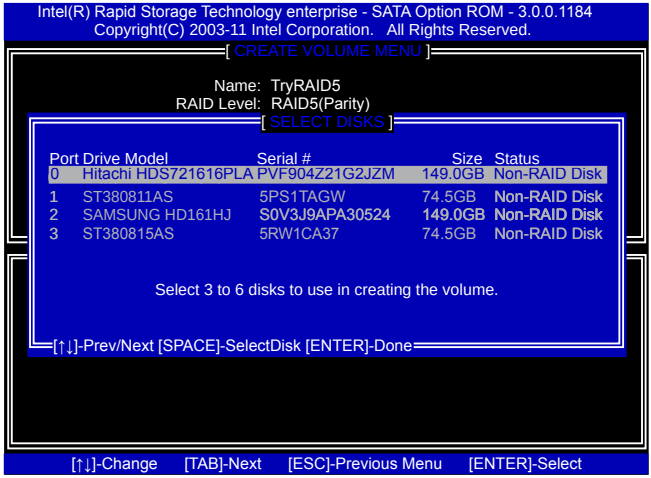
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the RAID5 system and press <Enter> to apply it. Here, we name it as TryRAID5 to replace the default Volume0.



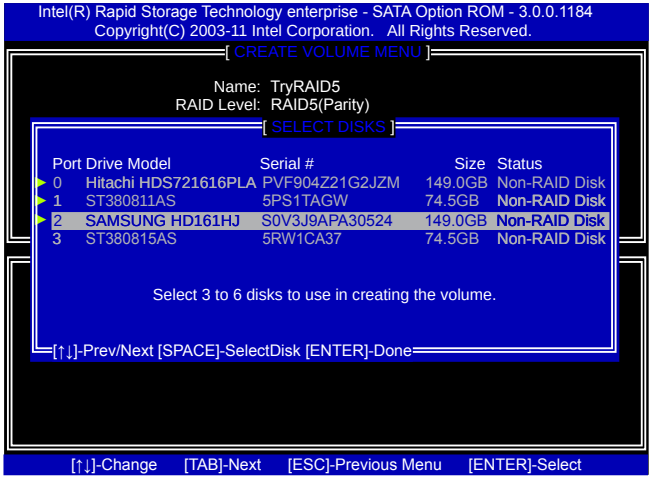
3. In “**RAID Level**” item, you can use Up or Down arrow key to make a selection. Select RAID5(Parity) and press <Enter>.



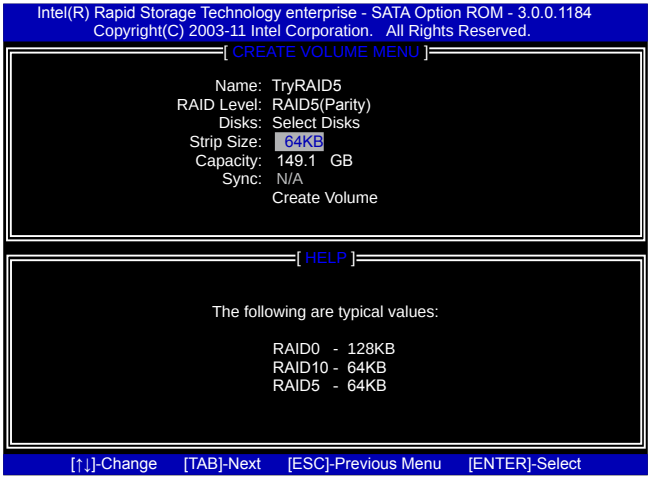
4. It then goes to “**Disks**” item. Press <Enter> to display the hard disks list for this RAID5 system.



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 two 149.0GB and 74.5GB hard disks for an example. Press <Enter> key to finish the selection.

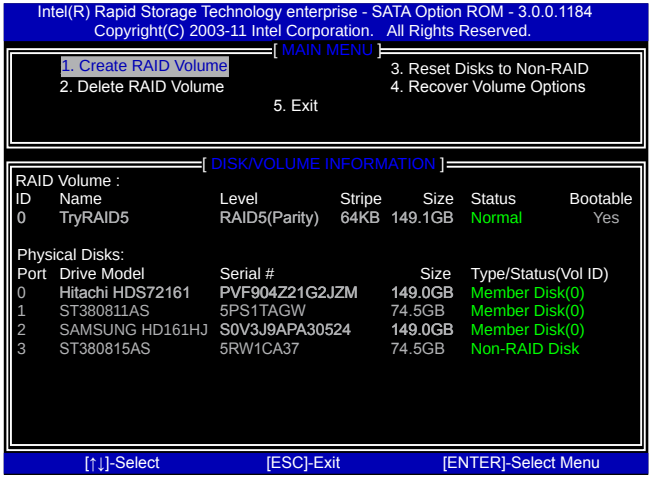


6. Use Up or Down arrow key to select the desired strip size when entering "**Strip Size**" menu. The default value is 64K. Press <Enter>.



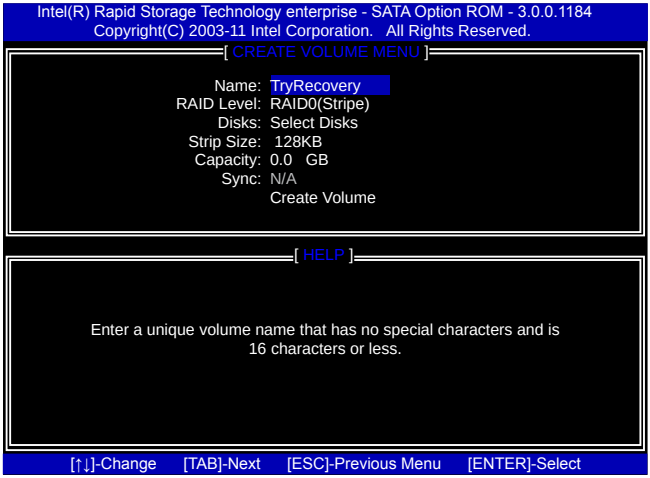
7. In "**Capacity**" item, use the default value, and press <Enter>. The default value is twice that of the smallest hard disk size, that is, 74.5GB * 2 = 149GB.
8. Select "**Create Volume**" and press <Enter>. A warning message will appear :

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

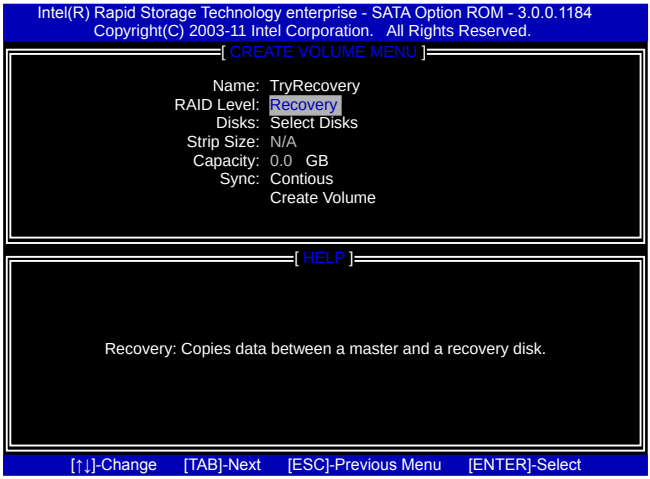


Create Recovery

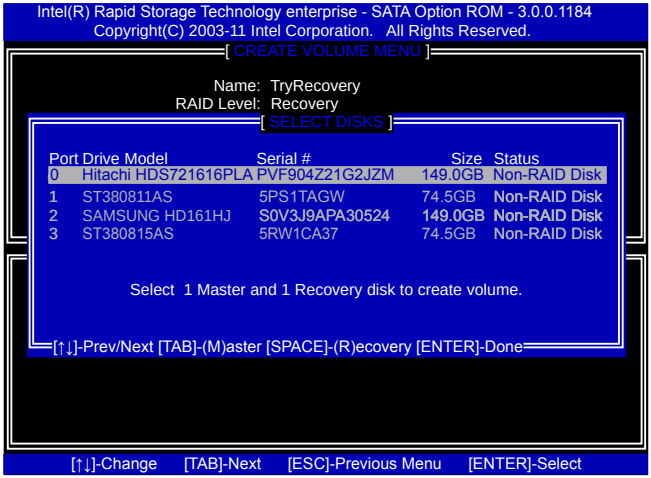
1. Select “**1.Create RAID Volume**” from the main menu and press <Enter>.
2. In "**Name**" item, you can input a device name for the Recovery system and press <Enter> to apply it. Here, we name it as TryRecovery to replace the default Volume0.



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

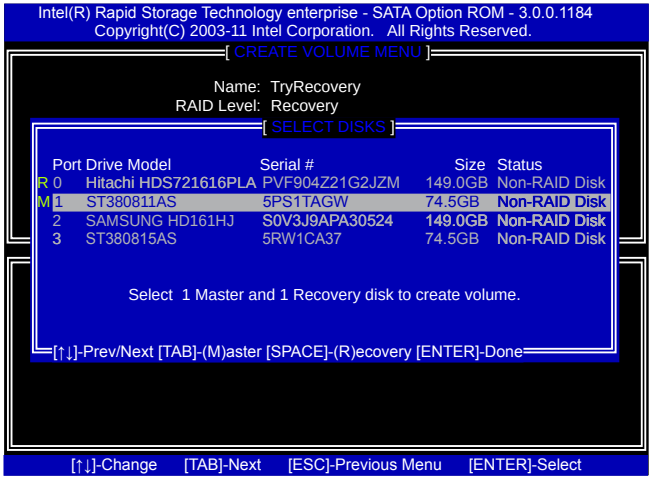


4. It then goes to “**Disks**” item. Press <Enter> to display the hard disks list for this Recovery system.

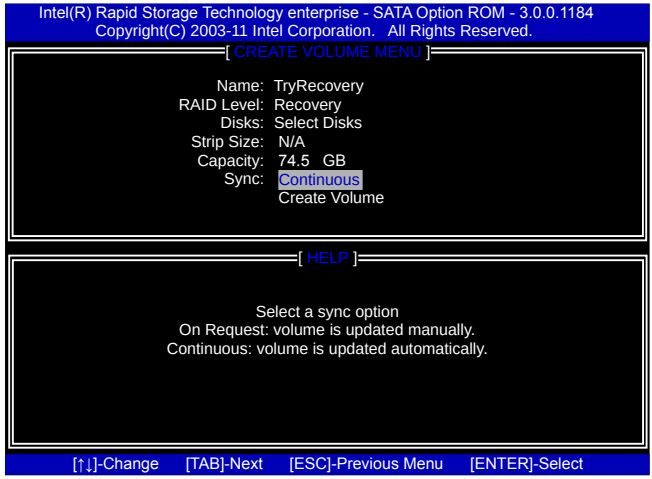


5. From the hard drive list, use Up or Down arrow key to reach the hard disks you want to combine them as Recovery, then press <Tab> key to select Master disk and press <Space> key to select Recovery disk. Here, we select 149.0GB as Recovery disk and 74.5GB as Master disk. Press <Enter> key to finish the selection.

(Note : When you use Intel Rapid Recover Technology, the capacity of recovery disk should be larger or equal to master disk.)

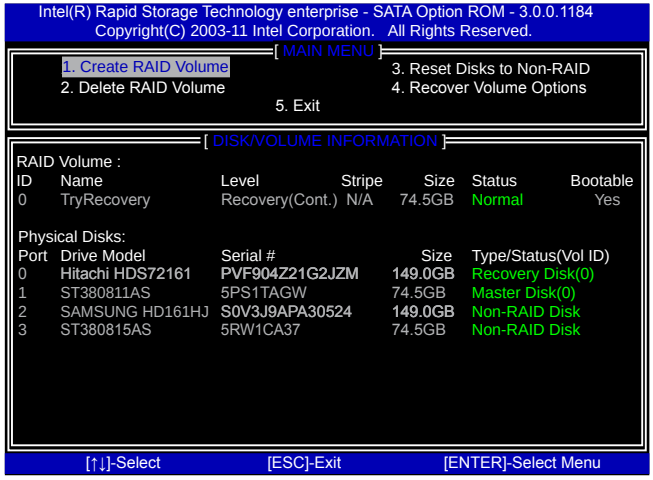


6. It will skip “Strip size” and “Capacity” items. The default “**Capacity**” value is the smaller hard disk size, that is 74.5GB. In “Sync” item, we suggest you select the “Continuous” value and press <Enter>.



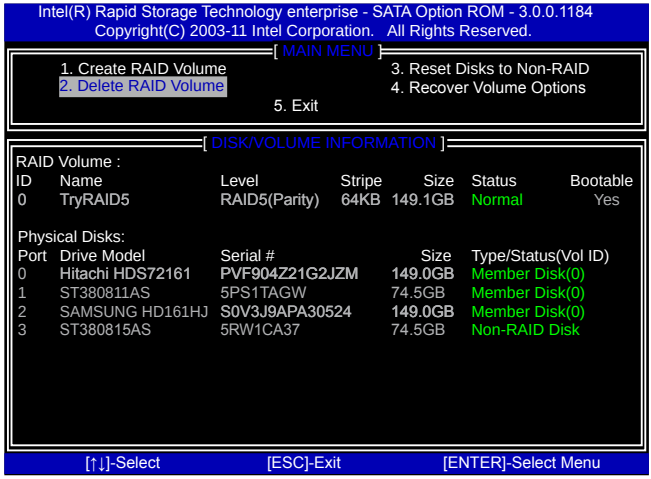
7. Select “**Create Volume**” and press <Enter>. A warning message will appear :

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

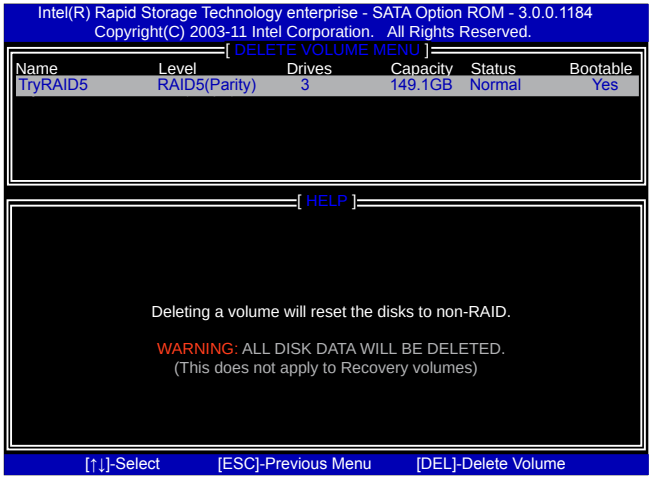


Delete RAID Volume

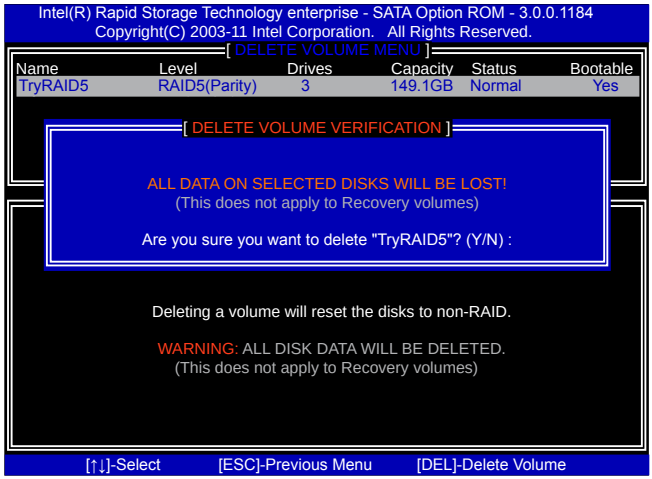
1. Take TryRAID5 for example. Select "**2. Delete RAID Volume**" in main menu and press <Enter>.



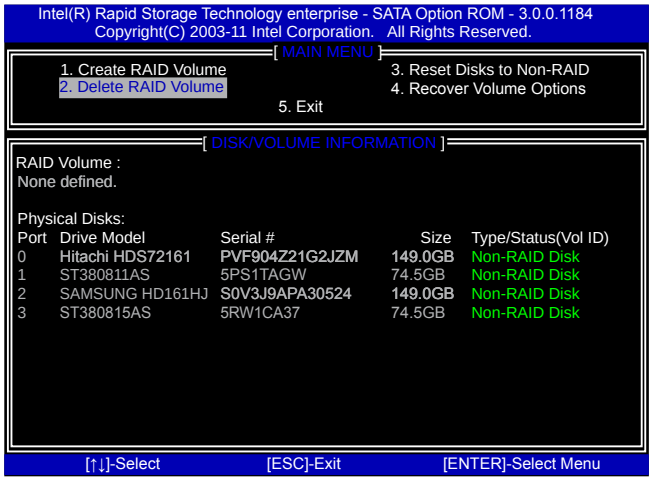
2. Use Up or Down arrow key to select the RAID set you want to delete. Here only one RAID5 is seen, so press <DEL> key to continue.



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



4. Return to Main Menu.

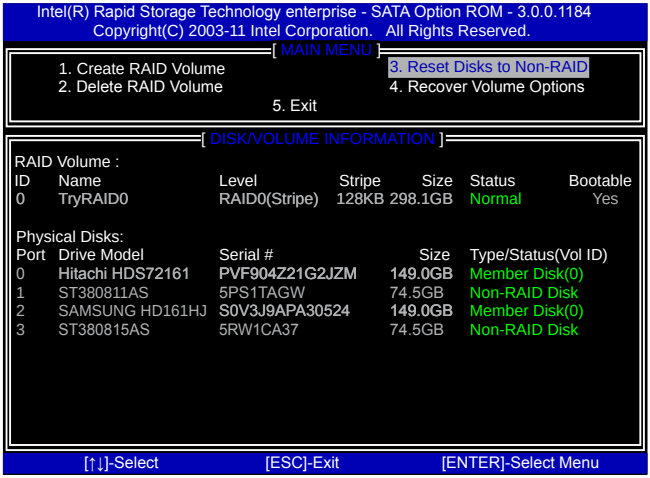


Reset Disks to Non-RAID

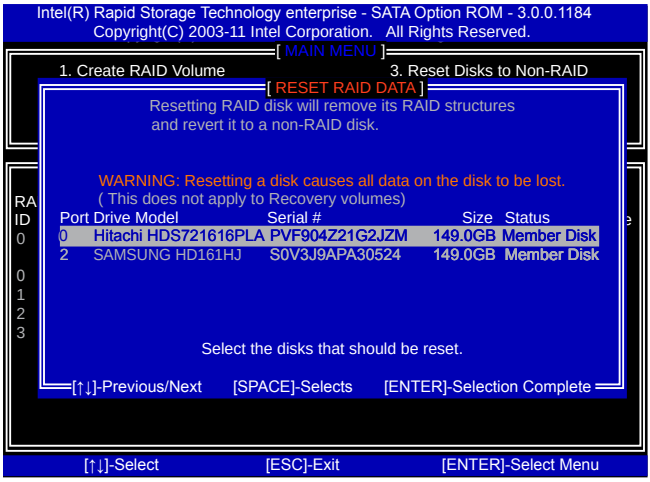
Reset RAID volume allows you to replace a failed disk with a new one, and the operating system will rebuild the data later. For RAID0, reset a hard disk would totally crash the system, but for RAID1, RAID10 and RAID5, they all can be rebuilt.
When rebuild is needed, you must first install a new hard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

Example 1. Reset a RAID0 system.

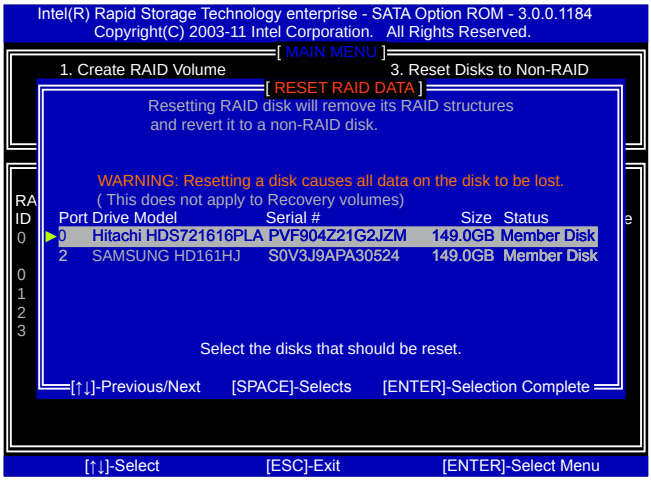
1. A TryRAID0 volume was built with two 149.0GB hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



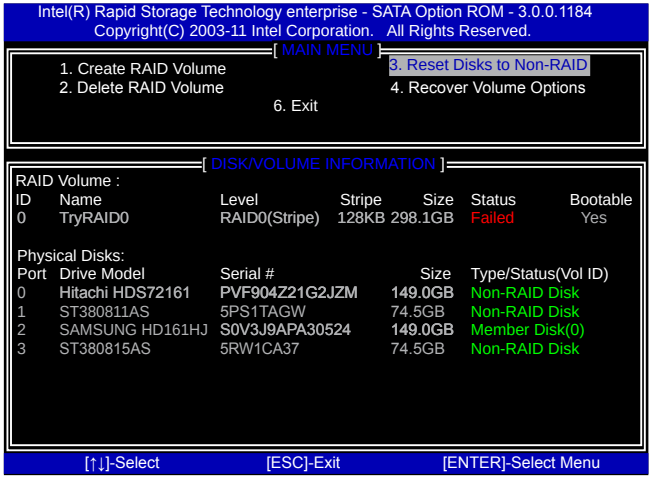
2. A warning message is displayed.



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

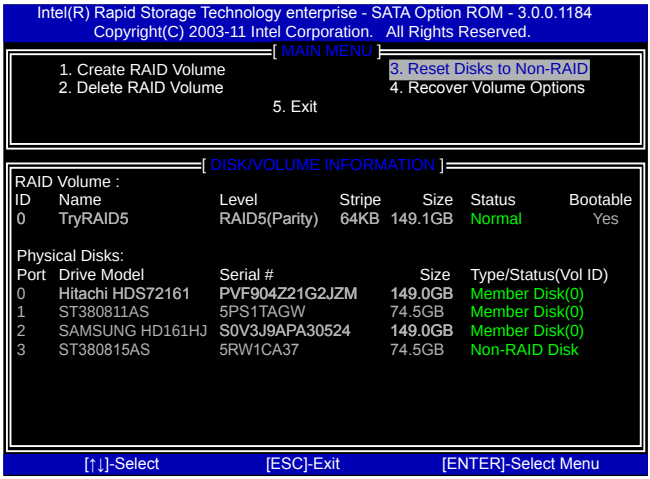


4. It goes back to Main menu with a "Failed" status of RAID0 volume.

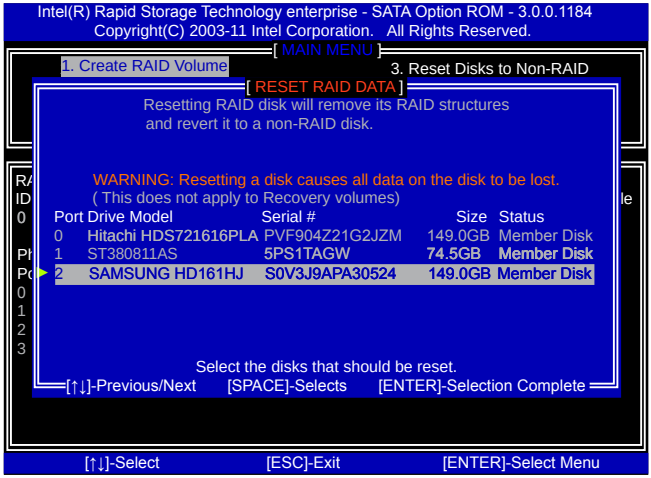


Example 2. Reset a RAID5 system

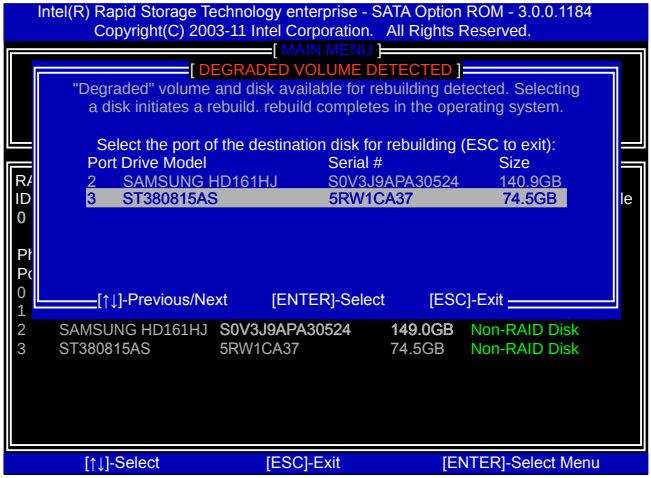
1. A TryRAID5 volume was built with three hard disks, we want to reset one of them. Select "**3. Reset Disks to Non-RAID**" in main menu and press <Enter>.



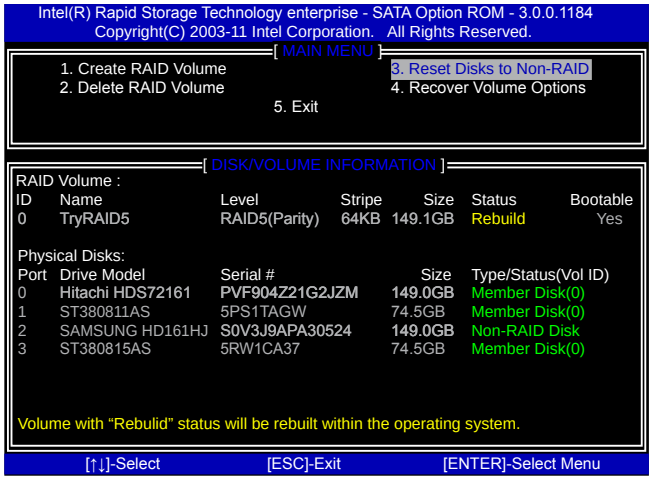
2. A warning message is displayed.
3. Select "**Port 2 - SAMSUNG HD161HJ**" hard disk as the one to be reset. Press <Enter>. A double confirmation message pops out, press <Y> to confirm.



4. A "**DEGRADED VOLUME DETECTED**" screen pops out asking you to select a new hard disk for rebuilding. Here, we select ST 74.5GB. Press <Enter> to select it.

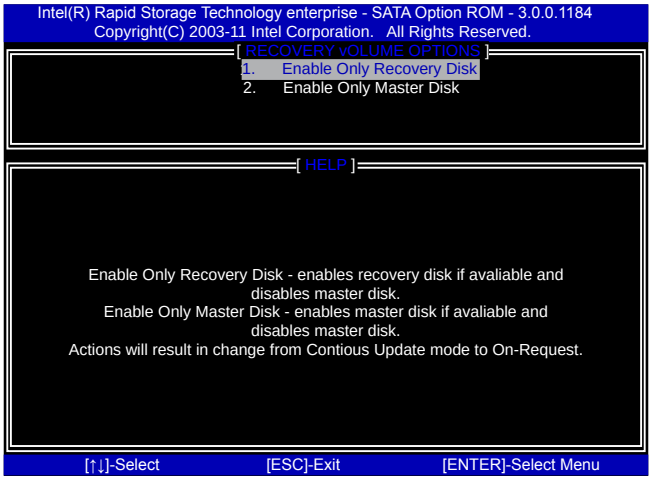


5. It goes back to Main menu with a "Rebuild" status of RAID5 volume. Eventually, a replacement hard disk has to join in and it always keeps three hard disks in the RAID5 system.
6. Operating System will perform the rebuilding later.

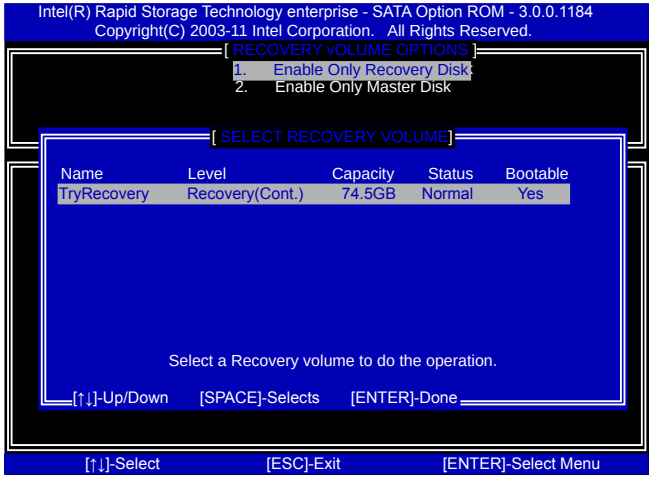


Recovery Volume Options

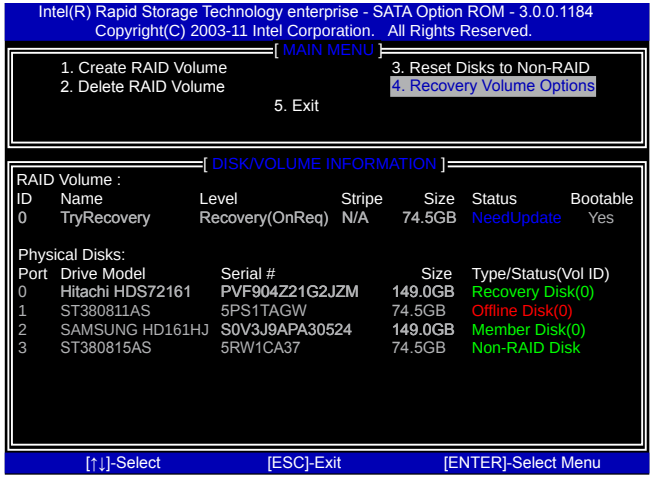
1. “Recovery Volume Options” is only available when “Recovery” is built. Here, we take TryRecovery as an example, select “**4. Recovery Volume Options**” in main menu and press <Enter>. The screen displays:



2. Use Up or Down key to make a selection to enable Recovery or Master disk.
3. Here, we select “**1.Enable Only Recovery Disk**“ and press<Enter> to continue. The screen display:

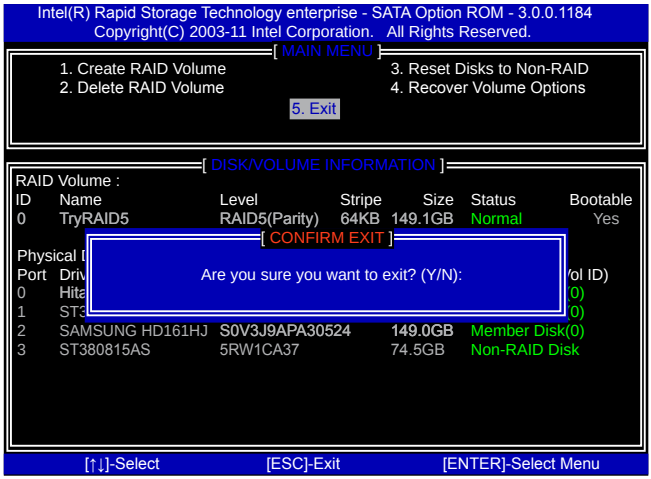


4. Press <Space> key to select it and press <Enter>, it returns to the main menu. You can see the 74.5GB disk is offline, and actions of Recovery change from Contious Update mode to On-Request.



Exit RAID BIOS

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



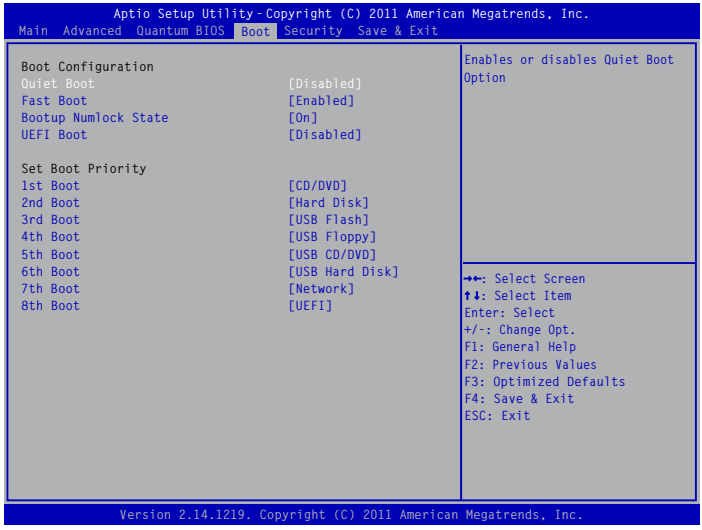
2. Press <Y> to exit Intel® Rapid Storage Technology enterprise program. The system will enter BIOS setup.
3. Shut down the computer, remove the Non-RAID disk, and we will continue for Windows OS installation. If you do not remove irrelevant hard disk, Windows may detect it during the installation, and 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

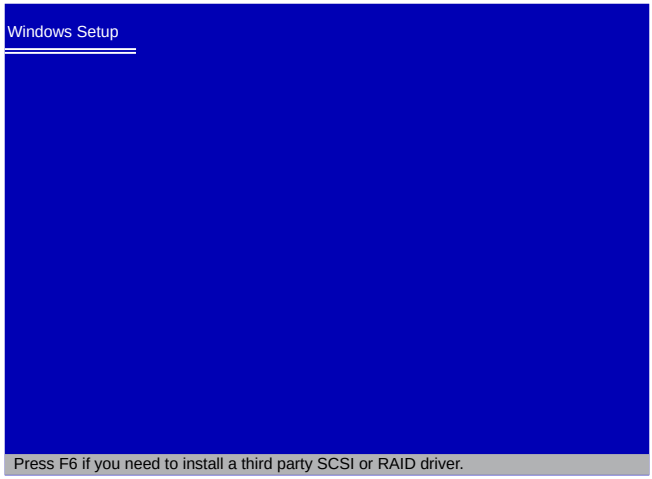
CAUTION

When set the SATA Mode in BIOS to IDE, you can install Windows XP directly. When set the SATA Mode in BIOS to either AHCI or RAID, you need to follow the following steps to install Windows XP.

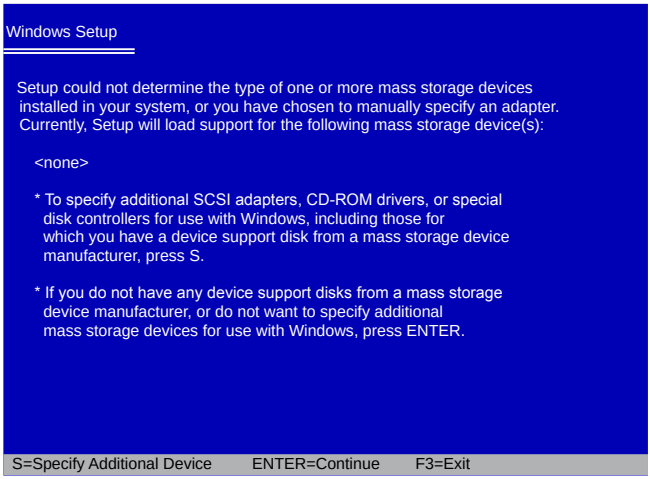
1. Press <DEL> to enter BIOS Setup during POST.
2. Insert the Windows installation CD into the optical drive.
3. Set the “1st Boot” to “CD/DVD”, save changes and exit the BIOS setup.



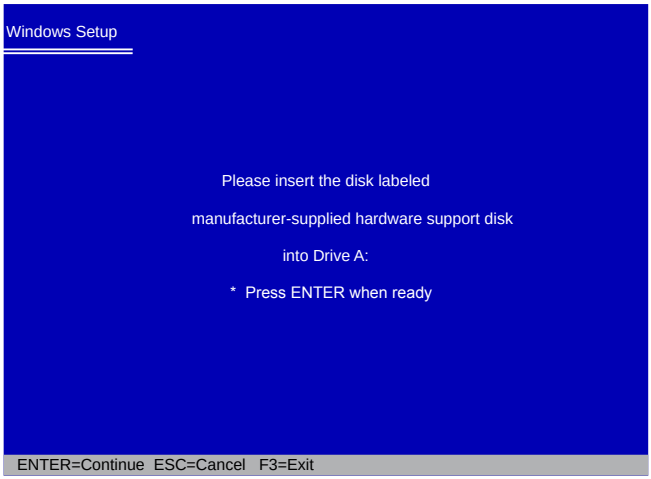
4. The computer will reboot, and it will start installing Windows Operating System. Watch the screen carefully, when the following picture appears, press <F6> key immediately. If you forgot to do this, PC will go to an fatal blue screen, and you may need to reboot the system again. PC may not respond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



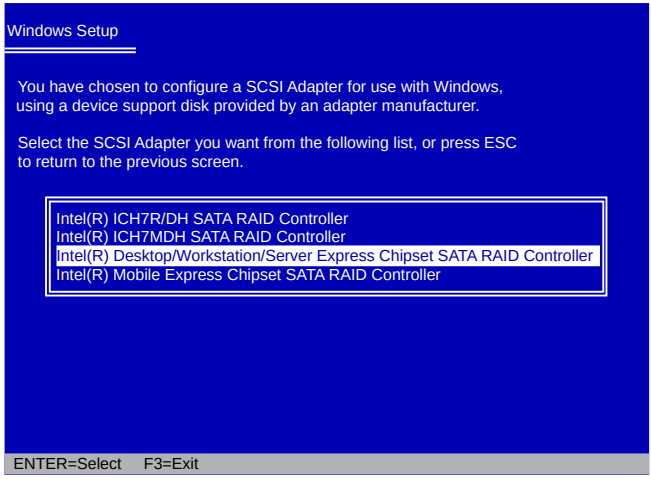
5. After some files are copied to your system, the following picture appears, press <S> to continue the specific driver installation.



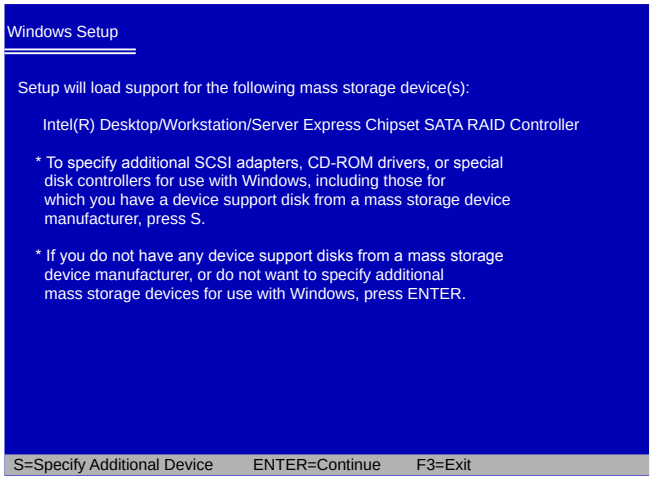
6. It will ask you to insert the RAID driver diskette into you floppy drive. Press <Enter> after it is done.



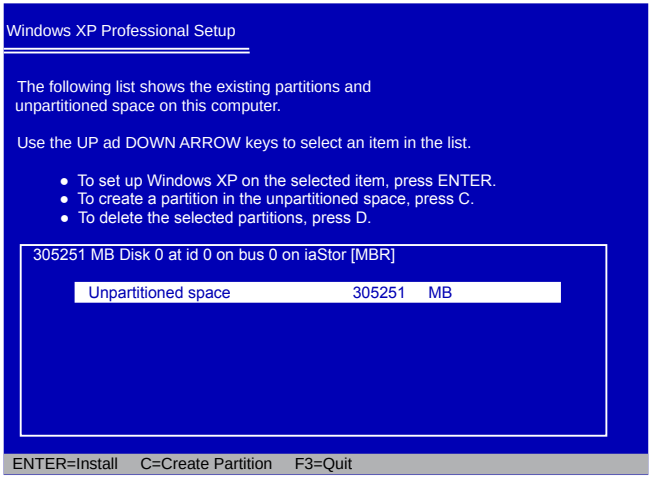
7. Depending on South Bridge chip of your system, select appropriate driver for it. Here, because the SATA mode is set to RAID, we choose "Intel(R) Desktop/ Workstation/Server Express Chipset SATA RAID Controller" . Press <Enter> to select it.
   If the SATA mode in BIOS is set to AHCI, this screen will show different drivers, and we need choose "Intel(R) Desktop/Workstation/Server Express Chipset SATA AHCI Controller".



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

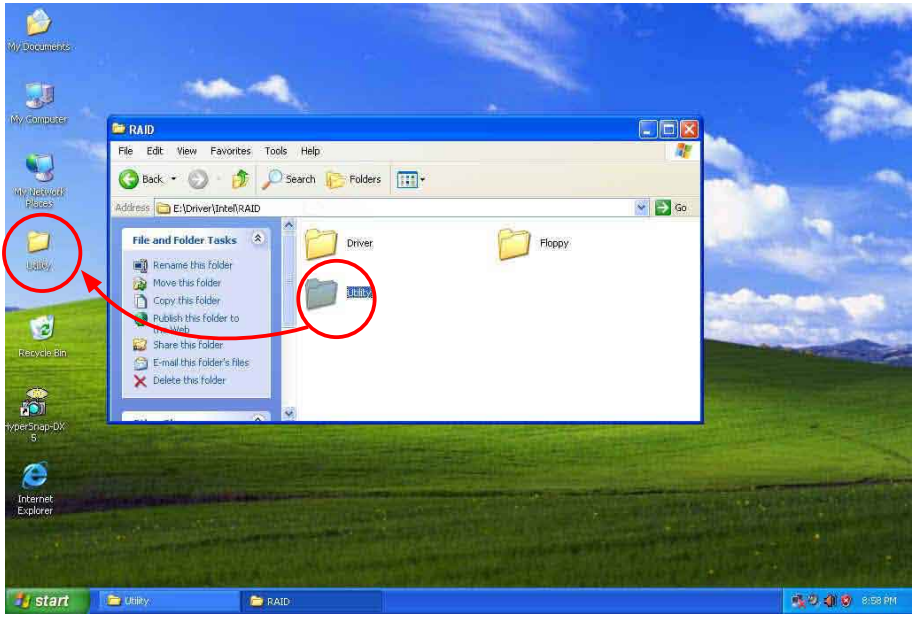
When you already have a Windows XP system running at a traditional IDE hard disk, and you want to keep it unchanged, but you also want to expand the system with some SATA hard disks, to come out a new RAID system for data storage. In this case, you need to install the Intel® Rapid Storage Technology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

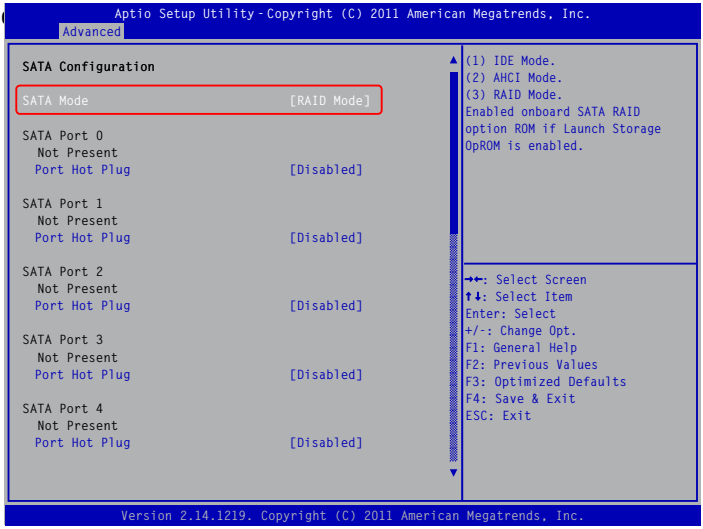
If you have a SATA CD drive and the BIOS SATA mode was set to [AHCI] or [RAID], in Windows XP platform, this CD drive can not be recognized if Intel® Rapid Storage Technology enterprise has not been installed. If the system can not recognize it, how can the driver be installed ? This is the reason why 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® Rapid Storage Technology enterprise setup program to your desktop. For example, drag and copy directory "**\Driver\Intel\RAID\Utility**" to your desktop.



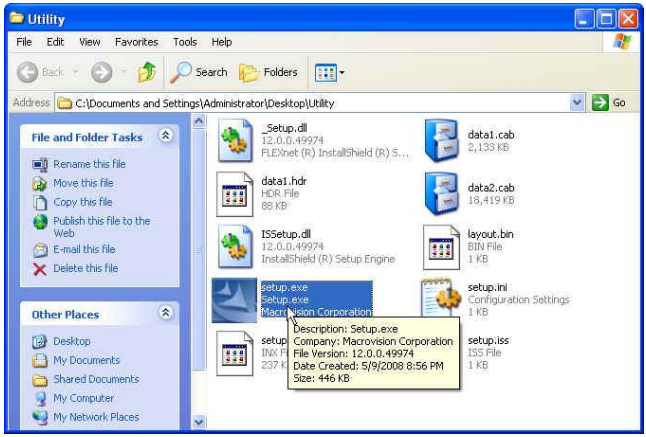
2. Copy section 5-2, BIOS Configuration.
   Shut down the computer, connect SATA hard disks to SATA ports, power on computer again.
   Press <Del> key, get into BIOS, set "SATA Mode" to [RAID Mode], press <F4> to save an



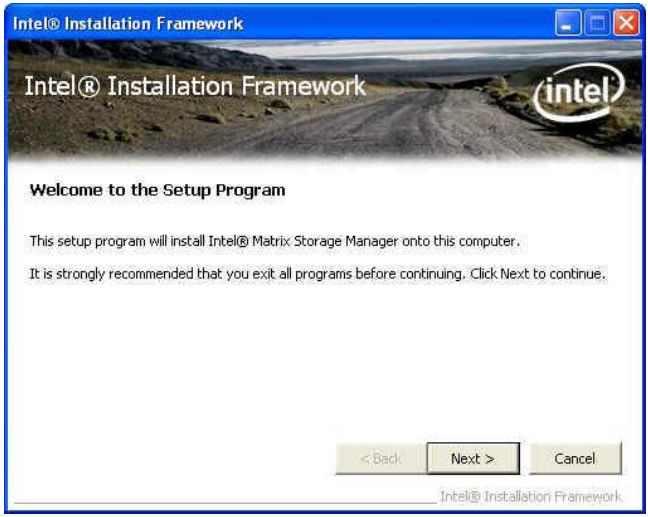
3. Copy section 5-3, Create RAID in BIOS.
   Press <CTRL><I> simultaneously to get into RAID BIOS set up (Intel® Rapid Storage Technology enterprise utility).
   Configure your new hard disks to RAID0, 1, 5 or 10. Exit RAID BIOS. PC will reboot.
4. The Windows XP is running again and a new hardware of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

Click to exit.

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

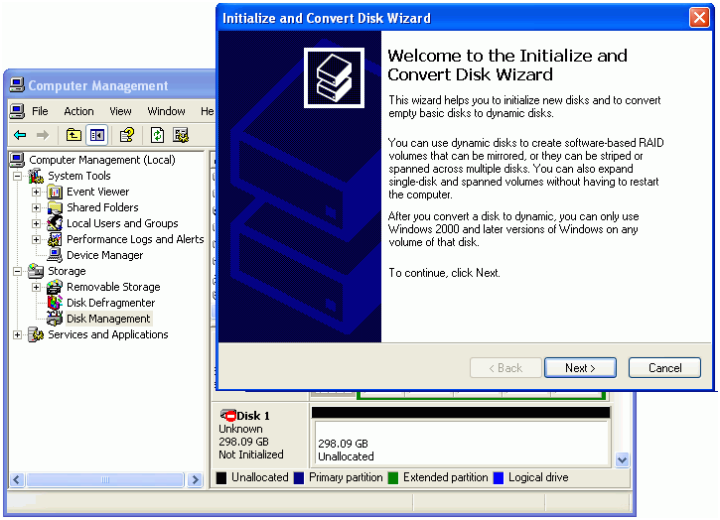


6. Click on Setup.exe to install Intel® Rapid Storage Technology enterprise.



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.



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. It allows up to three identical PCI Express™ x16 graphics cards.

CAUTION

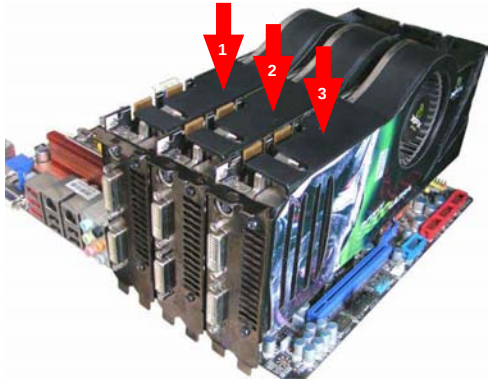
- In Dual SLI mode, it needs two identical SLI-ready graphics cards.
- In 3-way SLI mode, it needs three identical SLI-ready graphics cards.
- Make sure that all the graphics cards are certified by NVIDIA, different type of graphics cards will not work together properly.
- Make sure that your power supply unit can provide at least the minimum power required by your system. If you want to use 3-way SLI™ configuration, please visit the NVIDIA website (www.nvidia.com) for the qualified Power Supply Unit vendor list.
- The NVIDIA 3-way SLI technology supports Windows® Vista and Windows® 7 operating system.
- For the detailed Graphics Card support list on this motherboard, please visit the website: http://www.foxconnchannel.com

Appendix

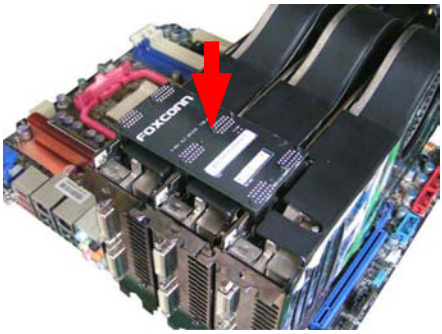
2. Graphics card configuration

2-1 Installing three SLI-ready graphics cards

1. Install SLI-ready graphics cards into PCI-E*_16X slots.



2. Align and firmly insert the 3-way SLI bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.



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 two SLI-ready graphics cards

1. Install the first graphics card into the PCI-E1_16X slot and the other into the PCI-E3_ 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.
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.

2-3 Installing the graphics cards drivers

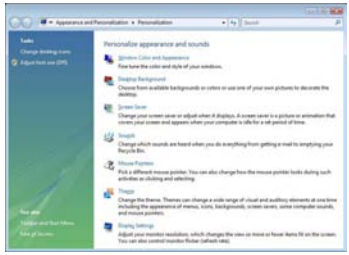
1. Power on your computer and boot into Operating System.
2. Install the NVIDIA graphics card drivers and restart your computer.

2-4 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".

Appendix

2. When using three graphics cards:
   Select “Set SLI Configuration”, then click "Enable 3-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:
The display is similar to the three graphics’ one.
Just select “Set SLI Configuration”, then click "Enable SLI" and set the display, when done, click Apply.

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 Quantumian 1 Series.
- 2 CrossFireX™ graphics cards

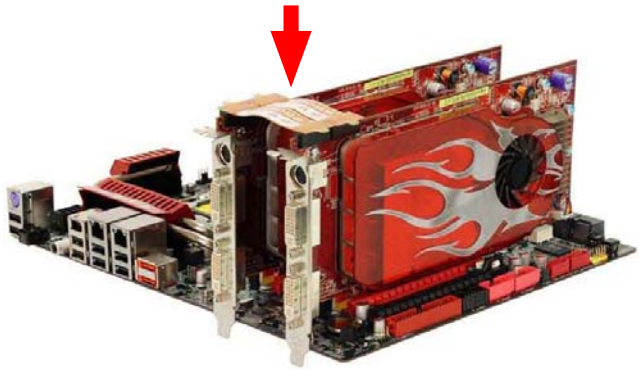
For the detailed CrossFireX™ Graphic Card support list on this motherboard, please visit the website: http://www.foxconnchannel.com

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 Radeon CrossFireX™ graphics cards into PCI-E*_16X slots.

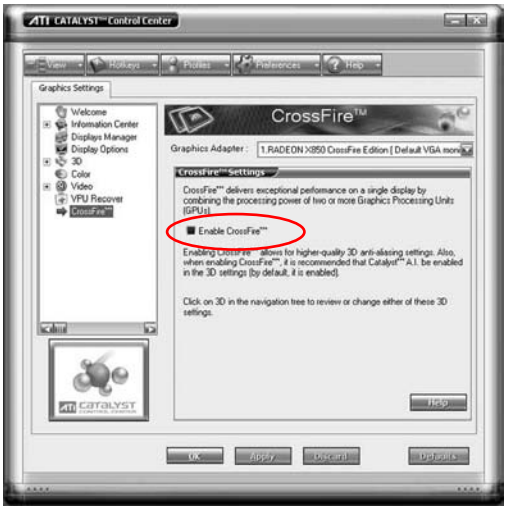
3. Align and firmly insert the CrossFire bridge onto the edge connector of each graphics card. Make sure that the bridge is firmly in place.



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

6. 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™.