

ASUS[®]

RS100-X7

1U Rackmount Server

User Guide



E6939

First Edition
October 2011

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Notices

Federal Communications Commission Statement

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

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.



WARNING! The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This Class B digital apparatus complies with Canadian ICES-003.

REACH

Complying with the REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) regulatory framework, we publish the chemical substances in our products at ASUS REACH website at <http://green.asus.com/english/REACH.htm>.

Safety information

Electrical Safety

- Before installing or removing signal cables, ensure that the power cables for the system unit and all attached devices are unplugged.
- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing any additional devices to or from the system, contact a qualified service technician or your dealer. Ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you service.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your dealer.

Operation Safety

- Servicing of this product or units is to be performed by trained service personnel only.
- Before operating the server, carefully read all the manuals included with the server package.
- Before using the server, make sure all cables are correctly connected and the power cables are not damaged. If any damage is detected, contact your dealer as soon as possible.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Place the server on a stable surface.



This product is equipped with a three-wire power cable and plug for the user's safety. Use the power cable with a properly grounded electrical outlet to avoid electrical shock.

Lithium-Ion Battery Warning

CAUTION! Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

CD-ROM Drive Safety Warning

CLASS 1 LASER PRODUCT

Heavy System

CAUTION! This server system is heavy. Ask for assistance when moving or carrying the system.



DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.



DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

About this guide

Audience

This user guide is intended for system integrators, and experienced users with at least basic knowledge of configuring a server.

Contents

This guide contains the following parts:

1. Chapter 1: Product Introduction

This chapter describes the general features of the server, including sections on front panel and rear panel specifications.

2. Chapter 2: Hardware setup

This chapter lists the hardware setup procedures that you have to perform when installing or removing system components.

3. Chapter 3: Rackmount installation

This chapter describes how to install the rackmount rail kit to the barebone server

4. Chapter 4: Motherboard information

This chapter includes the motherboard layout and brief descriptions of the jumpers and internal connectors.

5. Chapter 5: BIOS information

This chapter tells how to change system settings through the BIOS Setup menu and describes the BIOS parameters.

6. Chapter 6: RAID Configuration

This chapter gives instructions on configuring RAID.

7. Chapter 7: Driver installation

This chapter provides instructions for installing the necessary drivers for different system components.

Conventions

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.



CAUTION: Information to prevent damage to the components when trying to complete a task.



IMPORTANT: Instructions that you **MUST** follow to complete a task.



NOTE: Tips and additional information to help you complete a task.

Typography

Bold text

Indicates a menu or an item to select.

Italics

Used to emphasize a word or a phrase.

<Key>

Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.

Example: <Enter> means that you must press the Enter or Return key.

<Key1+Key2+Key3>

If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).

Example: <Ctrl+Alt+D>

Command

Means that you must type the command exactly as shown, then supply the required item or value enclosed in brackets.

Example: At the DOS prompt, type the command line: **format A: /S**

References

Refer to the following sources for additional information, and for product and software updates.

1. **ASUS Server Web-based Management (ASWM) user guide**

This manual tells how to set up and use the proprietary ASUS server management utility.

2. **ASUS websites**

The ASUS websites worldwide provide updated information for all ASUS hardware and software products. Refer to the ASUS contact information.

Chapter 1

This chapter describes the general features of the server, including sections on front panel and rear panel specifications.



Product introduction

1.1 System package contents

Check your system package for the following items.

Model Name	RS100-X7
Chassis	ASUS R09 1U Rackmount Chassis
Motherboard	ASUS P8B-X/ MR Server Board
Component	1 x 250W Single Power Supply (80PLUS, Bronze Level) 2 x SATA Cables 1 x PCI Express x16 Riser Card (PCI-E16-R11) 1 x Front I/O Board (FPB-R9) 1 x USB Board (USB-R9) 2 x System Fans (40mm x 28mm)
Accessories	1 x RS100-X7 User's Guide 1 x RS100-X7 Support CD 1 x Bag of Screws 1 x AC Power Cable CPU Heatsink Ball Bearing Rail Kit

***ASUS System Web-based Management**



If any of the above items is damaged or missing, contact your retailer.

1.2 Serial number label

Before requesting support from the ASUS Technical Support team, you must take note of the product's serial number containing 14 characters such as xxS0xxxxxxxxxx shown as the figure below. With the correct serial number of the product, ASUS Technical Support team members can then offer a quicker and satisfying solution to your problems.



1.3 System specifications

The ASUS RS100-X7 is a 1U barebone server system featuring the ASUS P8B-X/MR server board. The server supports Intel® LGA1155 Lynnfield / Clarkdale processors, plus other latest technologies through the chipsets onboard.

Model Name		RS100-X7
Processor / System Bus		1 x Socket LGA1155
		Intel® Xeon® E3-1200 Processor Family Intel® Core™ i3-2100 Processor Family
Core Logic		Intel® C202 Chipset
ASUS Features	Smart Fan	√
	ASWM2.0	√
Memory	Total Slots	4 DIMMS (2 Channels)
	Capacity	Maximum up to 32GB
	Memory Type	DDR3 1333 / 1066 Unbuffered DIMM with ECC
	Memory Size	1 GB, 2GB, 4GB, 8GB
Expansion Slots	Total PCI/PCI-X/PCI-E Slots	1
	Slot Type	1x PCI-E G2 x16 slot (x16 link)
Storage		Intel® C202: 6 SATA 3Gb/s ports Intel Rapid Storage (for Windows only) (Support software RAID 0, 1) LSI® MegaRAID (for Linux/Windows) (Support software RAID 0, 1)
HDD Bays	I = internal A or S = hot-swappable	2 x Internal 3.5" SATA2 HDD Bays
Networking	LAN	2 x Intel® 82574L
Graphic	VGA	Aspeed® AST1100
Onboard I/O		1 * External Serial Port 2 * RJ-45 ports 4* USB 2.0 ports (Front * 2, Rear * 2) 1 * VGA port 1 * PS/2 keyboard port 1 * PS/2 mouse port

(continues on next page)

OS Support		Windows® Server 2008 R2 Windows® Server 2008 Enterprise 32/64-bit Windows® Server 2003 R2 Enterprise 32/64-bit RedHat® Enterprise Linux AS5.5/6.0 32/64-bit SuSE® Linux Enterprise Server 10 SP3/11 32/64-bit (Subject to change without any notice)
Management Solution	Software	ASUS ASWM Enterprise®
Net Weight Kg (CPU, DRAM & HDD not included)		6.5 Kg
Dimension (DD x WW x HH)		380mm x 429.6mm x 43.2mm
Power Supply		250W 80PLUS Single Power Supply (Bronze Level)
Power Rating		Input: 100–240Vac, 4A, 50–60Hz, Class I
Environment		Operation temperature: 10°C–35°C / Non operation temperature: -40°C–70°C Non operation humidity: 20%–90% (Non-condensing)

*Specifications are subject to change without notice.

1.4 Front panel features

The barebone server displays a simple yet stylish front panel with easily accessible features. The power and reset buttons, LED indicators, and two USB ports are located on the front panel.



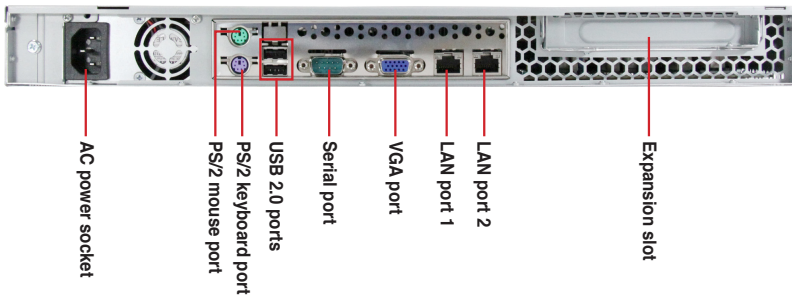
Refer to section 1.7.1 **Front panel LEDs** for the LED descriptions.



Turn off the system power and detach the power supply before removing or replacing any system component.

1.5 Rear panel features

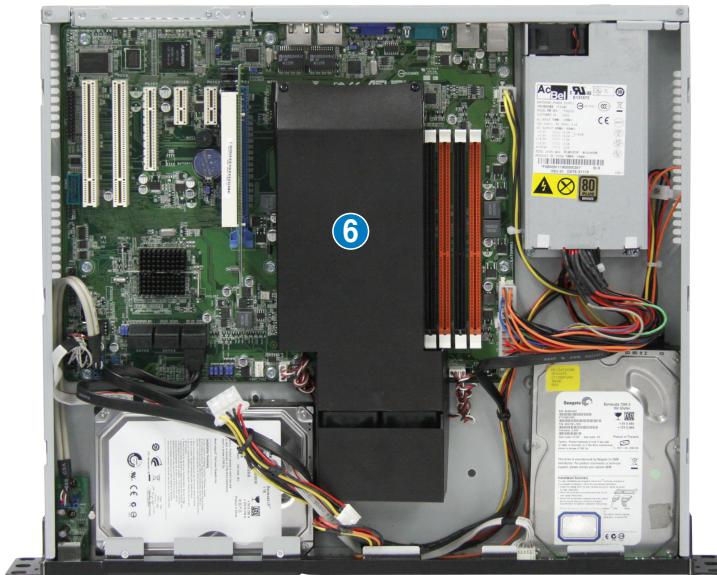
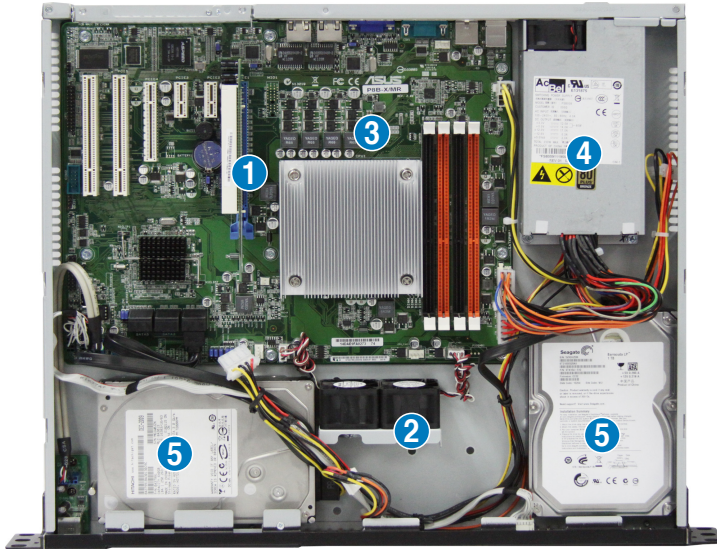
The rear panel includes the expansion slot and system power socket. The I/O shield with openings for the rear panel connectors on the motherboard are also placed in the rear panel.



The ports for the PS/2 keyboard, PS/2 mouse, USB, VGA, and Gigabit LAN do not appear on the rear panel if motherboard is not present.

1.6 Internal features

The barebone server includes the basic components as shown.



1. PCI Express x16 Riser Card (at x16 link)
2. System Fan (x2)
3. ASUS P8B-X/ MR Server Board
4. Power Supply
5. HDDs
6. Airduct



Turn off the system power and detach the power supply before removing or replacing any system component.

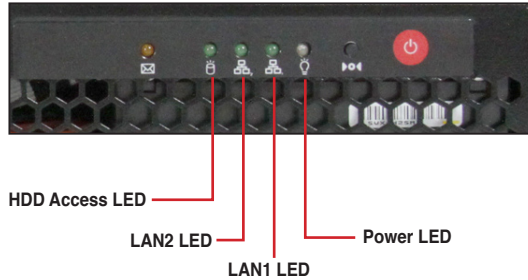


The barebone server does not include a floppy disk drive. Connect a USB floppy disk drive to any of the USB ports on the front or rear panel if you need to use a floppy disk.

***WARNING**
HAZARDOUS MOVING PARTS
KEEP FINGERS AND OTHER BODY PARTS AWAY

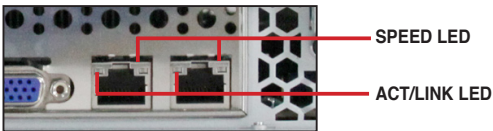
1.7 LED information

1.7.1 Front panel LEDs



LED	Icon	Display status	Description
Power LED		ON	System power ON
HDD Access LED		OFF Blinking	No activity Read/write data into the HDD
LAN LEDs		OFF Blinking ON	No LAN connection LAN is transmitting or receiving data LAN connection is present

1.7.2 LAN (RJ-45) LEDs



ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
GREEN	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection

Chapter 2

This chapter lists the hardware setup procedures that you have to perform when installing or removing system components.



Hardware setup

2.1 Chassis cover

2.1.1 Removing the chassis cover



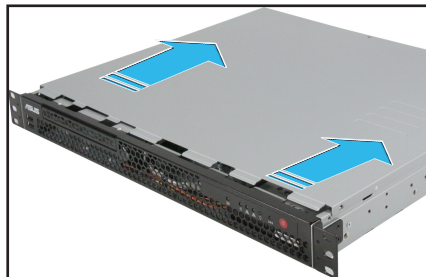
- Ensure that you unplug the power cord before removing the chassis cover.
- Take extra care when removing the chassis cover. Keep your fingers from components inside the chassis that can cause injury, such as the CPU fan, rear fan, and other sharp-edged parts.
- The images of the barebone server shown in this section are for reference purposes only and may not exactly match the model you purchase.

To remove the chassis cover:

1. Use a Phillips screwdriver to remove the three screws on the chassis cover.



2. Firmly hold the cover and slide it toward the rear panel for about half an inch until it is disengaged from the chassis.

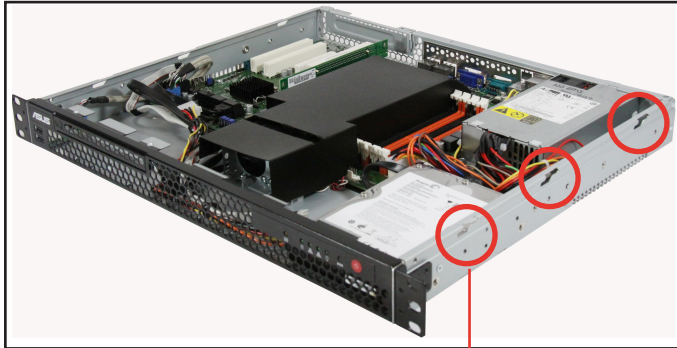


3. Lift the cover from the chassis.

2.1.2 Reinstalling the chassis cover

To reinstall the chassis cover:

1. Position the cover on top of the chassis with the hooks aligned to the side tabs of the chassis.



Side tabs

2. Slide the cover toward the front until it snaps in place.



3. Secure the cover with three screws.



2.2 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1155 socket designed for the Intel® Xeon E3-1200/Core™ i3-2100 processor.

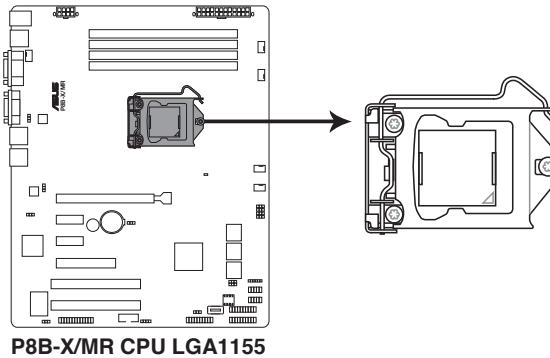


- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1155 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

2.2.1 Installing the CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.



P8B-X/MR CPU LGA1155

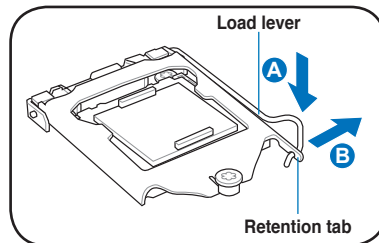


Before installing the CPU, ensure that the socket box is facing toward you and the load lever is on your left.

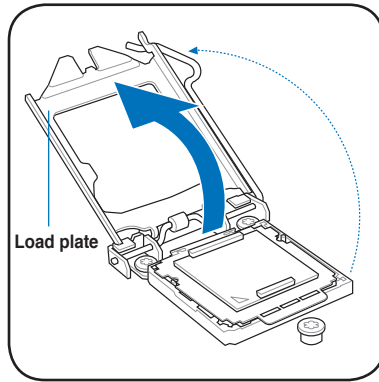
2. Press the load lever with your thumb (A), and then move it to the right (B) until it is released from the retention tab.



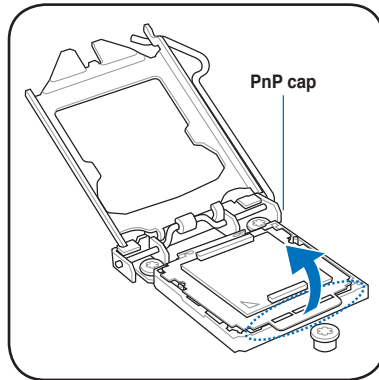
To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.



3. Lift the load lever in the direction of the arrow until the load plate is completely lifted.



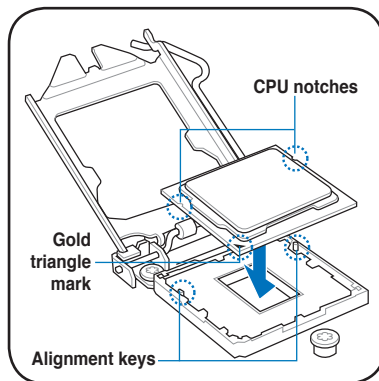
4. Remove the PnP cap from the CPU socket.



5. Position the CPU over the socket, ensuring that the gold triangle is on the bottom-left corner of the socket, and then fit the socket alignment keys into the CPU notches.



The CPU fits in only one correct orientation. **DO NOT** force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!



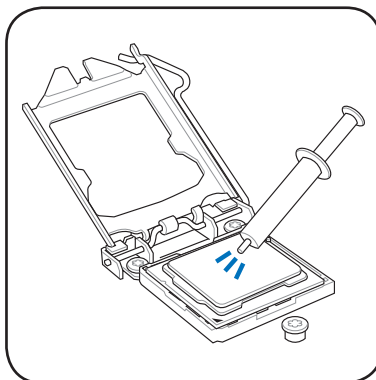
6. Apply some Thermal Interface Material to the exposed area of the CPU that the heatsink will be in contact with, ensuring that it is spread in an even thin layer.



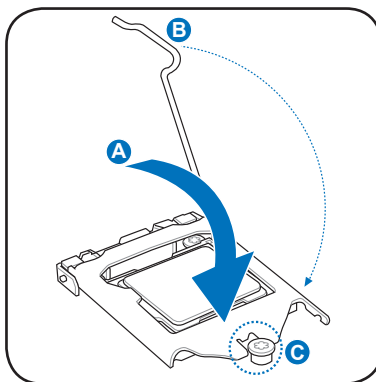
Some heatsinks come with pre-applied thermal paste. If so, skip this step.



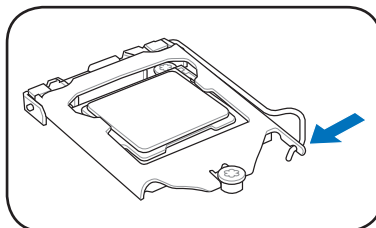
The Thermal Interface Material is toxic and inedible. DO NOT eat it. If it gets into your eyes or touches your skin, wash it off immediately, and seek professional medical help.



7. Close the load plate (A), and then push down the load lever (B), ensuring that the front edge of the load plate slides under the retention lock (C).



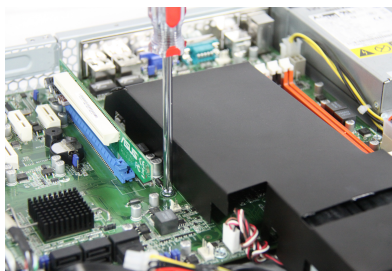
8. Insert the load lever under the retention tab.



2.2.2 Installing the CPU heatsink

Before installing the CPU heatsink, remove the airduct first.

1. Loosen the airduct from the motherboard by unfastening the screw fixing the airduct to the motherboard.

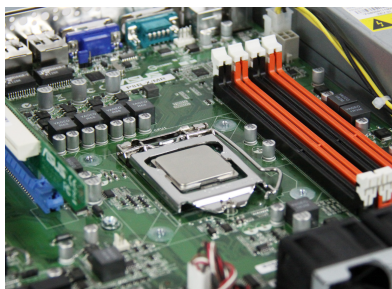


2. Remove the airduct from the motherboard. Keep the airduct and screw for later use.

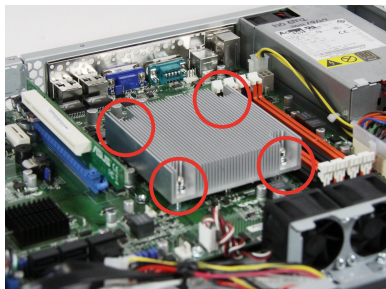


To install the CPU heatsink:

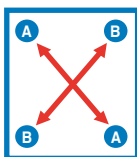
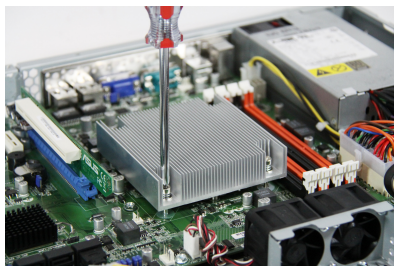
3. Locate the CPU socket for installing the CPU heatsink.



- Place the heatsink on top of the socket making sure the four fastening screws match the screwholes on the motherboard.



- Twist each of the four screws with a Philips (cross) screwdriver just enough to attach the heatsink to the motherboard. When the four screws are attached, tighten them one by one to completely secure the heatsink.



Tighten the four heatsink screws in a diagonal sequence.

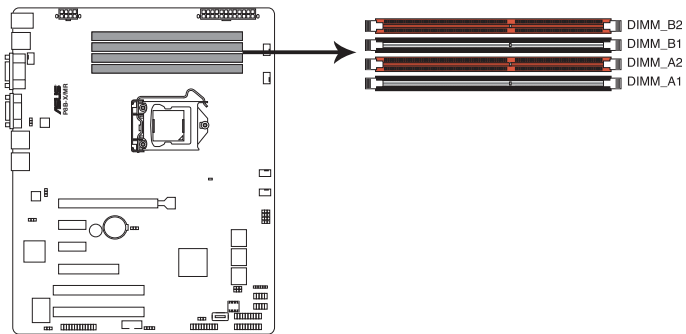
2.3 System memory

2.3.1 Overview

The motherboard comes with four Double Data Rate 3 (DDR3) Dual Inline Memory Modules (DIMM) sockets.

A DDR3 module has the same physical dimensions as a DDR2 DIMM but is notched differently to prevent installation on a DDR2 DIMM socket. DDR3 modules are developed for better performance with less power consumption.

The figure illustrates the location of the DDR3 DIMM sockets:



P8B-X/MR 240-pin DDR3 DIMM sockets

2.3.2 Memory Configurations

You may install 1GB, 2GB, 4GB and 8GB Unbuffered with ECC DDR3 DIMMs into the DIMM sockets using the memory configurations in this section.

UDIMM				
DIMM Slot Per Channel	DIMM Populated per Channel	DIMM Type	Speed	Rank per DIMM
2	1	Unbuffered DDR3 ECC	1066/1333	Single Rank, Dual Rank
2	2	Unbuffered DDR3 ECC	1066/1333	Single Rank, Dual Rank



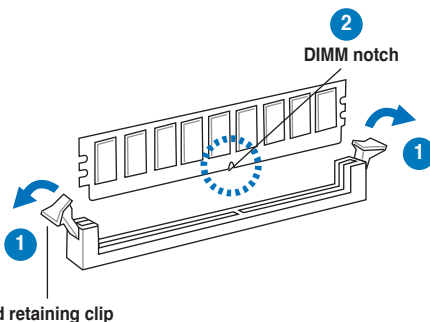
- Start installing the DIMMs from slot A2 and B2 (orange).
- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.

2.3.3 Installing a DIMM



Ensure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Unlock a DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

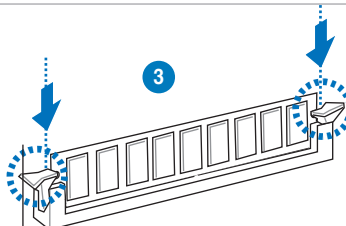


Unlocked retaining clip



A DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

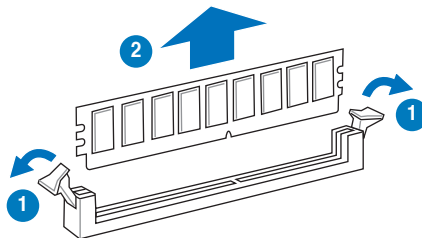


Locked Retaining Clip

2.3.4 Removing a DIMM

Follow these steps to remove a DIMM.

1. Simultaneously press the retaining clips outward to unlock the DIMM.



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

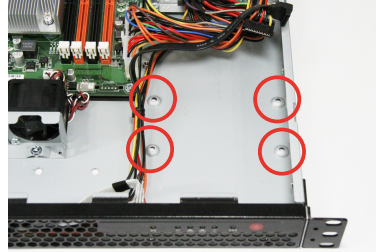
2.4 Hard disk drives

You can install up to two (2) Serial ATA hard disk drives to the system. Follow the succeeding instructions to install each of the drives.

2.4.1 Installing a hard disk drive to the HDD compartment (Right)

To install a hard disk drive to the HDD compartment on the right hand side:

1. Locate the HDD compartment beside the power supply unit. Notice the four standard screw holes.



2. Connect the SATA signal cable and a power plug from the power supply to the hard disk drive.



Use the L-type SATA connector to connect to the hard disk drive.



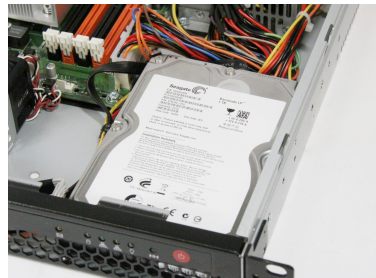
L-type SATA connector



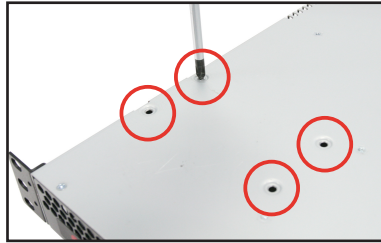
Power plug

SATA signal cable

3. Place the hard disk drive into the HDD compartment matching the four screw holes with the holes on the disk drive.



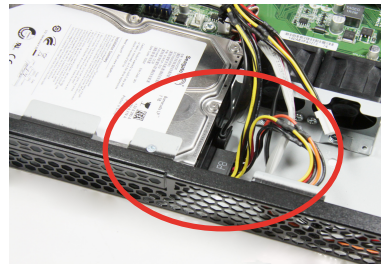
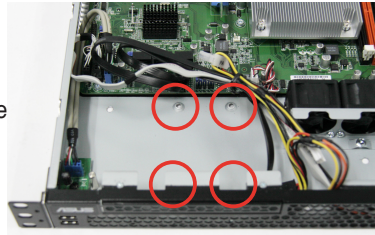
- Secure the hard disk drive with four screws.



2.4.2 Installing a hard disk drive to the HDD compartment (Left)

To install a hard disk drive to the HDD compartment on the lower left hand side:

- Locate the HDD compartment near the SATA ports. Notice the four standard screw holes.
- Repeat Steps 2-4 in 2.4.1 to secure the hard disk drive to the chassis.



2.5 Expansion card

The system comes with a riser card. You need to remove the riser card and the expansion slot bracket if you want to install an expansion card.

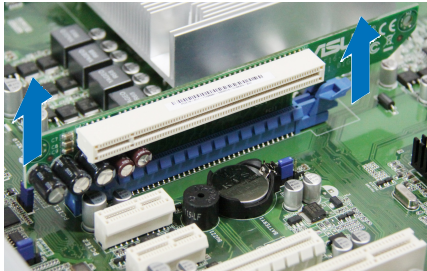


Ensure to unplug the power cord before installing or removing an expansion card. Failure to do so may cause severe damage to the motherboard and other system components!

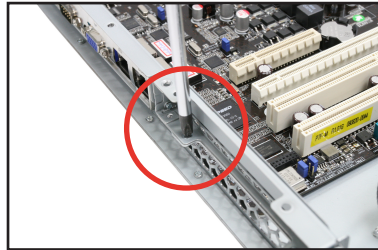
2.5.1 Installing an expansion card

To install an expansion card:

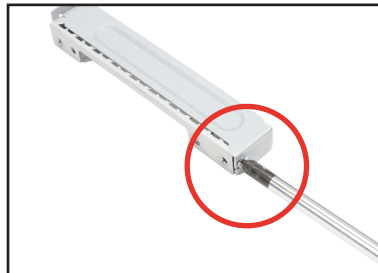
1. Hold the riser card and pull it up to detach it from the PCI Express slot on the motherboard.



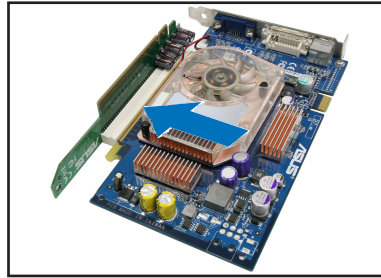
2. Remove the screw to release the expansion card bracket from the system.



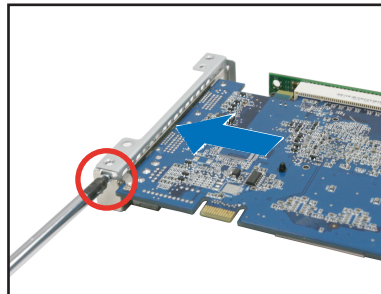
3. Remove the screw to release the metal slot cover from the expansion card bracket.



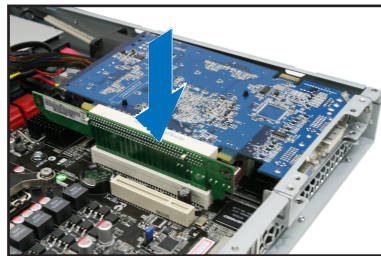
4. Install the expansion card to the riser card as shown.



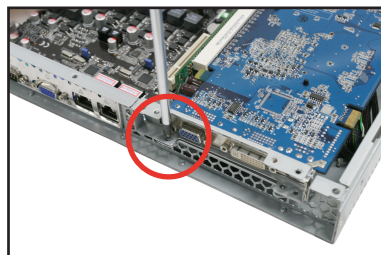
5. Attach the expansion card to the expansion card bracket, and then secure the card with a screw.



6. Align the riser card with the expansion card installed to the PCI Express slot on the motherboard.
7. Press the riser card until the golden connectors completely fit the slot and the bracket aligns with the rear panel.



8. Secure the expansion card bracket to the system with one screw.



2.5.2 Configuring an expansion card

After installing the expansion card, configure the it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 5 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the following tables.
3. Install the software drivers for the expansion card.

Standard Interrupt assignments

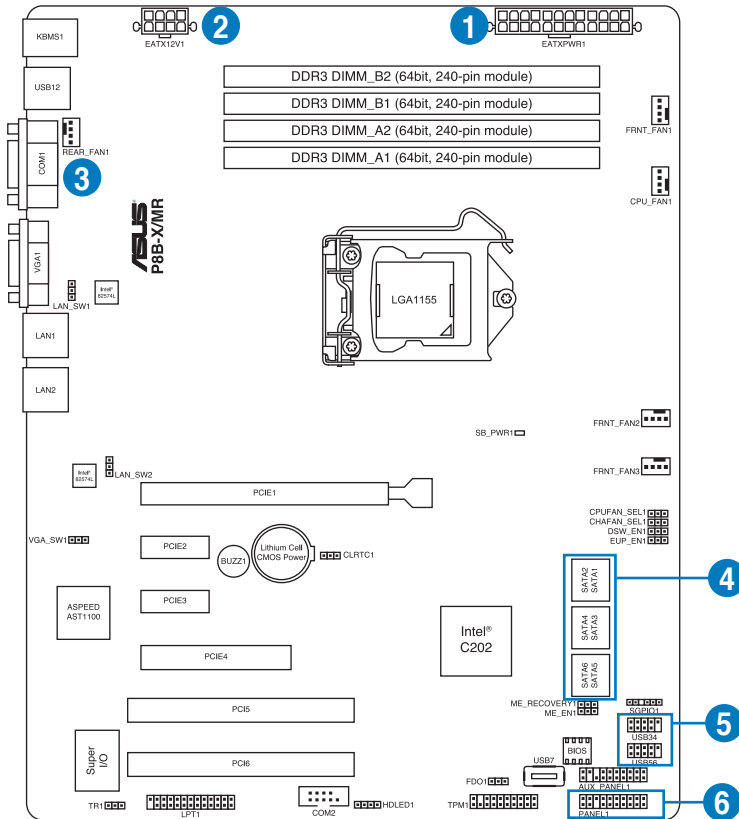
IRQ	Priority	Standard function
0	1	System Timer
1	2	Keyboard Controller
2	-	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	--
6	14	Floppy Disk Controller
7*	15	--
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when used
10*	5	IRQ Holder for PCI Steering
11*	6	IRQ Holder for PCI Steering
12*	7	PS/2 Compatible Mouse Port
13	8	Numeric Data Processor
14*	9	Primary IDE Channel
15*	10	Secondary IDE Channel

* These IRQs are usually available for ISA or PCI devices.

2.6 Cable connections



- The bundled system cables are pre-connected before shipment. You do not need to disconnect these cables unless you will remove pre-installed components to install additional devices.
- Refer to Chapter 4 for detailed information on the connectors.



Standard cables connected to the motherboard

1. 24-pin ATX power connector (from power supply to motherboard)
2. 8-pin ATX 12V power connector (from power supply to motherboard)
3. System fan connector (from system fan to motherboard)
4. SATA connectors (system default; from motherboard to SATA devices)
5. USB connector (from motherboard to front I/O board)
6. System panel connector (from motherboard to front I/O board)

2.7 Removable/optional components

You may need to remove previously installed system components when installing or removing system devices. Or you may need to install the optional components into the system. This section tells how to remove/install the following components:

1. System fans
2. Optical disk drive (optional)
3. ASUS ASMB5-iKVM (optional)



Ensure that the system is turned off before removing any components.

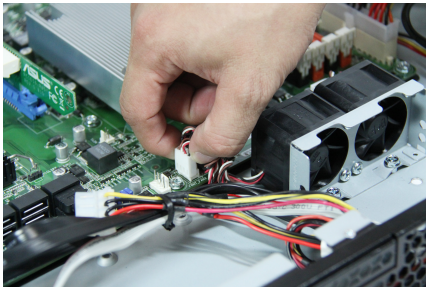
2.7.1 Chassis fans

To remove the system fan:

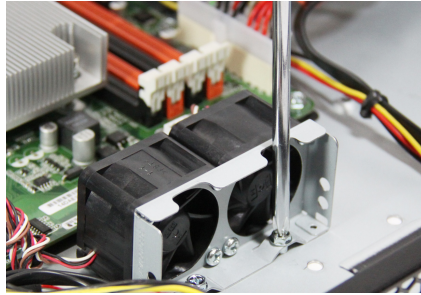
1. Remove the airduct away from the heatsink first.



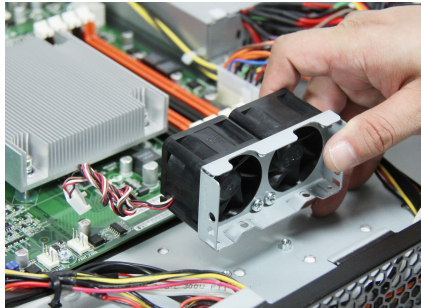
2. Unfasten the two onboard fan power connectors.



3. Unfasten the screws from the fans.



4. Release the fans from the motherboard.



Chapter 3

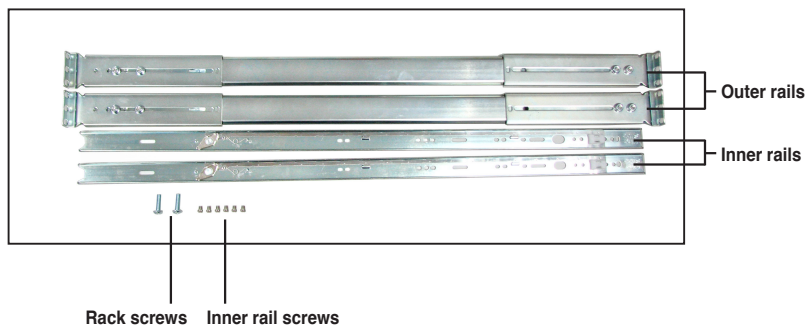
This chapter describes how to install the rackmount rail kit to the barebone server.



Rackmount installation

3.1 Rackmount rail kit items

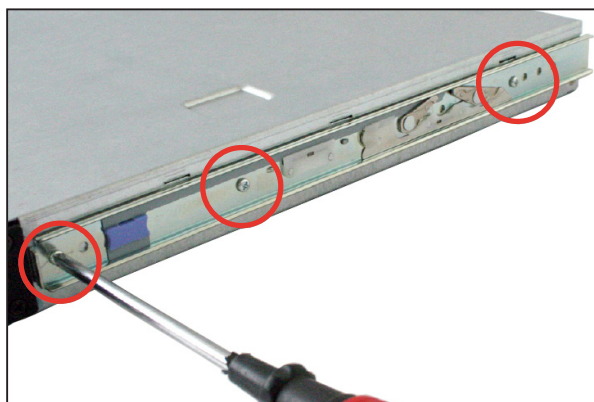
The rackmount rail kit contains two pairs of rails (one pair for each side of the server system), six (6) pieces of inner rail screws, and two (2) pieces of rack screws.



3.2 Attaching the rails to the rack

To attach the rack rails:

1. Attach the inner rail to the corresponding side of the chassis and secure with three inner rail screws. Make sure the rail is oriented as shown.



2. Attach the second inner rail to the other side of the chassis and secure with three inner rail screws.

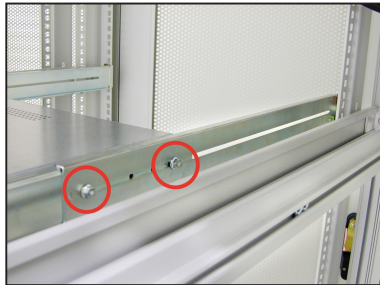
3. Select one unit of space (1U) on the rack where you wish to install the server.

4. Place three (3) nuts on the front and three at the back. Do the same to the corresponding side of the rack.

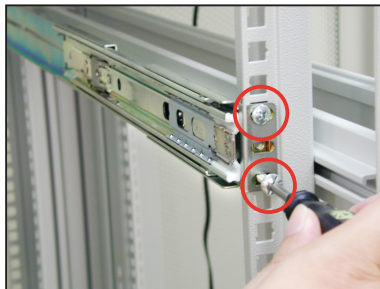
Nuts



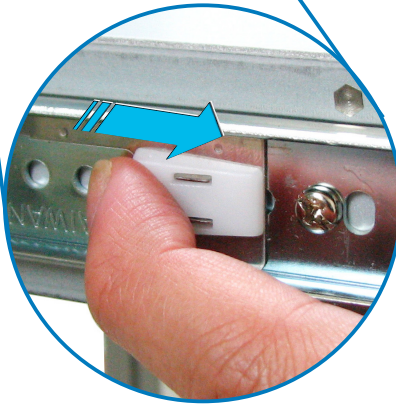
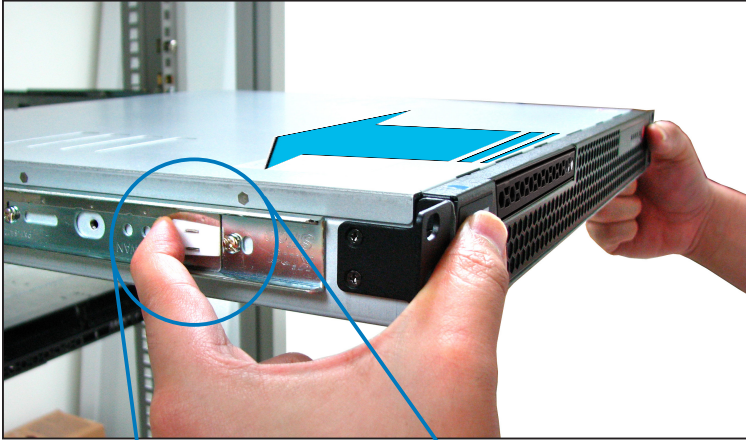
5. Adjust the length of the outer rail to fit the length of the rack cabinet, then fasten the two screws.



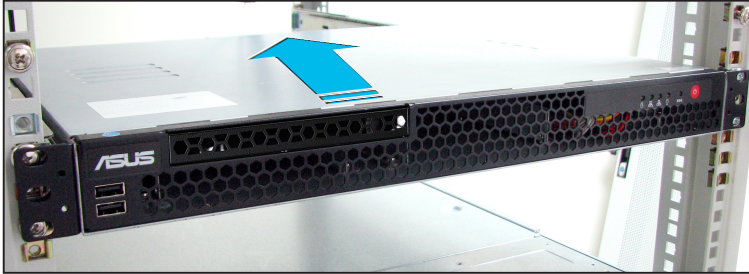
6. Secure the outer rail with two screws at the front and rear of the rack cabinet .
7. Find the corresponding 1U space on the other side of the rack cabinet then repeat steps 5 and 6 to attach the other outer rail.



8. Firmly hold the server on both sides. Slide the latches on the inner rack rails to the direction indicated below. Hold the latches, and insert the rear side of the server to the front end of the outer rack rail. Make sure that the inner rails are properly aligned with the outer rails.



- Carefully push the server all the way to the back until the front panel fits the front end of the rack.



- Secure the server to the rack with one rack screw at one side. Secure the other side as well.

Rack screw



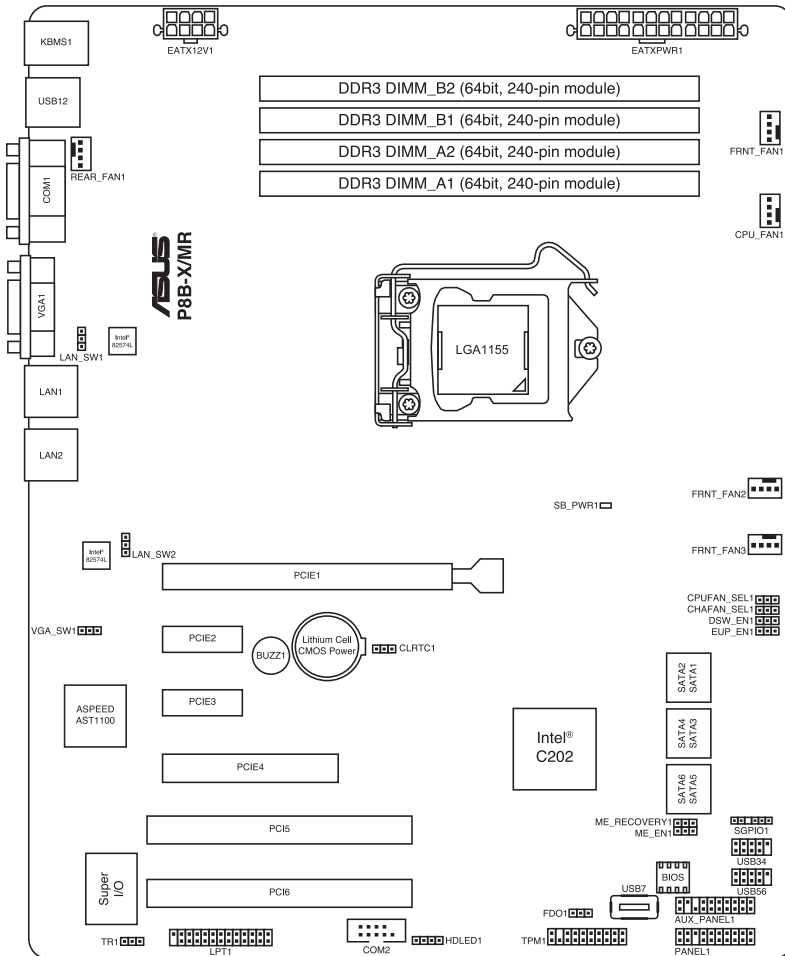
Chapter 4

This chapter includes the motherboard layout and brief descriptions of the jumpers and internal connectors.



Motherboard Info

4.1 Motherboard layout



Layout contents

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3.	USB connector (10-1 pin USB34, USB56; A-Type USB7)	4-8
4.	CPU, front and rear fan connectors (4-pin CPU_FAN1, FRNT_FAN1, FRNT_FAN2, FRNT_FAN3, REAR_FAN1)	4-8
5.	Serial General Purpose Input/Output connector (6-1 pin SGPIO1)	4-9
6.	Thermal sensor cable connectors (3-pin TR1)	4-9
7.	Serial port connectors (10-1 pin COM2)	4-10
8.	Parallel port connector (26-1 pin LPT1)	4-10
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11.	System panel connector (20-1 pin PANEL1)	4-12
12.	Auxiliary panel connector (20-2 pin AUX_PANEL1)	4-13

4.2 Jumpers

1. Clear RTC RAM (CLRRTC1)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

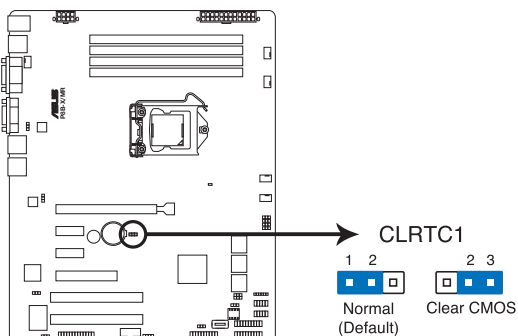
1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 1–2 (default) to pins 2–3. Keep the cap on pins 2–3 for about 5–10 seconds, then move the cap back to pins 1–2.
3. Plug the power cord and turn ON the computer.
4. Hold down the key during the boot process and enter BIOS setup to re-enter data.



Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure!



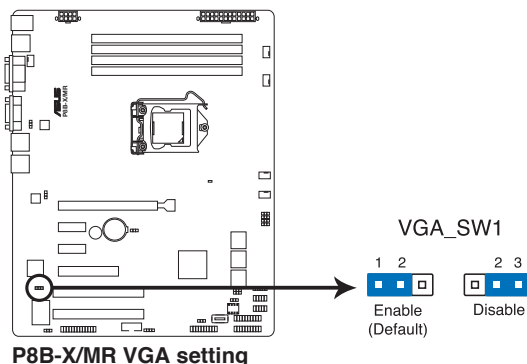
If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After the CMOS clearance, reinstall the battery.



P8B-X/MR Clear RTC RAM

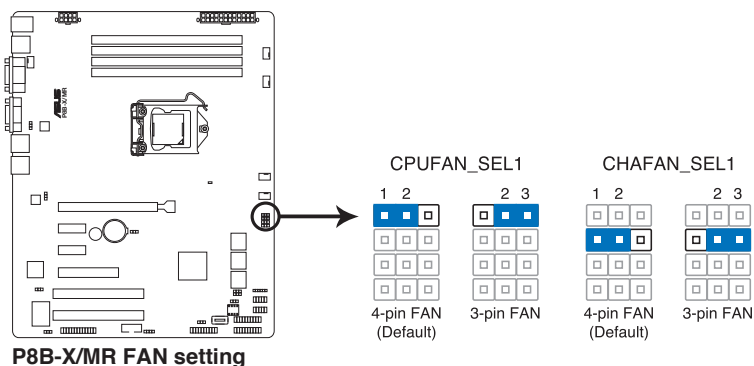
2. VGA controller setting (3-pin VGA_SW1)

This jumper allows you to enable or disable the onboard VGA controller. Set to pins 1–2 to activate the VGA feature.



3. CPU Fan and Chassis Fan control setting (3-pin CPUFAN_SEL1, CHAFAN_SEL1)

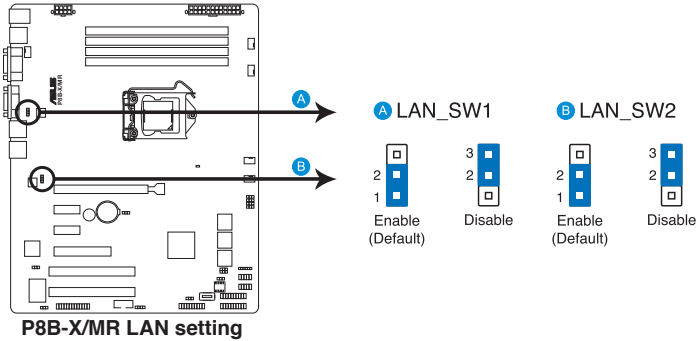
These jumpers allow you to switch for fan pin selection. The CPUFAN_SEL1 jumper is for the CPU fans control and the CHAFAN_SEL1 jumper is for the front fans and rear fans control. Set to pins 1–2 when using 4-pin fans or pins 2–3 when using 3-pin fans.



- If you use a 4-pin fan but set the jumper to pin 2–3, the fan you installed may not work.
- If you use a 3-pin fan but set the jumper for a 4-pin fan, the fan control will not work and the fan you installed will always run at full speed.

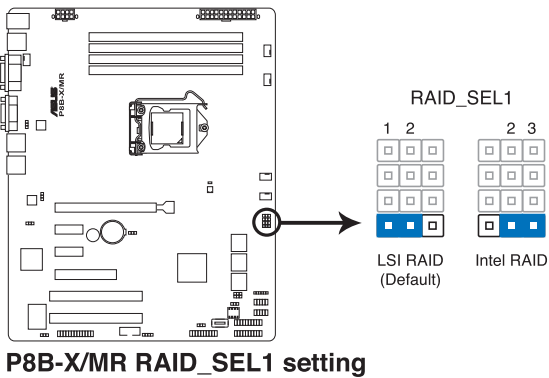
4. LAN controller setting (3-pin LAN_SW1, LAN_SW2)

These jumpers allow you to enable or disable the onboard Intel® Intel 82574L Gigabit LAN controllers. Set to pins 1–2 to activate the Gigabit LAN feature.



5. Intel® C202 SATA port S/W RAID setting (3-pin RAID_SEL1)

This jumper allows you to select the Serial ATA RAID configuration utility to use when you create disk arrays. Place the jumper caps on pins 1–2 if you want to use the LSI Logic Embedded SATA RAID Setup Utility (default); otherwise, place the jumper caps on pins 2–3 to use the Intel® Rapid Storage Technology (IRST).



4.3 Internal connectors

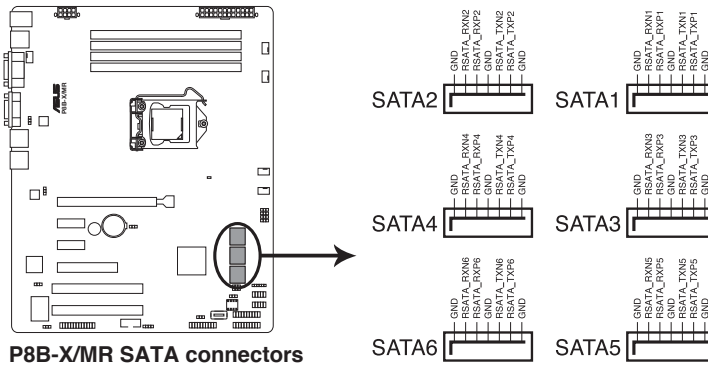
1. Serial ATA connectors

(SATA 6Gb/s: 7-pin SATA1, SATA2 [Blue])

(SATA 3Gb/s: 7-pin SATA3, SATA4, SATA5, SATA6 [Black])

Supported by the Intel® C204 chipset, these connectors are for the Serial ATA signal cables for Serial ATA hard disk drives that allows up to 6Gb/s of data transfer rate.

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, RAID 10, or RAID 5 configuration.



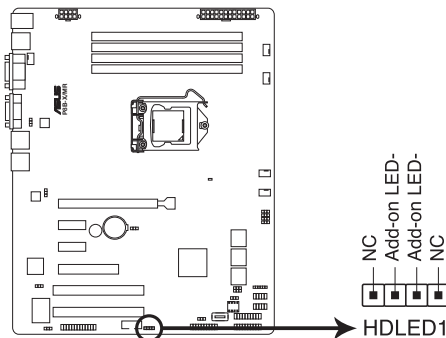
P8B-X/MR SATA connectors



The actual data transfer rate depends on the speed of Serial ATA hard disks installed.

2. Hard disk activity LED connector (4-pin HDLED1)

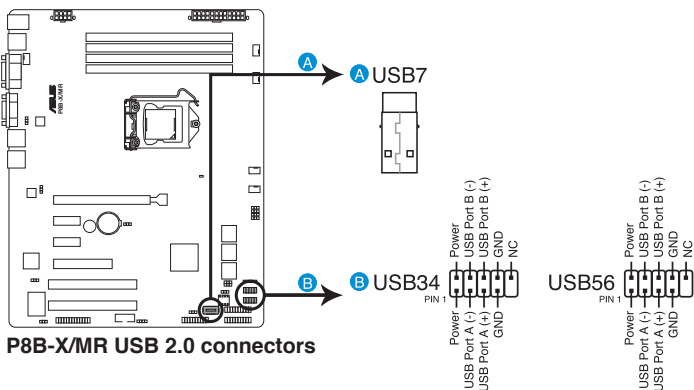
This LED connector is for the storage add-on card cable connected to the SATA or SAS add-on card. The read or write activities of any device connected to the SATA or SAS add-on card causes the front panel LED to light up.



P8B-X/MR Hard disk activity connector

3. USB connector (10-1 pin USB34, USB56; A-Type USB7)

These connectors are for USB 2.0 ports. Connect the USB module cables to connectors USB34, then install the modules to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.

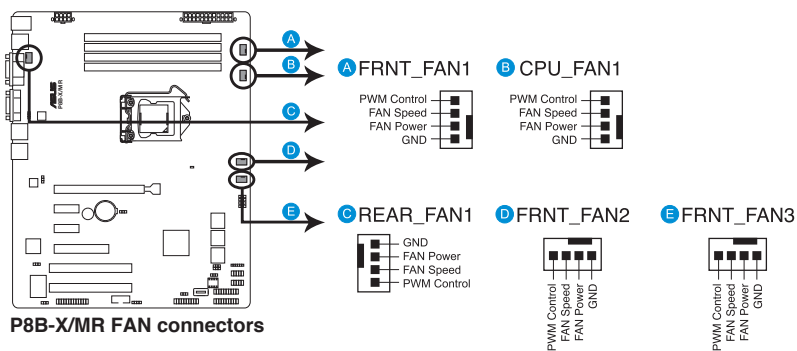


4. CPU, front and rear fan connectors (4-pin CPU_FAN1, FRNT_FAN1, FRNT_FAN2, FRNT_FAN3, REAR_FAN1)

The fan connectors support cooling fans of 350 mA–740 mA (8.88 W max.) or a total of 3.15 A–6.66 A (53.28 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector.

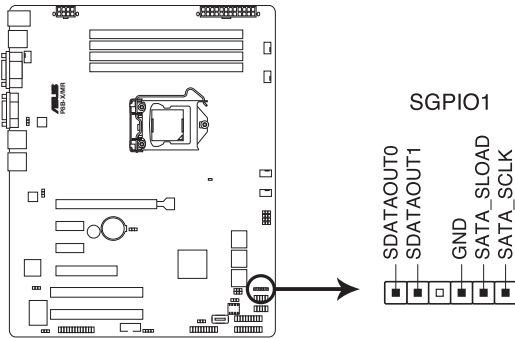


- DO NOT forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.
- These are not jumpers! DO NOT place jumper caps on the fan connectors!
- All fans feature the ASUS Smart Fan technology.



5. Serial General Purpose Input/Output connector (6-1 pin SGPIO1)

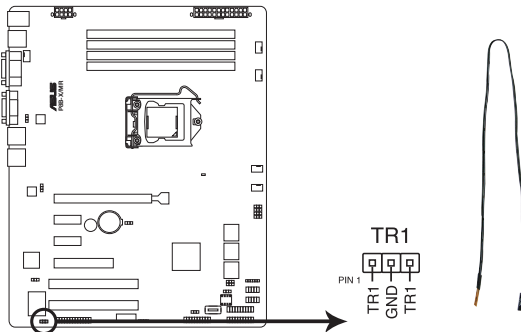
This connector is used for the SGPIO peripherals for the Intel Rapid Storage Technology RAID SATA LED.



P8B-X/MR SGPIO1 connector

6. Thermal sensor cable connectors (3-pin TR1)

This connector is for temperature monitoring. Connect the thermal sensor cable to this connector and place the other end to the device, which you want to monitor temperature.



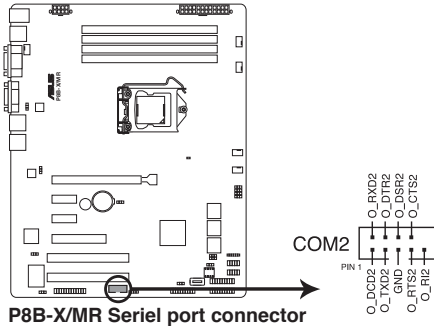
P8B-X/MR Thermal sensor cable connector



You can connect the thermal sensor cable to either pin 1-2 or pin 2-3.

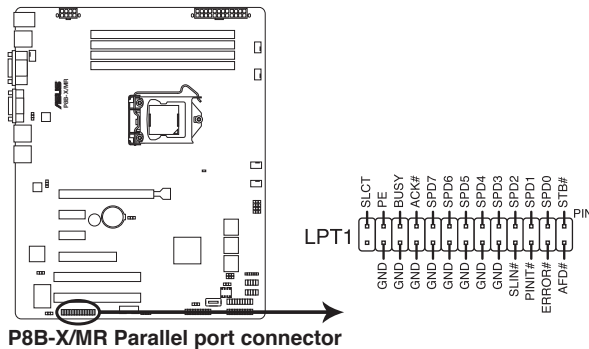
7. Serial port connector (10-1 pin COM2)

These connectors are for the serial (COM) ports. Connect the serial port module cable to one of these connectors, then install the module to a slot opening at the back of the system chassis.



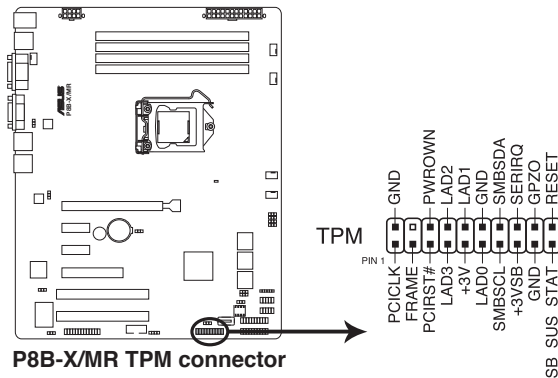
8. Parallel port connector (26-1 pin LPT1)

This connector is for a parallel port. Connect the parallel port module cable to this connector, then install the module to a slot opening at the back of the system chassis.



9 TPM connector (20-pin TPM)

This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

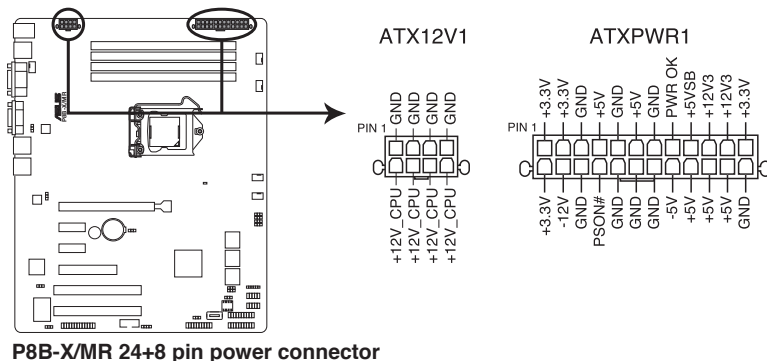


10. ATX power connectors (24-pin ATXPWR1, 8-pin ATX12V1)

These connectors are for an ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

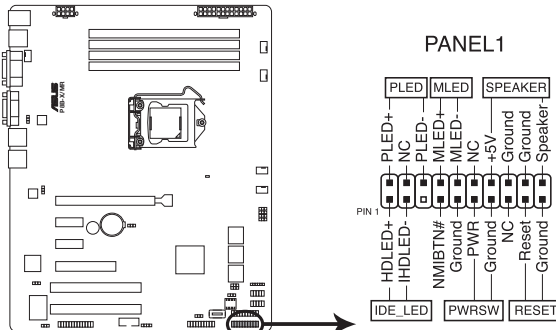


- DO NOT forget to connect the 24+8-pin power plugs; otherwise, the system will not boot up.
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- This motherboard supports ATX2.0 PSU or later version.
- Ensure that your power supply unit (PSU) can provide at least the minimum power required by your system.



11. System panel connector (20-pin PANEL1)

This connector supports several chassis-mounted functions.



P8B-X/MR System panel connector

1. System power LED (3-pin PLED)

This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

2. Message LED (2-pin MLED)

This 2-pin connector is for the message LED cable that connects to the front message LED. The message LED is controlled by Hardware monitor to indicate an abnormal event occurrence.

3. System warning speaker (4-pin SPEAKER)

This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

4. Hard disk drive activity LED (2-pin HDDLED)

This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

5. Power button/soft-off button (2-pin PWRSW)

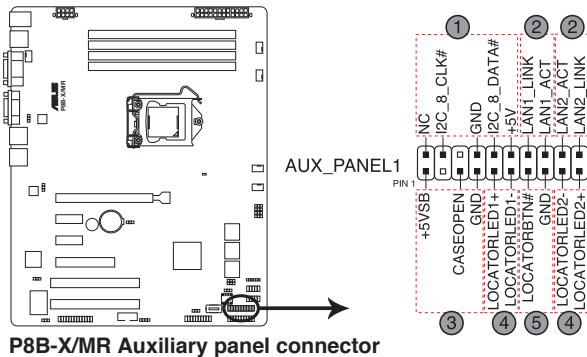
This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

6. Reset button (2-pin RESET)

This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

12. Auxiliary panel connector (20-2 pin AUX_PANEL1)

This connector is for additional front panel features including front panel SMB, locator LED and switch, chassis intrusion, and LAN LEDs.



P8B-X/MR Auxiliary panel connector

- 1. Front panel SMB (6-1 pin FPSMB)**
These leads connect the front panel SMBus cable.
- 2. LAN activity LED (2-pin LAN1_LED, LAN2_LED)**
These leads are for Gigabit LAN activity LEDs on the front panel.
- 3. Chassis intrusion (4-1 pin CHASSIS)**
These leads are for the intrusion detection feature for chassis with intrusion sensor or microswitch. When you remove any chassis component, the sensor triggers and sends a high-level signal to these leads to record a chassis intrusion event. The default setting is short CASEOPEN and GND pin by jumper cap to disable the function.
- 4. Locator LED (2-pin LOCATORLED1 and 2-pin LOCATORLED2)**
These leads are for the locator LED1 and LED2 on the front panel. Connect the Locator LED cables to these 2-pin connector. The LEDs will light up when the Locator button is pressed.
- 5. Locator Button/Switch (2-pin LOCATORBTN)**
These leads are for the locator button on the front panel. This button queries the state of the system locator.

Chapter 5

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



BIOS setup

5.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup:

1. **ASUS CrashFree BIOS 3** (To recover the BIOS using a bootable USB flash disk drive when the BIOS file fails or gets corrupted.)
2. **ASUS EZ Flash 2** (Updates the BIOS using a USB flash disk.)
3. **BUPDATER utility** (Updates the BIOS in DOS mode using a bootable USB flash disk drive.)

Refer to the corresponding sections for details on these utilities.



Save a copy of the original motherboard BIOS file to a bootable USB flash disk drive in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the BUPDATER utility.

5.1.1 ASUS CrashFree BIOS 3 utility

The ASUS CrashFree BIOS 3 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using a USB flash drive that contains the updated BIOS file.



Prepare a USB flash drive containing the updated motherboard BIOS before using this utility.

Recovering the BIOS from a USB flash drive

To recover the BIOS from a USB flash drive:

1. Insert the USB flash drive with the original or updated BIOS file to one USB port on the system.
2. The utility will automatically recover the BIOS. It resets the system when the BIOS recovery finished.



DO NOT shut down or reset the system while recovering the BIOS! Doing so would cause system boot failure!



The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the ASUS website at www.asus.com to download the latest BIOS file.

5.1.2 ASUS EZ Flash Utility

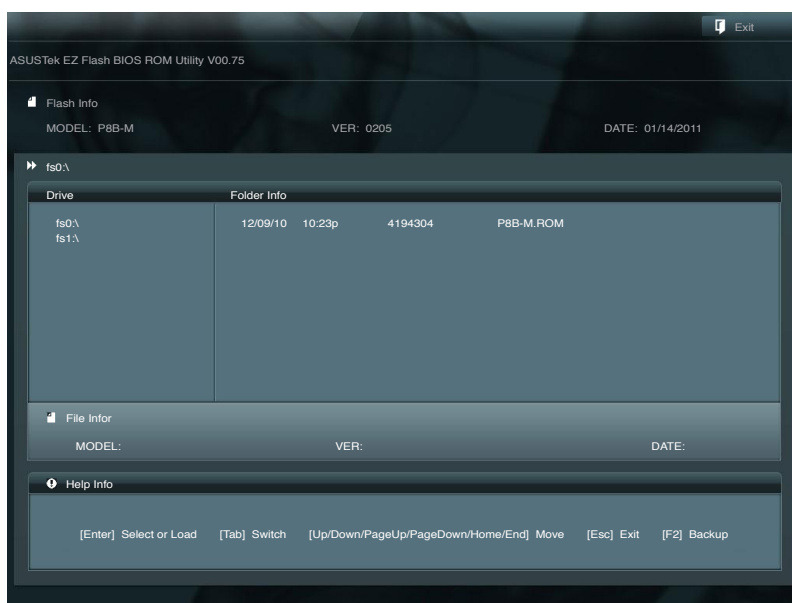
The ASUS EZ Flash Utility feature allows you to update the BIOS without having to use a DOS-based utility.



Before you start using this utility, download the latest BIOS from the ASUS website at www.asus.com.

To update the BIOS using EZ Flash Utility

1. Insert the USB flash disk that contains the latest BIOS file to the USB port.
2. Enter the BIOS setup program. Go to the **Tool** menu to select **ASUS EZ Flash Utility** and press <Enter> to enable it.



3. Press <Tab> to switch to the **Drive** field.
4. Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.
5. Press <Tab> to switch to the **Folder Info** field.
6. Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process. Reboot the system when the update process is done.



-
- This function can support devices such as a USB flash disk with FAT 32/16 format and single partition only.
 - DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!
-



Ensure to load the BIOS default settings to ensure system compatibility and stability. Press <F5> and select **Yes** to load the BIOS default settings.

5.1.3 BUPDATER utility



The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be the same as shown.

The BUPDATER utility allows you to update the BIOS file in DOS environment using a bootable USB flash disk drive with the updated BIOS file.

Updating the BIOS file

To update the BIOS file using the BUPDATER utility:

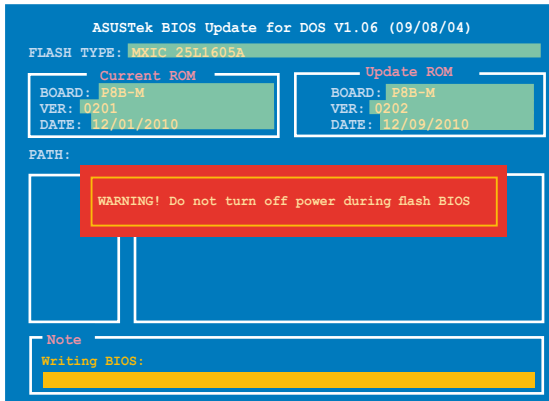
1. Visit the ASUS website at www.asus.com and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable USB flash disk drive.
2. Copy the BUPDATER utility (BUPDATER.exe) from the ASUS support website at support.asus.com to the bootable USB flash disk drive you created earlier.
3. Boot the system in DOS mode, then at the prompt, type:

```
BUPDATER /i [filename] .ROM
```

where [filename] is the latest or the original BIOS file on the bootable USB flash disk drive, then press <Enter>.

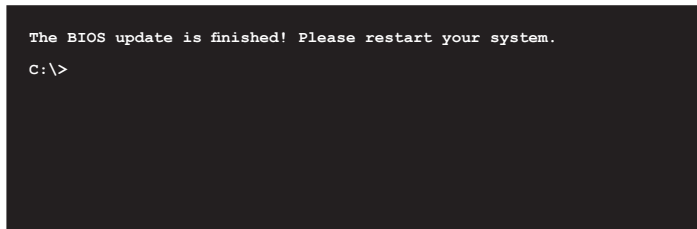
```
A:\>BUPDATER /i[file name].ROM
```

The utility verifies the file, then starts updating the BIOS file.



DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

5. The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.



5.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section 5.1 **Managing and updating your BIOS**.

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to “Run Setup.” This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware chip.

The firmware chip on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press during the Power-On Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

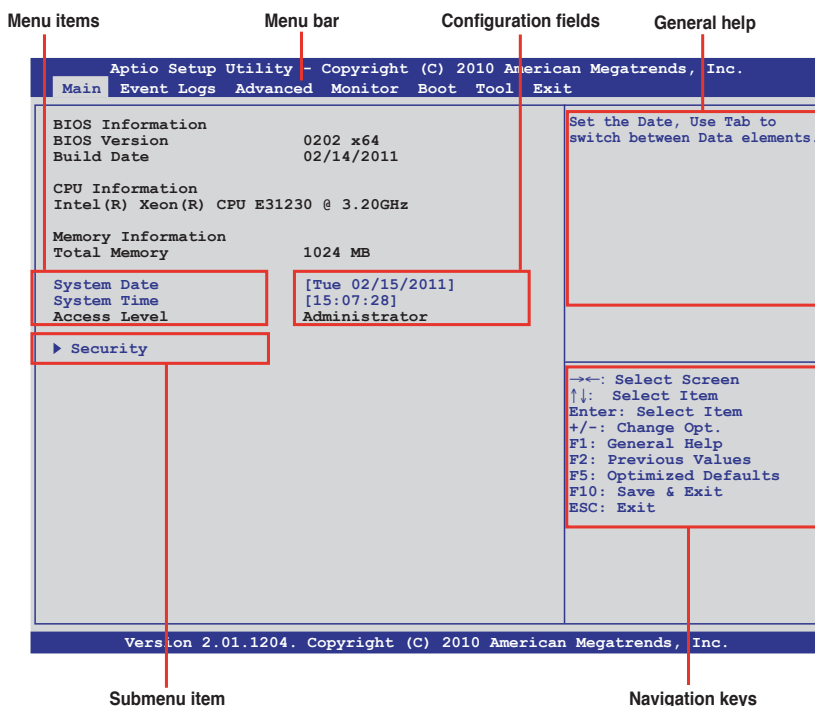
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.



-
- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Press <F5> and select **Yes** to load the BIOS default settings.
 - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
 - Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard.
-

5.2.1 BIOS menu screen



5.2.2 Menu bar

The menu bar on top of the screen has the following main items:

Main	For changing the basic system configuration
Event Logs	For changing the event log settings
Advanced	For changing the advanced system settings
Monitor	For displaying the system temperature, power status, and changing the fan settings
Boot	For changing the system boot configuration
Tool	For configuring options for special functions
Exit	For selecting the exit options

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

5.2.3 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Event Logs, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

5.2.4 Submenu items

A solid triangle before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.

5.2.5 Navigation keys

At the bottom right corner of a menu screen are the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

5.2.6 General help

At the top right corner of the menu screen is a brief description of the selected item.

5.2.7 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

5.2.8 Pop-up window

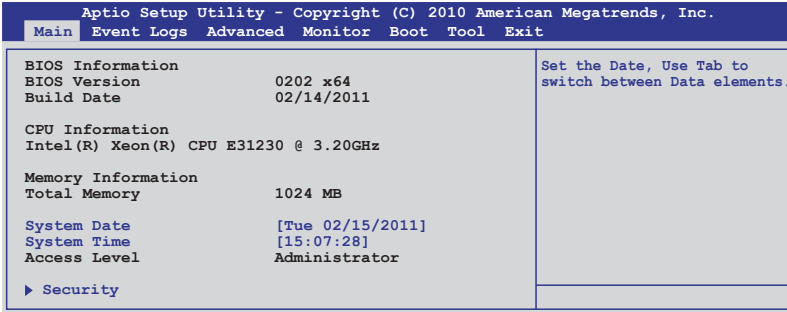
Select a menu item and press <Enter> to display a pop-up window with the configuration options for that item.

5.2.9 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> /<Page Down> keys to display the other items on the screen.

5.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.



5.3.1 System Date [Day xx/xx/xxxx]

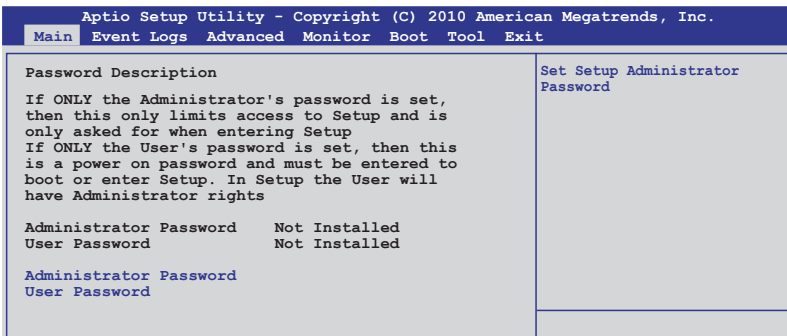
Allows you to set the system date.

5.3.2 System Time [xx:xx:xx]

Allows you to set the system time.

5.3.3 Security

The Security menu items allow you to change the system security settings.



- If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password. See section 2.6 Jumpers for information on how to erase the RTC RAM.
- The **Administrator** or **User Password** items on top of the screen show the default **Not Installed**. After you set a password, these items show **Installed**.

Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS setup program.

To set an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

To change an administrator password:

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **Administrator Password** item on top of the screen shows **Not Installed**.

User Password

If you have set a user password, you must enter the user password for accessing the system. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

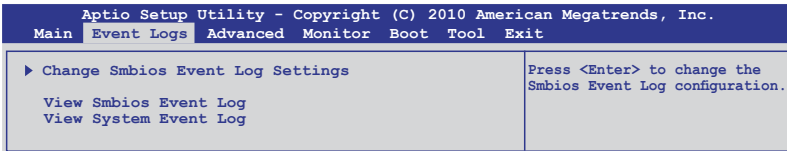
To change a user password:

1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

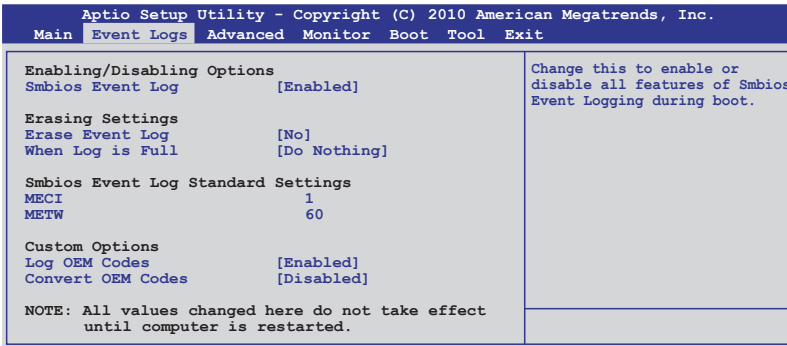
To clear the user password, follow the same steps as in changing a user password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **User Password** item on top of the screen shows **Not Installed**.

5.4 Event Logs menu

The Event Logs menu items allow you to change the event log settings and view the system event logs.



Change Smbios Event Log Settings



Smbios Event Log [Enabled]

Allows you to enable or disable all features of Smbios event logging.

Configuration option: [Disabled] [Enabled]

Erase Event Log [No]

Allows you to select the options for erasing Smbios event log.

Configuration options: [No] [Yes, Next reset] [Yes, Every reset]

When Log is Full [Do Nothing]

Allows you to select the options for reaction when the event logs are full.

Configuration options: [Do Nothing] [Erase Immediately]

MECI [xx]

Allows you to adjust value for the MECI (Multiple Event Count Increment), which is the number of occurrences of a duplicate event that must pass before the multiple-event counter associated with log entry is updated. Use the <+> and <-> keys to adjust the value. The values range from 1 to 255.

METW [xx]

Allows you to adjust value for the METW (Multiple Event Time Window), which is the number of minutes that must pass between duplicate log entries which utilize a multiple-event counter. Use the <+> and <-> keys to adjust the value. The values range from 0 to 99.

Log OEM Codes [Enabled]

Allows you to enable or disable the logging of EFI status codes as OEM codes. Configuration option: [Disabled] [Enabled]

Convert OEM Codes [Disabled]

Allows you to enable or disable the converting of EFI status codes to standard Smbios types. Configuration option: [Disabled] [Enabled]

View Smbios Event Log

Press <Enter> to view the Smbios event logs.

View System Event Log

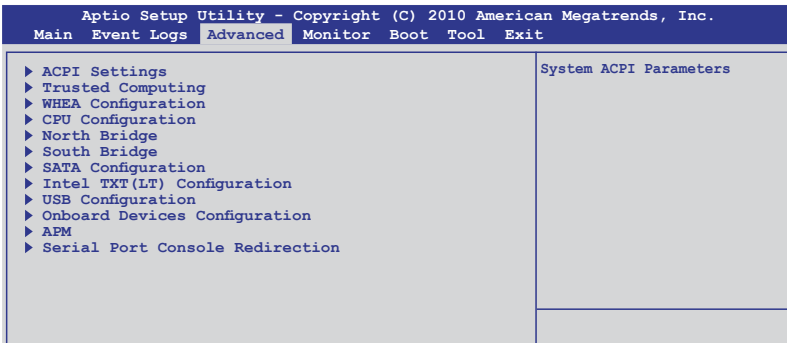
Press <Enter> to view the system event logs.

5.5 Advanced menu

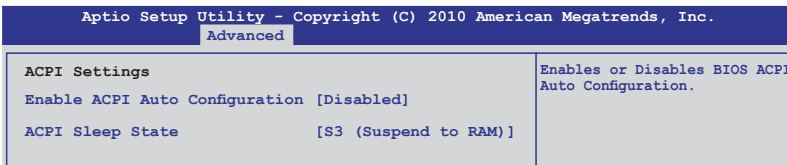
The Advanced menu items allow you to change the settings for the CPU and other system devices.



Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



5.5.1 ACPI Settings



Enable ACPI Auto Configuration [Disabled]

Allows you to enable or disable ACPI Auto Configuration.

Configuration options: [Disabled] [Enabled]

ACPI Sleep State [S3 (Suspend to RAM)]

Allows you to set the ACPI Sleep State.

Configuration options: [Suspend Disabled] [S1 (CPU Stop Clock)] [S3 (Suspend to RAM)]

5.5.2 Trusted Computing

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
TPM Configuration TPM SUPPORT [Disabled]	Enables or Disables TPM support. O.S. will not show TPM. Reset of platform is required.
Current TPM Status Information NO TPM Hardware	

TPM SUPPORT [Disabled]

Allows you to enable or disable the TPM support.

Configuration options: [Disabled] [Enabled]

5.5.3 WHEA Configuration

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
WHEA Support [Enabled]	Enable or disable Windows Hardware Error Architecture.

WHEA Support [Enabled]

Allows you to enable or disable the Windows Hardware Error Architecture support.

Configuration options: [Disabled] [Enabled]

5.5.4 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects. Some items may not appear if your CPU does not support the related functions.

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Advanced		
CPU Configuration		Includes TM1, TM2 and EMTM
Intel (R) Xeon(R) CPU E31230 @ 3.20GHz	Supported	
EM64T	3200 MHz	
Processor Speed	206a7	
Processor Stepping	d	
Microcode Revision	256 KB	
L1 CACHE	1024 KB	
L2 CACHE	8192 KB	
L3 CACHE	4	
Processor Cores	Supported	
Intel HT Technology	32	
CPU Current Ratio		
Intel Adaptive Thermal Monitor	[Enabled]	→←: Select Screen
Hyper-threading	[Enabled]	↑↓: Select Item
Active Processor Cores	[All]	Enter: Select Item
Limit CPUID Maximum	[Disabled]	+/-: Change Opt.
Execute Disable Bit	[Enabled]	F1: General Help
Intel Virtualization Technology	[Enabled]	F2: Previous Values
Enhanced Intel SpeedStep Technology	[Enabled]	F5: Optimized Defaults
Turbo Mode	[Enabled]	F10: Save & Exit
CPU C1E	[Enabled]	ESC: Exit
CPU C3 Report	[Enabled]	
CPU C6 Report	[Enabled]	
Package C State limit	[No Limit]	

Intel Adaptive Thermal Monitor [Enabled]

Allows you to enable or disable the CPU thermal monitor function.

Configuration options: [Disabled] [Enabled]

Hyper-threading [Enabled]

This item appears only when you install a CPU with Hyper-threading support and allows you to enable or disable the Intel Hyper-Threading Technology function.

When disabled, only one thread per activated core is enabled.

Configuration options: [Enabled] [Disabled]

Active Processor Cores [All]

Allows you to choose the number of CPU cores to activate in each processor package. Configuration options: [All] [1] [2] [3]

Limit CPUID Maximum [Disabled]

Setting this item to [Enabled] allows legacy operating systems to boot even without support for CPUs with extended CPUID functions.

Configuration options: [Disabled] [Enabled]

Execute Disable Bit [Enabled]

Allows you to enable or disable the No-Execution Page Protection Technology. Setting this item to [Disabled] forces the XD feature flag to always return to zero (0). Configuration options: [Disabled] [Enabled]

Intel Virtualization Tech [Enabled]

The Intel® Virtualization Technology allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems. Configuration options: [Disabled] [Enabled]

Enhanced Intel SpeedStep Technology [Enabled]

Allows you to enable or disable the Enhanced Intel® SpeedStep Technology (EIST). Configuration options: [Disabled] [Enabled]

Turbo Mode [Enabled]

This item appears only when you set the **Enhanced Intel SpeedStep Technology** item to [Enabled] and allows you to enable or disable the Intel® Turbo Mode Technology. Configuration options: [Disabled] [Enabled]

CPU C1E [Enabled]

[Enabled] Enables the C1E support function. This item should be enabled in order to enable the Enhanced Halt State.

[Disabled] Disables this function.

CPU C3 Report [Enabled]

Allows you to disable or enable the CPU C3 report to OS.

CPU C6 Report [Enabled]

Allows you to disable or enable the CPU C6 report to OS.

Package C State limit [No Limit]

Configuration options: [C0] [C1] [C6] [No Limit]

5.5.5 North Bridge

The North Bridge is built in the CPU.

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
Memory Information	Low MMIO resources align at 64MB/1024MB
TOTAL Memory	1024 MB
DIMM_A1	0 MB (DDR3 1333)
DIMM_A2	0 MB (DDR3 1333)
DIMM_B1	0 MB (DDR3 1333)
DIMM_B2	1024 MB (DDR3 1333)
Low MMIO Align	[64M]
DMI Gen2	[Enabled]
VT-d	[Disabled]
Initate Graphic Adapter	[PEG/PCI]

Low MMIO Align [64M]

Allows you to select the options for the Low MMIO Align.

Configuration options: [64M] [1024M]

DMI Gen2 [Enabled]

Allows you to enable or disable the DMI Gen2.

Configuration options: [Disabled] [Enabled]

VT-d [Disabled]

Allows you to enable or disable the VT-d.

Configuration options: [Disabled] [Enabled]

Initiate Graphic Adapter [PEG/PCI]

Allows you to decide which graphics controller to use as the primary boot device.

Configuration options: [PCI/PEG] [PEG/PCI]

5.5.6 South Bridge

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
SB Chipset Configuration	Enabled/disabled the High Precision Event Timer.
High Precision Event Timer Configuration	
High Precision Timer	[Enabled]

High Precision Timer [Enabled]

Allows you to enable or disable the High Precision Event Timer.

Configuration options: [Enabled] [Disabled]

5.5.7 SATA Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show **Not Present** if no SATA device is installed to the corresponding SATA port.

Aptio Setup Utility – Copyright (C) 2010 American Megatrends, Inc.		
Advanced		
SATA Configuration		(1) IDE Mode. (2) AHCI Mode. (3) RAID Mode.
SATA Mode	[IDE Mode]	
Serial-ATA Controller 0	[Enhanced]	
Serial-ATA Controller 1	[Enhanced]	
S.M.A.R.T. Status Check	[Enabled]	
SATA Port1	ST3160812AS (160.0GB)	
SATA Port2	ST3160812AS (160.0GB)	
SATA Port3	ASUS CB-521 ATAPI	
SATA Port4	Not Present	
SATA Port5	Not Present	
SATA Port6	Not Present	

SATA Mode [IDE Mode]

Allows you to set the SATA configuration.

Configuration options: [Disabled] [IDE Mode] [AHCI Mode] [RAID Mode]



- If you want to use the Serial ATA hard disk drives as Parallel ATA physical storage devices, keep the default setting [IDE Mode].
- If you want the Serial ATA hard disk drives to use the Advanced Host Controller Interface (AHCI), set this item to [AHCI Mode]. The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.
- If you want to create RAID sets with LSI MegaRAID utility, or Intel® Rapid Storage Technology from the Serial ATA hard disk drives, set this item to [RAID Mode].

Serial-ATA Controller 0 [Enhanced]

This item appears only when you set the **SATA Mode** item to [IDE Mode]. Set to [Enhanced] to support two SATA 6.0 Gb/s and two SATA 3.0 Gb/s devices. Set to [Compatible] when using Windows 98/NT/2000/MS-DOS. Up to four SATA devices are supported under these operating systems.

Configuration options: [Disabled] [Enhanced] [Compatible]

Serial-ATA Controller 1 [Enhanced]

This item appears only when you set the **SATA Mode** item to [IDE Mode]. Set to [Enhanced] to support two SATA 3.0 Gb/s devices. Configuration options: [Disabled] [Enhanced]

S.M.A.R.T. Status Check [Enabled]

S.M.A.R.T. (Self-Monitoring, Analysis and Reporting Technology) is a monitor system. When read/write of your hard disk errors occur, this feature allows the hard disk to report warning messages during the POST.

Configuration options: [Enabled] [Disabled]

5.5.8 Intel TXT(LT) Configuration

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
Intel Trusted Execution Technology Configuration Intel TXT support only can be enabled/disabled if SMX is enabled. VT and VT-d support must also be enabled prior to TXT.	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
Secure Mode Extensions (SMX) Enabled	
Intel TXT(LT) Support [Disabled]	

Intel TXT(LT) Support [Disabled]

Allows you to enable or disable the Intel Trusted Execution Technology (TXT) feature. Configuration options: [Disabled] [Enabled]



The **Intel TXT(LT) Support** item requires a Trusted Platform Module (TPM) to be installed on the motherboard to enable.

5.5.9 USB Configuration

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.	
Advanced	
USB Configuration	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.
USB Devices 1 Mouse, 2 Hubs	
Legacy USB Support [Enabled]	
EHCI Hand-off [Disabled]	
USB hardware delays and time-out:	
USB transfer time-out [20 sec]	
Device reset time-out [20 sec]	
Device power-up delay [Auto]	



The **USB Devices** item shows the auto-detected values. If no USB device is detected, the item shows **None**.

Legacy USB Support [Enabled]

Allows you to enable or disable support for legacy USB devices. Setting to [Auto] allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

EHCI Hand-off [Disabled]

Enables or disables the BIOS EHCI hand-off support.
Configuration options: [Disabled] [Enabled]

USB transfer time-out [20 sec]

Allows you to select the USB transfer time-out value.
Configuration options: [1 sec] [5 sec] [10 sec] [20 sec]

Device reset time-out [20 sec]

Allows you to select the USB device reset time-out value.
Configuration options: [10 sec] [20 sec] [30 sec] [40 sec]

Device power-up delay [Auto]

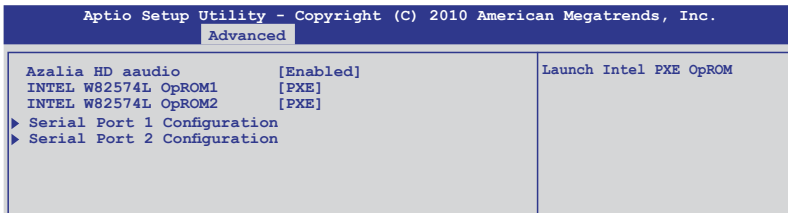
Configuration options: [Auto] [Manual]

Device power-up delay in seconds [XX]

This item appears only when you set the **Device power-up delay** item to [manual]. Use the <+> and <-> keys to adjust the value. The values range from 1 to 40 with a one-second interval.

5.5.10 Onboard Devices Configuration

The Onboard Devices Configuration menu items allow you to change the advanced settings for onboard devices.



Azalia HD Audio [Enabled]

Allows you to enable or disable the Azalia HD audio.

INTEL W82574L OpROM1/OpROM2 [PXE]

Allows you to select the options for the OptionRom of the Intel LAN controllers.
Configuration options: [Disabled] [PXE] [iSCSI]

Serial Port 1/2 Configuration

The sub-items in this menu allow you to set the serial port 1/2 configuration.

Serial Port [Enabled]

Allows you to enable or disable the serial port (COM).

Configuration options: [Enabled] [Disabled]

5.5.11 APM

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Advanced		
Restore AC Power Loss	[Power Off]	Specify what state to go to when power is re-applied after a power failure (G3 state).
EuP Ready	[Disabled]	
Power On By PCI	[Disabled]	
Power On By PCIE	[Disabled]	
Power On By Ring	[Disabled]	
Power On By RTC	[Disabled]	

Restore AC Power Loss [Power Off]

When set to [Power Off], the system goes into off state after an AC power loss.

When set to [Power On], the system will reboot after an AC power loss. When set to [Last State], the system goes into either off or on state, whatever the system state was before the AC power loss.

Configuration options: [Power Off] [Power On] [Last State]

EuP Ready [Disabled]

When set to [Enabled], all other PME options will be switched off.

Configuration options: [Disabled] [Enabled]

Power On By PCI [Disabled]

[Disabled] Disables the PME to wake up from S5 by PCI devices.

[Enabled] Allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

Power On By PCIE [Disabled]

[Disabled] Disables the PCIE devices to generate a wake event.

[Enabled] Enables the PCIE devices to generate a wake event.

Power On By Ring [Disabled]

[Disabled] Disables Ring to generate a wake event.

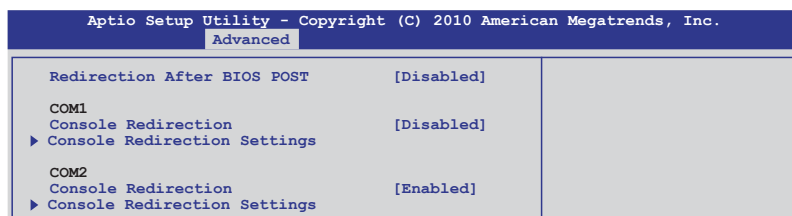
[Enabled] Enables Ring to generate a wake event.

Power On By RTC [Disabled]

[Disabled] Disables RTC to generate a wake event.

[Enabled] When set to [Enabled], the items **RTC Alarm Date (Days)** and **Hour/Minute/Second** will become user-configurable with set values.

5.5.12 Serial Port Console Redirection



Redirection After BIOS POST [Disabled]

Enables or disables the redirection after BIOS POST feature.

Configuration options: [Disabled] [Enabled]

COM1

Console Redirection [Disabled]

Enables or disables the console redirection feature.

Configuration options: [Disabled] [Enabled]

Console Redirection Settings

This item becomes configurable only when you enable the **Console Redirection** item. The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Terminal Type [VT-UTF8]

Allows you to set the terminal type.

[VT100] ASCII char set.

[VT100+] Extends VT100 to support color, function keys, et.

[VT-UTF8] Uses UTF8 encoding to map Unicode chars onto 1 or more bytes

[ANSI] Extended ASCII char set

Bits per second [57600]

Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

Configuration options: [9600] [19200] [38400] [57600] [115200]

Data Bits [8]

Configuration options: [7] [8]

Parity [None]

A parity bit can be sent with the data bits to detect some transmission errors. [Mark] and [Space] parity do not allow for error detection.

[Even] parity bit is 0 if the num of 1's in the data bits is even

[Odd] parity bit is 0 if num of 1's in the data bits is odd

[Mark] parity bit is always 1

[Space] parity bit is always 0

Stop Bits [1]

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning.) The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit. Configuration options: [1] [2]

Flow Control [Hardware RTS/CTS]

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

Configuration options: [None] [Hardware RTS/CTS]

Recorder Mode [Disabled]

With this mode enabled only text will be sent. This is to capture Terminal data.

Configuration options: [Disabled] [Enabled]

Legacy OS Redirection Resolution [80x24]

Configures the number of rows and columns supported on legacy OS.

Configuration options: [80x24] [80x25]

COM2

Console Redirection [Enabled]

Enables or disables the console redirection feature.

Configuration options: [Disabled] [Enabled]

Console Redirection Settings

Please refer to the description of the **Console Redirection Settings** item under COM1 for details.

5.6 Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.						
Main	Event Logs	Advanced	Monitor	Boot	Tool	Exit
CPU Temperature (PECI)	[	+35°C/	+94°F]			
MB Temperature	[	+35°C/	+94°F]			
TR1 Temperature	[	N/A]			
CPU FAN1 Speed	[	1305	RPM]			
FRNT FAN1 Speed	[	N/A]			
FRNT FAN2 Speed	[	N/A]			
FRNT FAN3 Speed	[	N/A]			
REAR FAN1 Speed	[	N/A]			
FAN Speed Control	[	Generic Mode]				
VCORE1	[	+1.200	V]			
+3.3V	[	+3.360	V]			
+5V	[	+5.160	V]			
+12V	[	+12.384	V]			
VBAT	[	+3.408	V]			
+3VSB	[	+3.422	V]			
+1.5V	[	+1.496	V]			

CPU/MB/TR1 Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the CPU and motherboard component temperatures. Select **Ignore** if you do not wish to display the detected temperatures.

CPU FAN1 Speed; FRNT FAN1–3 Speed; REAR FAN1 Speed [xxxx RPM] or [Ignore] / [N/A]

The onboard hardware monitor automatically detects and displays the speed of CPU fans, front fans, and rear fan in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows **N/A**.

Fan Speed Control [Generic Mode]

Allows you to configure the ASUS Smart Fan feature that smartly adjusts the fan speeds for more efficient system operation.

Configuration options: [Full Speed Mode] [High Density Mode] [Generic Mode] [Whisper Mode]

VCORE1 Voltage, 3.3V Voltage, +5V Voltage, +12V Voltage, VBAT Voltage, +3VSB Voltage, +1.5V ICH Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select **Ignore** if you do not want to detect this item.

5.7 Boot menu

The Boot menu items allow you to change the system boot options.

Aptio Setup Utility - Copyright (C) 2010 American Megatrends, Inc.		
Main Event Logs Advanced Monitor Boot Tool Exit		
Setup Prompt Timeout	5	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.
Bootup NumLock State	[On]	
Full Screen Logo	[Enabled]	
Option ROM Messages	[Force BIOS]	
Interrupt 19 Capture	[Enabled]	
EFI Boot	[Disabled]	
Boot Device Seeking	[Endless PXE]	
Boot Option Priorities		
Boot Option #1	[IBA GE Slot 0200 v...]	
Boot Option #2	[Intel Volume0]	
Boot Override		
IBA GE Slot 0200 v1353		
IBA GE Slot 0300 v1353		
Network Device BBS Priorities		
CD/DVD ROM Drive BBS Priorities		
Hard Drive BBS Priorities		

Setup Prompt Timeout [xx]

Use the <+> and <-> keys to adjust the number of seconds to wait for setup activation key.

Bootup NumLock State [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

Full Screen Logo [Enabled]

Allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]



Set this item to [Enabled] to use the ASUS MyLogo2™ feature.

Option ROM Messages [Force BIOS]

Allows you to set the display mode for Options ROM.
Configuration options: [Force BIOS] [Keep Current]

Interrupt 19 Capture [Enabled]

Allows Option ROMs to trap interrupt 19.
Configuration options: [Disabled] [Enabled]

EFI Boot [Disabled]

Enables or disables EFI Boot.
Configuration options: [Disabled] [Enabled]

Boot Device Seeking [Endless PXE]

[Endless PXE] Continuous seek remote boot image until boot image found or user abort (press Ctrl+Alt+Del).

[Normal] Seek remote boot image once then stop.

Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.



-
- To select the boot device during system startup, press <F8> when ASUS Logo appears.
 - To access Windows OS in Safe Mode, do any of the following:
 - Press <F5> when ASUS Logo appears.
 - Press <F8> after POST.
-

Boot Override

These items displays the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Click an item to start booting from the selected device.

Network Device BBS Priorities

Set the booting order of network devices.

Boot Option #1/#2 [IBA GE Slot 0200 v1324]

Configuration options: [IBA GE Slot 0200 v1353] [IBA GE Slot 0300 v1353]
[Disabled]

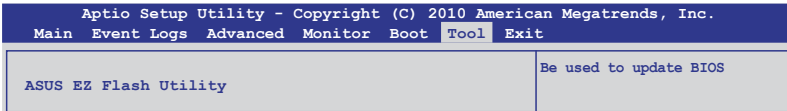
CD/DVD ROM Drives BBS Priorities

Hard Drive BBS Priorities

These two items appear only when you connect SATA ODD or hard drive to the SATA ports and allow you to set the booting order of the SATA devices.

5.8 Tool menu

The Tool menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.

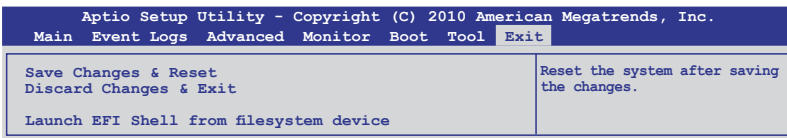


ASUS EZ Flash Utility

Allows you to run ASUS EZ Flash BIOS ROM Utility when you press <Enter>. Check section 5.1.2 **ASUS EZ Flash Utility** for details.

5.9 Exit menu

The Exit menu items allow you to save or discard your changes to the BIOS items.



Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

Save Changes & Reset

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select **Yes** to save changes and exit.

Discard Changes & Exit

This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to discard changes and exit.

Launch EFI Shell from filesystem device

This option allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available filesystem devices.

Chapter 6

This chapter provides instructions for setting up, creating and configuring RAID sets using the available utilities.



RAID configuration

6.1 Setting up RAID

The motherboard comes with the Intel® C202 controller that supports the following SATA RAID solutions:

- **Intel Rapid Storage Technology** with RAID 0 and RAID 1 support (for Windows OS only).

6.1.1 RAID definitions

RAID 0 (*Data striping*) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 (*Data mirroring*) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.



-
- If you want to boot the system from a hard disk drive included in a created RAID set, copy first the RAID driver from the support DVD to a floppy disk before you install an operating system to the selected hard disk drive.
 - Please refer to chapter 2 for how to select the RAID configuration utility. Move the jumper to choose between LSI MegaRAID and Intel® Rapid RAID.
-

6.1.2 Installing hard disk drives

The motherboard supports Serial ATA for RAID set configuration. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for RAID configuration:

1. Install the SATA hard disks into the drive bays following the instructions in the system user guide.
2. Connect a SATA signal cable to the signal connector at the back of each drive and to the SATA connector on the motherboard.
3. Connect a SATA power cable to the power connector on each drive.

6.1.3 Setting the RAID item in BIOS

You must set the RAID item in the BIOS Setup before you can create a RAID set from SATA hard disk drives attached to the SATA connectors supported by Intel® C202 chipset. To do this:

1. Enter the BIOS Setup during POST.
2. Go to the **Advanced** Menu > **SATA Configuration**, then press <Enter>.
3. Set **SATA Mode** to [RAID Mode]
4. Press <F10> to save your changes and exit the BIOS Setup.



Refer to Chapter 4 for details on entering and navigating through the BIOS Setup.

6.1.4 RAID configuration utilities

Depending on the RAID connectors that you use, you can create a RAID set using the utilities embedded in each RAID controller. For example, use the **Intel® Rapid Storage Technology** if you installed Serial ATA hard disk drives on the Serial ATA connectors supported by the Intel® C202 chipset.

Refer to the succeeding section for details on how to use the RAID configuration utility.

6.2 Intel® Rapid Storage Technology Option ROM Utility

The Intel® Rapid Storage Technology Option ROM utility allows you to create RAID 0 and RAID 1 from Serial ATA hard disk drives that are connected to the Serial ATA connectors supported by the Southbridge.

To enter the Intel® Rapid Storage Technology option ROM utility:

1. Install all the Serial ATA hard disk drives.
2. Turn on the system.
3. During POST, press <Ctrl+I> to display the utility main menu.

```
Intel(R) Rapid Storage Technology - Option ROM - 10.1.0.1008
Copyright(C) 2003-10 Intel Corporation. All Rights Reserved.

[ MAIN MENU ]
1. Create RAID Volume          3. Reset Disks to Non-RAID
2. Delete RAID Volume        4. Recovery Volume Options
5. Exit

[ DISK/VOLUME INFORMATION ]
RAID Volumes:                * = Data is Encrypted
None defined.

Physical Devices:
Port Drive Model      Serial #      Size      Type/Status (Vol ID)
0  ST3160812AS        9LS0HJA4    149.0GB   Non-RAID Disk
1  ST3160812AS        9LS0F4HL    149.0GB   Non-RAID Disk
2  ST3160812AS        3LS0JYL8    149.0GB   Non-RAID Disk
3  ST3160812AS        9LS0BJ5H    149.0GB   Non-RAID Disk

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

The navigation keys at the bottom of the screen allow you to move through the menus and select the menu options.

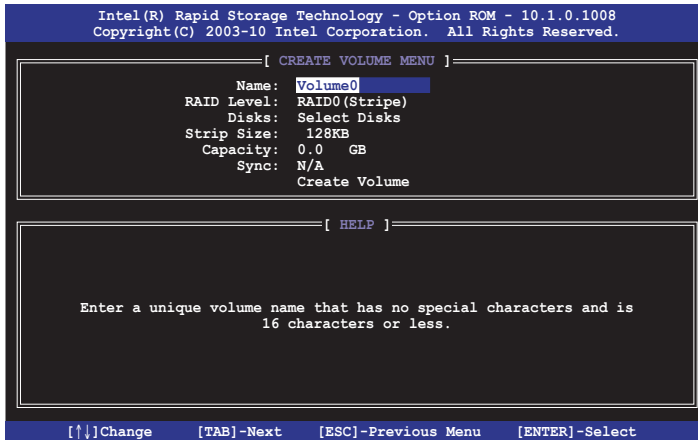


The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen.

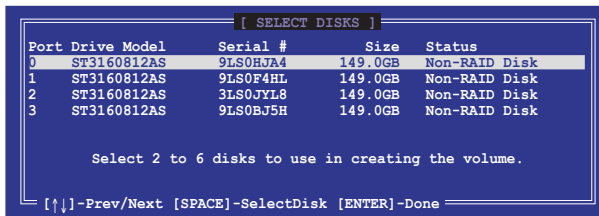
6.2.1 Creating a RAID set

To create a RAID set:

1. From the utility main menu, select **1. Create RAID Volume** and press <Enter>. The following screen appears.



2. Enter a name for the RAID set and press <Enter>.
3. When the **RAID Level** item is selected, press the up/down arrow keys to select a RAID level to create, and then press <Enter>.
4. When the **Disks** item is selected, press <Enter> to select the hard disk drives you want to include in the RAID set. The **SELECT DISKS** screen appears.



5. Use the up/down arrow keys to select a drive, and then press <Space> to select. A small triangle marks the selected drive. Press <Enter> after completing your selection.

- Use the up/down arrow keys to select the stripe size for the RAID array (for RAID 0, and then press <Enter>. The available stripe size values range from 4 KB to 128 KB.



We recommend a lower stripe size for server systems, and a higher stripe size for multimedia computer systems used mainly for audio and video editing.

- When the **Capacity** item is selected, enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum allowed capacity.
- When the **Create Volume** item is selected, press <Enter>. The following warning message appears.

```
WARNING: ALL DATA ON SELECTED DISKS WILL BE LOST.  
Are you sure you want to create this volume? (Y/N) :
```

- Press <Y> to create the RAID volume and return to the main menu, or <N> to go back to the **CREATE VOLUME** menu.

6.2.2 Creating a Recovery set

To create a recovery set:

- From the utility main menu, select **1. Create RAID Volume** and press <Enter>. The following screen appears.

```
Intel(R) Rapid Storage Technology - Option ROM - 10.1.0.1008  
Copyright(C) 2003-10 Intel Corporation. All Rights Reserved.  
-----[ CREATE VOLUME MENU ]-----  
Name: Volume0  
RAID Level: RAID0 (Stripe)  
Disks: Select Disks  
Strip Size: 128KB  
Capacity: 0.0 GB  
Sync: N/A  
Create Volume  
-----[ HELP ]-----  
  
Enter a unique volume name that has no special characters and is  
16 characters or less.  
  
[↑↓]Change [TAB]-Next [ESC]-Previous Menu [ENTER]-Select
```

2. Enter a name for the recovery set and press <Enter>.
3. When the **RAID Level** item is selected, press the up/down arrow keys to select **Recovery**, and then press <Enter>.
4. When the **Disks** item is selected, press <Enter> to select the hard disk drives you want to include in the recovery set. The **SELECT DISKS** screen appears.



5. Use the up/down arrow keys to select a drive, press <TAB> to select a Master disk, and then press <SPACE> to select a Recovery disk. A small triangle marks the selected drive. Press <Enter> after completing your selection.
6. When the **Sync** item is selected, use the up/down arrow keys to select a sync option that you want and press <Enter>.
7. When the **Create Volume** item is selected, press <Enter>. The following warning message appears.



8. Press <Y> to create the recovery set and return to the main menu, or <N> to go back to the **CREATE VOLUME** menu.



If a recovery set is created, you cannot add more RAID sets even when you have more non-RAID disks installed in your system.

6.2.3 Deleting a RAID set



Take caution when deleting a RAID set. You will lose all data on the hard disk drives when you delete a RAID set.

To delete a RAID set:

1. From the utility main menu, select **2. Delete RAID Volume** and press <Enter>. The following screen appears.

```
Intel(R) Rapid Storage Technology - Option ROM - 10.1.0.1008
Copyright(C) 2003-10 Intel Corporation. All Rights Reserved.

[ DELETE VOLUME MENU ]

Name      Level      Drives  Capacity  Status  Bootable
Volume0   RAID0(Stripe)  2       298.0GB  Normal  Yes

[ HELP ]

Deleting a volume will reset the disks to non-RAID.

WARNING: ALL DISK DATA WILL BE DELETED.
(This does not apply to Recovery volumes)

[↑↓]-Select      [ESC]-Previous Menu  [DEL]-Delete Volume
```

2. Use the up/down arrow keys to select the RAID set you want to delete, and then press . The following warning message appears.

```
[ DELETE VOLUME VERIFICATION ]

ALL DATA IN THE VOLUME WILL BE LOST!
(This does not apply to Recovery volumes)

Are you sure you want to delete volume "Volume0"? (Y/N):
```

3. Press <Y> to delete the RAID set and return to the utility main menu, or press <N> to return to the **DELETE VOLUME** menu.

6.2.4 Resetting disks to Non-RAID



Take caution before you reset a RAID volume hard disk drive to non-RAID. Resetting a RAID volume hard disk drive deletes all internal RAID structure on the drive.

To reset a RAID set hard disk drive:

1. From the utility main menu, select **3. Reset Disks to Non-RAID** and press <Enter>. The following screen appears.

```
[ RESET RAID DATA ]
Resetting RAID disk will remove its RAID structures
and revert it to a non-RAID disk.
WARNING: Resetting a disk causes all data on the disk to be lost.
(This does not apply to Recovery volumes)
Port Drive Model      Serial #      Size      Status
0  ST3160812AS        9LS0HJA4    149.0GB  Member Disk
1  ST3160812AS        9LS0F4HL    149.0GB  Member Disk

Select the disks that should be reset.

[↑↓]-Previous/Next [SPACE]-Selects [ENTER]-Selection Complete
```

2. Use the up/down arrow keys to select the RAID set drive(s) you want to reset, and then press <Space> to select.
3. Press <Enter> to reset the RAID set drive(s). A confirmation message appears.
4. Press <Y> to reset the drive(s) or press <N> to return to the utility main menu.

6.2.5 Recovery Volume Options

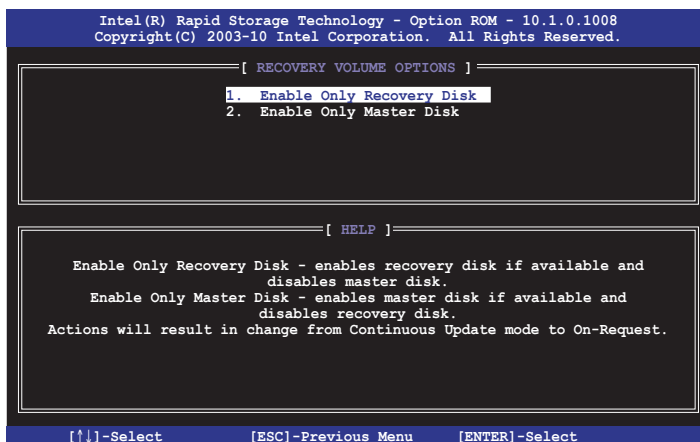
If you have created a recovery set, you can configure more recovery set options following the descriptions in the section.



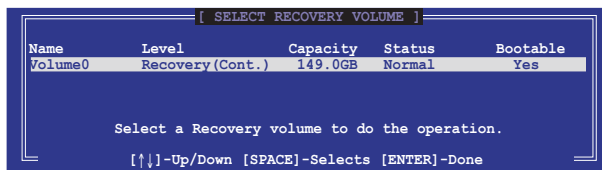
See section **6.2.2 Creating a Recovery set** to create a recovery set before continue.

To configure a recovery set:

1. From the utility main menu, select **4. Recovery Volume Options** and press <Enter>. The following screen appears.



2. Use the up/down arrow keys to select the option you want, and then press <ENTER>. The **SELECT RECOVERY VOLUME** screen appears.

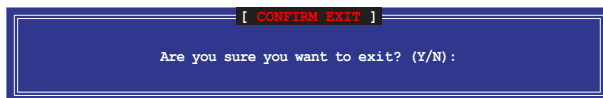


3. Use the up/down arrow keys to select a drive, and then press <Space> to select. A small triangle marks the selected drive. Press <Enter> after completing your selection and return to the utility main menu.

6.2.6 Exiting the Intel® Rapid Storage Technology utility

To exit the utility:

1. From the utility main menu, select **5. Exit**, and then press <Enter>. The following warning message appears.



2. Press <Y> to exit or press <N> to return to the utility main menu.

6.2.7 Rebuilding the RAID



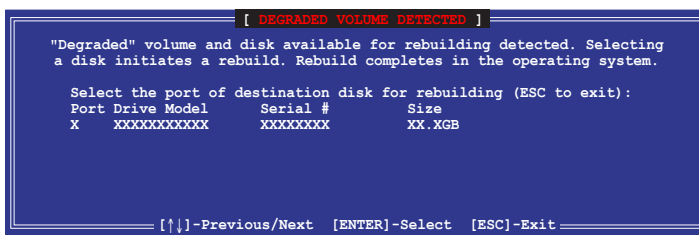
This option is only for the RAID 1 set.

Rebuilding the RAID with other non-RAID disk

If any of the SATA hard disk drives included in the RAID 1 array failed, the system displays the status of the RAID volume as “**Degraded**” during POST. You can rebuild the RAID array with other installed non-RAID disks.

To rebuild the RAID with other non-RAID disk:

1. At the prompt, press <Ctrl> + <I> to enter the Intel Rapid Storage Technology option ROM utility.
2. If there is a non-RAID SATA Hard Disk available, the utility will prompt to rebuild the RAID. Press <Enter>, and then use up/down arrow keys to select the destination disk or press <ESC> to exit.



Select a destination disk with the same size as the original hard disk.

- The utility immediately starts rebuilding after the disk is selected. The status of the degraded RAID volume is changed to “**Rebuild**”.

```

Intel(R) Rapid Storage Technology - Option ROM - 10.1.0.1008
Copyright(C) 2003-10 Intel Corporation. All Rights Reserved.

[ MAIN MENU ]
1. Create RAID Volume          3. Reset Disks to Non-RAID
2. Delete RAID Volume         4. Recovery Volume Options
5. Exit

[ DISK/VOLUME INFORMATION ]

RAID Volumes:
ID  Name      Level      Strip      Size      Status      Bootable
0   Volume0   RAID1(Mirror)  N/A      149.0GB   Rebuild     Yes
                                     * = Data is Encrypted

Physical Devices:
Port Drive Model      Serial #      Size      Type/Status (Vol ID)
1   ST3160812AS        9LS0F4HL     149.0GB   Member Disk (0)
2   ST3160812AS        3LS0JYL8     149.0GB   Member Disk (0)

Volumes with "Rebuild" status will be rebuilt within the operating system.

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

```

- Exit Intel Rapid Storage Technology and reboot the system.
- Under Microsoft® Windows OS, select **Start > Programs > Intel Rapid Storage > Intel Rapid Storage Console** or click the **Intel Rapid Storage Technology** tray icon to load the Intel Rapid Storage Manager utility.
- From the **View** menu, select **Advanced Mode** to display the details of the Intel Rapid Storage Console.
- From the **Volumes view** option, select **RAID volume** to view the rebuilding status. When finished, the status is changed to “**Normal**”.

Rebuilding the RAID with a new hard disk

If any of the SATA hard disk drives included in the RAID array failed, the system displays the status of the RAID volume as “**Degraded**” during POST. You may replace the disk drive and rebuild the RAID array.

To rebuild the RAID with a new hard disk:

- Remove the failed SATA hard disk and install a new SATA hard disk of the same specification into the same SATA Port.



Select a destination disk with the same size as the original hard disk.

- Reboot the system and then follow the steps in section **Rebuilding the RAID with other non-RAID disk**.

6.2.8 Setting the Boot array in the BIOS Setup Utility

You can set the boot priority sequence in the BIOS for your RAID arrays when creating multi-RAID using the Intel® Rapid Storage Technology.

To set the boot array in the BIOS:



Set at least one of the arrays bootable to boot from the hard disk.

1. Reboot the system and press to enter the BIOS setup utility during POST.
2. Go to the **Boot** menu and select the boot option priority.
3. Use up/down arrow keys to select the boot priority and press <Enter>. See section **5.7 Boot menu** for details.
4. From the **Exit** menu, select **Save Changes & Exit**, then press <Enter>.
5. When the confirmation window appears, select **Yes**, then press <Enter>.

6.3 LSI Corporation MPT Setup Utility

The LSI Corporation MPT Setup Utility is an integrated RAID solution that allows you to create the following RAID sets from SAS hard disk drives supported by the LSI 2008 controller: RAID 0 and RAID 1.



- You may use disks of different sizes in one volume; however, the size of the smallest disk determines the “logical” size of each member disk.
- DO NOT combine Serial ATA and SAS disk drives in one volume.



- The RAID setup screens shown in this section are for reference only and may not exactly match the items on your screen due to the controller version difference.
- The adapter name shown on the setup screens differs according to the installed SAS RAID card.
- Before requesting support from the ASUS Technical Support team, you have to take note of the MPTFW and MPTBIOS version for the SAS controller. After entering the SAS configuration utility, you can see below screen and identify the MPTFW and MPTBIOS version:
MPTFW version: 8.00.00.00-IR
MPTBIOS version: v7.07.00.00 (2010.04.30)

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter List Global Properties

Adapter      PCI   PCI   PCI   PCI   FW Revision   Status   Boot
              BUS  Dev  Fnc  Slot
LSI 2008     01   00   00   00   8.00.00.00-IR Enabled   0

Esc = Exit Menu      F1/Shift+1 = Help
Alt+N = Global Properties  -/+ = Alter Boot Order  Ins/Del = Alter Boot List
```

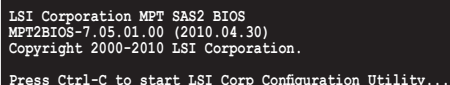
6.3.1 RAID 1 volume

The RAID 1 feature supports simultaneous mirrored volumes with two disks.

The RAID 1 feature supports hot swap capability, so when a disk in an RAID 1 volume fails, you can easily restore the volume, and the swapped disk is automatically re-mirrored.

To create a RAID 1 volume:

1. Turn on the system after installing all SAS hard disk drives.
2. During POST, press <Ctrl+C> to enter the SAS configuration utility.



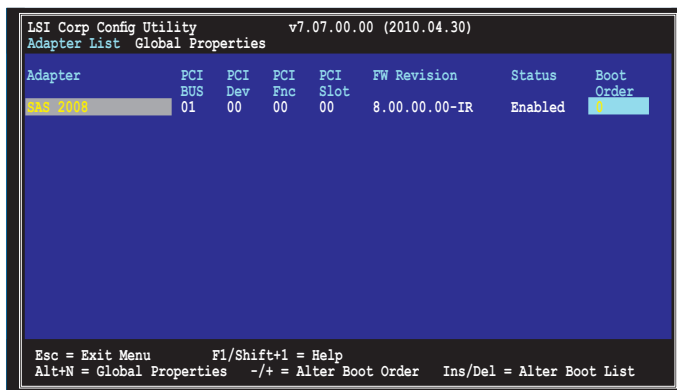
```
LSI Corporation MPT SAS2 BIOS
MPT2BIOS-7.05.01.00 (2010.04.30)
Copyright 2000-2010 LSI Corporation.

Press Ctrl-C to start LSI Corp Configuration Utility...
```



To avoid data loss, do not turn off the system when rebuilding.

3. The following screen appears. Select a channel and press <Enter> to enter the setup.



```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter List  Global Properties

Adapter      PCI   PCI   PCI   PCI   FW Revision   Status   Boot
             BUS  Dev  Fnc  Slot
SAS 1004    01   00   00   00   8.00.00.00-IR  Enabled   1

Esc = Exit Menu      F1/Shift+1 = Help
Alt+N = Global Properties  -/+ = Alter Boot Order  Ins/Del = Alter Boot List
```



The numbers of the channel depend on the controller.

4. The **Adapter Properties** screen appears.
Use the arrow keys to select **RAID Properties**, then press <Enter>.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter Properties -- SAS2008

Adapter                SAS 2008
PCI Slot               00
PCI Address (Bus/Dev)  01:00
MPT Firmware Revision  8.00.00.00-IR
SAS Address            500E0180:00010424
NVDATA Version         07.01
Status                 Enabled
Boot Order             0
Boot Support           Enabled (RAID & CC)

RAID Properties
RAID Topology
Advanced Adapter Properties

Esc = Exit Menu          F1/Shift+1 = Help
Enter = Select Item     -/+Enter = Change Item
```

5. The **Select New Volume Type** screen appears.
Use the arrow keys to select **Create RAID 1 Volume**, then press <Enter>.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Select New Volume Type -- SAS2008

Create RAID 1 Volume          Create a RAID 1 volume
                              consisting of 2 disks plus up to 2
                              optional hot spares. ALL DATA on
                              volume disks will be DELETED!

Create RAID 10 Volume         Create a RAID 1E or RAID 10 volume
                              consisting of 3 to 10 disks including up
                              to 2 optional hot spares. ALL DATA on
                              volume disks will be DELETED!

Create RAID 0 Volume          Create a RAID 0 volume consisting of
                              2 to 10 disks. ALL DATA on
                              volume disks will be DELETED!

Esc = Exit Menu          F1/Shift+1 = Help
Enter = Choose volume type to create
```

- The **Create New Volume** screen shows the disks you can add to make up the RAID 1 volume. Use the arrow key to select a disk, then move the cursor to the **RAID Disk** column. To include this disk in the array, press <+>, <->, or <Space>.

```

LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Create New Volume -- SAS2008

Volume Type:                    RAID 1
Volume Size(GB):                -----

Slot  Device Identifier          RAID  Drive   Pred   Size
Num   Num                       Disk   Status  Fail   (GB)
-----
0     0     ATA   ST3160812AS  E     No      149
1     1     ATA   ST3160812AS  E     No      149
2     2     ATA   ST3160812AS  E     No      149
3     3     ATA   ST3160812AS  E     No      149

Esc = Exit Menu          F1/Shift+1 = Help
SPACE/+/- = Select disk for volume      C = Create volume

```



By default, the **RAID Disk** field shows **No** before volume creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID volume.
- The disk is not large enough to mirror existing data on the primary drive.
- The disk is already part of another volume.

- Repeat step 6 to add the second disk to the volume.
- When done, press <C> to create the volume, then select **Save changes then exit this menu**.

```

Create and save new volume?
Cancel Exit
Save Changes then exit this menu
Load Changes then exit this menu
Exit the Configuration Utility and Reboot

```

- The utility creates the volume.

```

LSI Corp Config Utility          v7.07.00.00 (2010.04.30)

Processing...may take up to 1 minute
Creating RAID Volume...

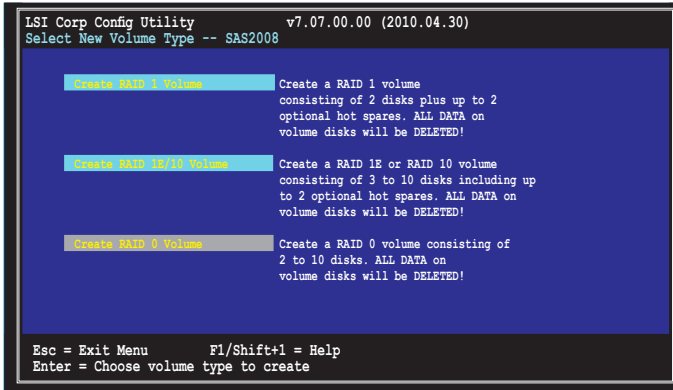
```

6.3.2 RAID 0 volume

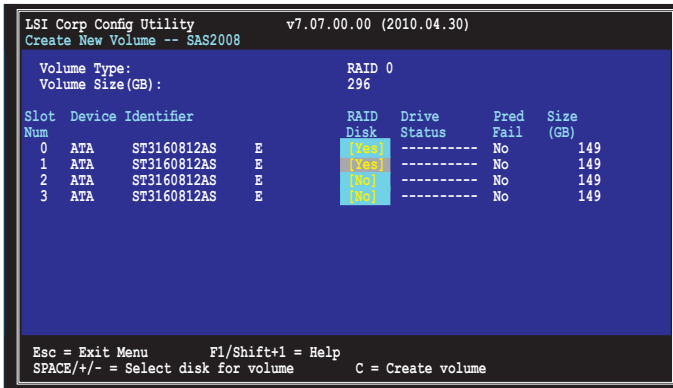
The RAID 0 feature supports volumes with two to ten disks. You may combine an RAID 0 volume with an RAID 1 or RAID 1E/10 volume.

To create a RAID 0 volume:

1. Follow steps 1–4 of the section **RAID 1 volume**.
2. The **Select New Volume Type** screen appears. Use the arrow keys to select **Create RAID 0 Volume**, then press <Enter>.



3. The **Create New Volume** screen shows the disks you can add to make up the RAID 0 volume. Use the arrow key to select a disk, then move the cursor to the **RAID Disk** column. To include this disk in the array, press <+>, <->, or <Space>.





By default, the **RAID Disk** field shows **No** before volume creation. This field is grayed out under the following conditions:

- The disk does not meet the minimum requirements for use in a RAID volume.
 - The disk is not large enough to mirror existing data on the primary drive.
 - The disk is already part of another volume.
-

4. Repeat step 3 to add the other disks to the volume.
5. When done, press <C> to create the volume, then select **Save changes then exit this menu.**

```
Create and save new volume?  
Save changes then exit this menu  
Reboot changes then exit this menu  
Exit the Configuration Utility and Reboot
```

6. The utility creates the volume.

```
LSI Corp Config Utility v7.07.00.00 (2010.04.30)  
  
Processing...may take up to 1 minute  
Creating RAID Volume...
```

6.3.3 Managing Arrays

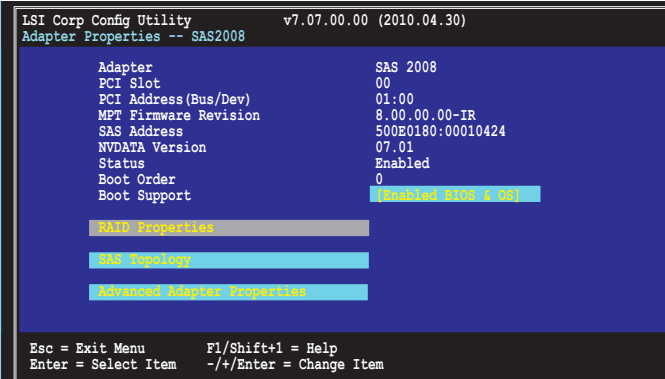
The LSI Corporation MPT Setup Utility allows you to perform other tasks related to configuring and maintaining RAID volumes.

Refer to this section to view volume properties, manage the hot spare disk, proceed with the volume consistency check, activate the volume, delete the volume, and expand the volume capacity.

Viewing volume properties

To view volume properties:

1. On the main menu, select **RAID Properties**.



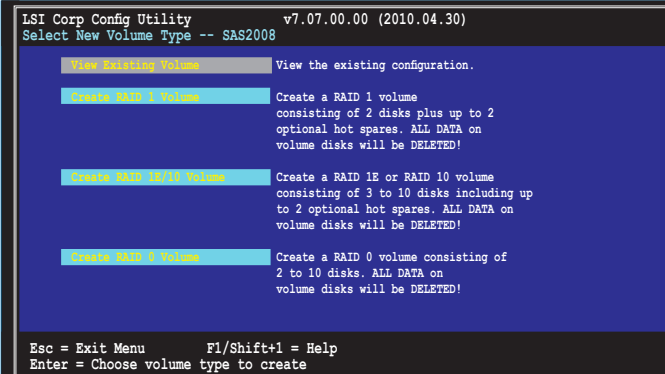
```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter Properties -- SAS2008

Adapter                SAS 2008
PCI Slot               00
PCI Address (Bus/Dev)  01:00
MPT Firmware Revision  8.00.00.00-IR
SAS Address            500E0180:00010424
NVDATA Version        07.01
Status                 Enabled
Boot Order             0
Boot Support           Enabled With a Key

RAID Properties
RAID Topology
Advanced Adapter Properties

Esc = Exit Menu          F1/Shift+1 = Help
Enter = Select Item     -/+/Enter = Change Item
```

2. On the next screen that appears, select **View Existing Volume**.



```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Select New Volume Type -- SAS2008

View Existing Volume      View the existing configuration.
Create RAID 1 Volume      Create a RAID 1 volume
                           consisting of 2 disks plus up to 2
                           optional hot spares. ALL DATA on
                           volume disks will be DELETED!
Create RAID 10/10 Stripes Create a RAID 1E or RAID 10 volume
                           consisting of 3 to 10 disks including up
                           to 2 optional hot spares. ALL DATA on
                           volume disks will be DELETED!
Create RAID 0 Volume      Create a RAID 0 volume consisting of
                           2 to 10 disks. ALL DATA on
                           volume disks will be DELETED!

Esc = Exit Menu          F1/Shift+1 = Help
Enter = Choose volume type to create
```

- The **View Volume** screen appears. Here you can view properties of the RAID volume(s) created. If you have configured a hot spare, it will also be listed. If you created more than one volume, you may view the next volume by pressing <Alt+N>.

```

LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
View Volume -- SAS2008

Volume                          1 of 1
Identifier                       LSI      Logical Volume 3000
Type                             RAID 0
Size (GB)                        296
Status                           Optimal
Task                             None

Manage Volume

Slot  Device Identifier          RAID  Hot  Drive  Pred  Size
Num  ATA  ST3160812AS  E    Disk Spr Status Fail (GB)
0    ATA  ST3160812AS  E    Yes No  Ok   No   148
1    ATA  ST3160812AS  E    Yes No  Ok   No   148

Esc = Exit Menu      F1/Shift+1 = Help
Enter=Select Item   Alt+N=Next Volume

```

Managing hot spares

You may configure one disk as a global hot spare to protect critical data on the RAID 1. You may create the hot spare disk at the same time you create the RAID 1 volume. Refer to this section when adding a hot spare disk on an existing volume.



If a disk on an RAID 1 volume fails, the utility automatically rebuilds the failed disk data on the hot spare. When the failed disk is replaced, the utility assigns the replacement as the new hot spare.

To create a hot spare

1. Follow steps 1–3 of the section **Viewing volume properties**.
2. From the **View Volume** screen, select **Manage Volume**, then press <Enter>.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
View Volume -- SAS2008

Volume                          1 of 1
Identifier                       LSI          Logical Volume 3000
Type                             RAID 1
Size(GB)                         148
Status                           Optimal
Task                             None

Manage Volume

Slot  Device  Identifier  RAID  Hot  Drive  Pred  Size
Num   ATA   ST3160812AS E   Disk Spr  Status Fail (GB)
0     ATA   ST3160812AS E   Yes  No   Primary No   148
1     ATA   ST3160812AS E   Yes  No   Secondary No  148

Esc = Exit Menu      F1/Shift+1 = Help
Enter=Select Item   Alt+N=Next Volume
```

3. From the **Manage Volume** screen, select **Manage Hot Spares**, then press <Enter>.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Identifier                       LSI          Logical Volume 3000
Type                             RAID 1
Size(GB)                         148
Status                           Optimal
Task                             None

Manage Hot Spares
Consistency Check
Activate Volume
Relocate Volume
Online Capacity Expansion

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item
```

- Use the arrow key to select the disk you would like to configure as hot spare, then move the cursor to the **Hot Spr** column. Press <+>, <->, or <Space>. Press <C> to commit the changes, then select **Save changes then exit this menu**. The **Drive Status** column field now shows **Hot Spare**.

```

LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
View Volume -- SAS2008

Volume                          1 of 1
Identifier                       LSI          Logical Volume 3000
Type                             RAID 1
Size (GB)                        148
Status                           Optimal
Task                              None

Manage Volume

Slot  Device Identifier          RAID  Hot  Drive  Pred  Size
Num   Num                       Disk Spr Status Fail (GB)
0     0   ATA   ST3160812AS   E     Yes  No   Primary No   148
1     1   ATA   ST3160812AS   E     Yes  No   Secondary No  148
2     2   ATA   ST3160812AS   E     No   Yes  Hot Spare No  148

Esc = Exit Menu      F1/Shift+1 = Help
Enter=Select Item   Alt+N=Next Volume

```

Running a consistency check

To run a consistency check on the RAID volume:

- Follow steps 1–3 of the section **Viewing volume properties** and step 2 of the section **Managing hot spares**.
- From the **Manage Volume** screen select **Consistency Check**, then press <Enter>.
- The below screen appears. Press <Y> to start the consistency check on the RAID volume.

```

LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Consistency Check of volume may take several hours to complete.

      Y      Start volume consistency check and exit this menu
      N      Abandon volume consistency check and exit this menu

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item

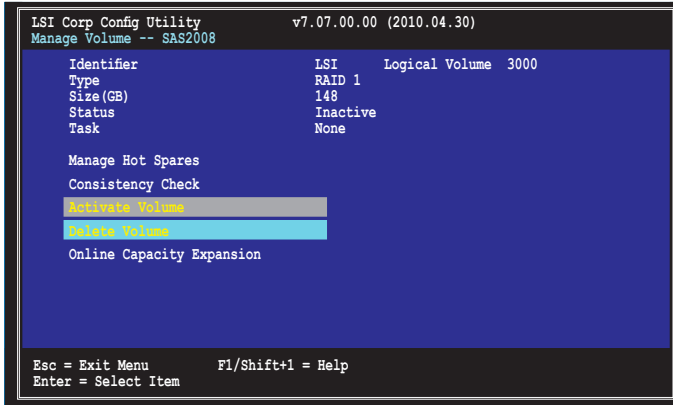
```

Activating a volume

If a volume is removed from one controller/computer or moved to another, the volume is considered inactive. When you add the volume back to the system, you may reactivate the volume.

To activate the volume:

1. From the **Manage Volume** screen, select **Activate Volume**, then press <Enter>.



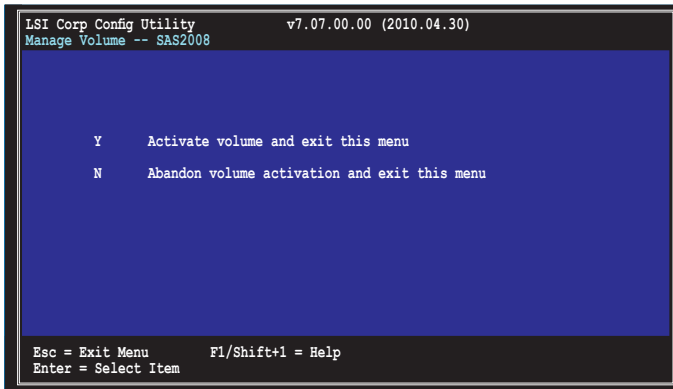
```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Identifier          LSI          Logical Volume 3000
Type               RAID 1
Size(GB)           148
Status             Inactive
Task               None

Manage Hot Spares
Consistency Check
Activate Volume
Deactivate Volume
Online Capacity Expansion

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item
```

2. The below screen appears. Press <Y> to activate a RAID volume.



```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Y   Activate volume and exit this menu
N   Abandon volume activation and exit this menu

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item
```

Deleting a volume



- You cannot recover lost data if you delete a volume. Ensure you back up important data before deleting a volume.
- If you delete a RAID 1 volume, the data is preserved on the primary disk.

To delete a volume

1. From the **Manage Volume** screen, select **Delete Volume**, then press <Enter>.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Identifier                      LSI          Logical Volume 3000
Type                            RAID 1
Size (GB)                       148
Status                           Optimal
Task                             None

Manage Hot Spares
Consistency Check
Delete Volume
Rebuild Volume
Online Capacity Expansion

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item
```

2. The below screen appears. Press <Y> to delete, or <N> to cancel.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

WARNING! All data will be lost when the volume is deleted!

      Y      Delete volume and exit to Adapter Properties
      N      Abandon volume deletion and exit this menu

Esc = Exit Menu      F1/Shift+1 = Help
Enter = Select Item
```

Expanding the volume capacity

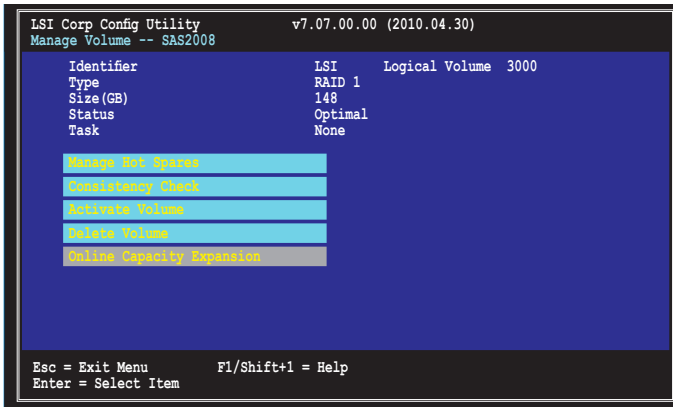
You may use two new hard disk drives to replace the existing one, and expand the capacity of the RAID volume.



- Please complete background initialization for the existing RAID volume before start expanding the volume capacity.
- The capacity of the new hard disk drives should be 50GB larger than the existing one.
- This function is available only when the RAID 1 volume is optimal.

To expand the capacity of the currently displayed RAID volume:

1. From the **Manage Volume** screen, select **Online Capacity Expansion**, then press <Enter>.



The screenshot shows the LSI Corp Config Utility interface. At the top, it displays 'LSI Corp Config Utility v7.07.00.00 (2010.04.30)' and 'Manage Volume -- SAS2008'. Below this, a table lists volume details: Identifier (LSI), Type (RAID 1), Size (GB) (148), Status (Optimal), and Task (None). A menu of options is shown below the table, with 'Online Capacity Expansion' highlighted in yellow. At the bottom, there are instructions: 'Esc = Exit Menu', 'F1/Shift+1 = Help', and 'Enter = Select Item'.

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Manage Volume -- SAS2008

Identifier          LSI          Logical Volume  3000
Type                RAID 1
Size (GB)          148
Status              Optimal
Task                None

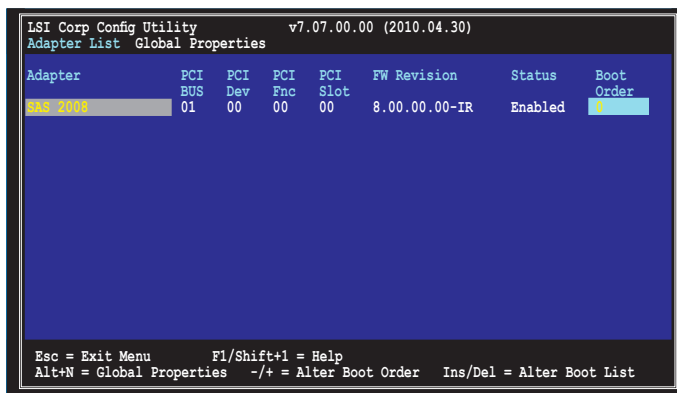
Manage Hot Spares
Consistency Check
Activate Volume
Delete Volume
Online Capacity Expansion

Esc = Exit Menu          F1/Shift+1 = Help
Enter = Select Item
```

2. Press <Y> to proceed with the capacity expansion.

6.3.4 Global Properties

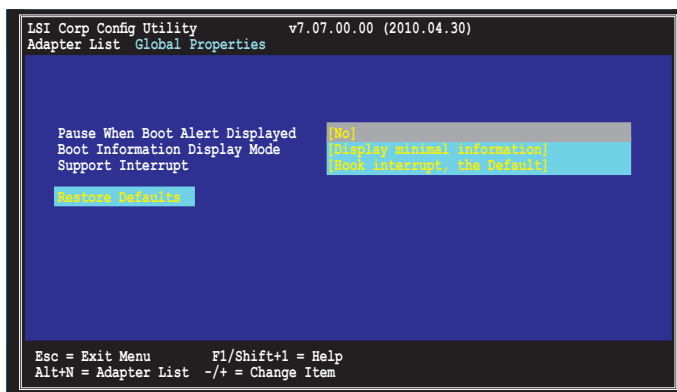
From the **Adapter List** screen, press <Alt+N> to enter **Global Properties** menu. From the menu you may change related settings.



Pause When Boot Alert Displayed

Sets whether to pause or not when the boot alert displays.

Configuration options: [Yes] [No]



Boot Information Display Mode

Sets the disk information display mode.

Configuration options: [Display adapters & installed devices]

[Display adapters only] [Display adapters and all devices]

[Display minimal information]

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter List  Global Properties

Pause When Boot Alert Displayed  [No]
Boot Information Display Mode     [Display minimal information]
Support Interrupt                 [Hook interrupt, the default]

Restore Defaults

Esc = Exit Menu      F1/Shift+1 = Help
Alt+N = Adapter List  -/+ = Change Item
```

Support Interrupt

Configuration options: [Hook interrupt, the Default] [Bypass interrupt hook]

```
LSI Corp Config Utility          v7.07.00.00 (2010.04.30)
Adapter List  Global Properties

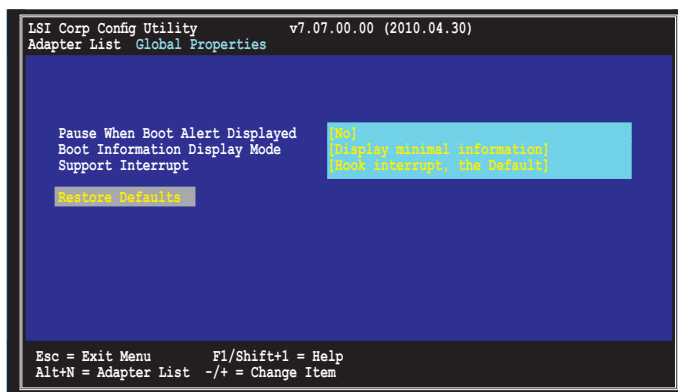
Pause When Boot Alert Displayed  [No]
Boot Information Display Mode     [Display minimal information]
Support Interrupt                 [Hook interrupt, the default]

Restore Defaults

Esc = Exit Menu      F1/Shift+1 = Help
Alt+N = Adapter List  -/+ = Change Item
```

Restore Defaults

This option allows you to discard the selections you made and restore the system defaults.



Chapter 7

This chapter provides instructions for installing the necessary drivers for different system components.



Driver installation

7.1 RAID driver installation

After creating the RAID sets for your server system, you are now ready to install an operating system to the independent hard disk drive or bootable array. This part provides the instructions on how to install the RAID controller drivers during OS installation.

7.1.1 Creating a RAID driver disk



The system does not include a floppy drive. You have to use a USB floppy drive when creating a SATA RAID driver disk.

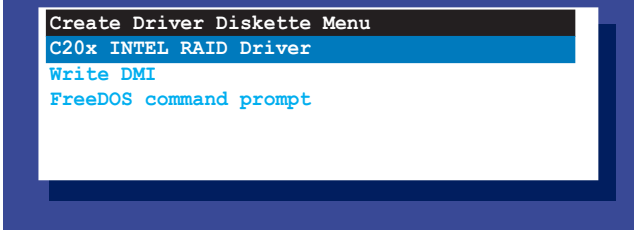


If you have created RAID sets with the LSI Software RAID configuration utility, the boot priority of the SATA optical disk drive has to be manually adjusted. Otherwise, the system will not boot from the connected SATA ODD.

A floppy disk with the RAID driver is required when installing Windows® operating system on a hard disk drive that is included in a RAID set. You can create a RAID driver disk in DOS (using the Makedisk application in the support DVD).

To create a RAID driver disk in DOS environment

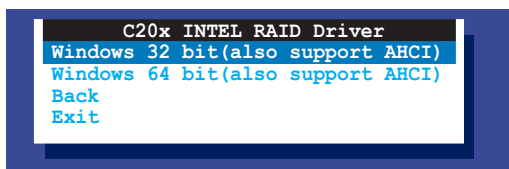
1. Place the motherboard support DVD in the optical drive.
2. Restart the computer, and then enter the BIOS Setup.
3. Select the optical drive as the first boot priority to boot from the support DVD. Save your changes, and then exit the BIOS Setup.
4. Restart the computer. The Makedisk menu appears.



```
Create Driver Diskette Menu
C20x INTEL RAID Driver
Write DMI
FreeDOS command prompt
```

5. Use the arrow keys to select the type of RAID driver disk you want to create and press <Enter> to enter the sub-menu.

C20x INTEL RAID Driver



6. Locate the RAID driver and place a blank, high-density floppy disk to the floppy disk drive.
7. Press <Enter>.
8. Follow screen instructions to create the driver disk.

To create a RAID driver disk in Windows® environment

1. Start Windows®.
2. Place the motherboard support DVD into the optical drive.



If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file **ASSETUP.EXE** from the **BIN** folder. Double-click the **ASSETUP.EXE** to run the support DVD.

3. Go to the **Make disk** menu, and then select the type of RAID driver disk you want to create.
4. Insert a floppy disk into the USB floppy disk drive.
5. Follow succeeding screen instructions to complete the process.



Write-protect the floppy disk to avoid computer virus infection.

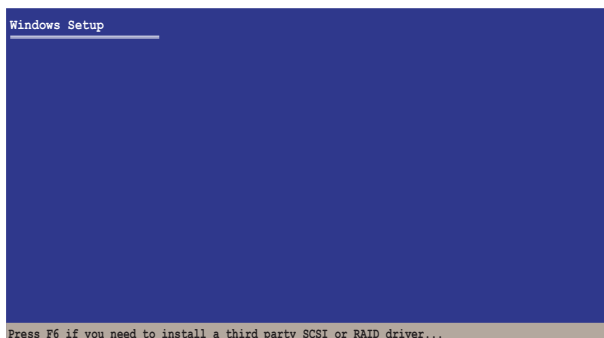
7.1.2 Installing the RAID controller driver

Windows® Server OS

During Windows® Server OS installation

To install the RAID controller driver when installing Windows® Server OS:

1. Boot the computer using the Windows® Server installation DVD. The Windows® Server OS Setup starts.

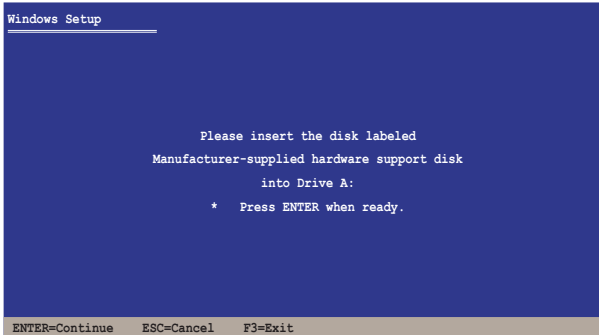


2. Press <F6> when the message "Press F6 if you need to install a third party SCSI or RAID driver..." appears at the bottom of the screen.
3. When prompted, press <S> to specify an additional device.



No, then

4. Insert the RAID driver disk you created earlier to the floppy disk drive, then press <Enter>.



rl>
Jser

5. Select the RAID controller driver you need from the list, and then press <Enter>.
6. The Windows® Setup loads the RAID controller drivers from the RAID driver disk. When the next screen appears, press <Enter> to continue installation.
7. Setup then proceeds with the OS installation. Follow screen instructions to continue.

To an existing Windows® Server OS

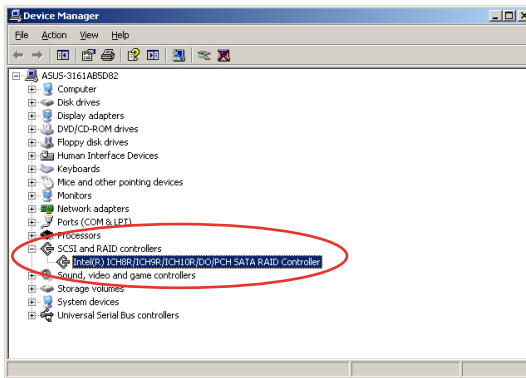
To install the RAID controller driver on an existing Windows® Server OS

1. Restart the computer, and then log in with **Administrator** privileges.
2. Windows® automatically detects the RAID controller and displays a **New Hardware Found** window. Click **Cancel**.
3. Right-click the **My Computer** icon on the Windows® desktop, and then select **Properties** from the menu.
4. Click the **Hardware** tab, and then click the **Device Manager** button to display the list of devices installed in the system.
5. Right-click the **RAID controller** item, then select **Properties**.
6. Click the **Driver** tab, and then click the **Update Driver** button.
7. The **Upgrade Device Driver Wizard** window appears. Click **Next**.
8. Insert the RAID driver disk you created earlier to the USB floppy disk drive.
9. Select the option **Install the software automatically (Recommended)**, and then click **Next**.
10. The wizard searches the RAID controller drivers. When found, click **Next** to install the drivers.
11. Click **Finish** after the driver installation is done.

mn

To verify the RAID controller driver installation:

1. Right-click the **My Computer** icon on the Windows® desktop, and then select **Properties** from the menu.
2. Click the **Hardware** tab, and then click the **Device Manager** button.
3. Click the “+” sign before the item **SCSI and RAID controllers**, and then the **Intel(R) ICH8R/ICH9R/ICH10R/DO/PCH SATA RAID Controller** item should appear.



The screen differs based on the controller.

4. Right-click the **RAID controller** driver item, and then select **Properties** from the menu.
5. Click the **Driver** tab, and then click the **Driver Details** button to display the RAID controller drivers.
6. Click **OK** when finished.

7.2 Intel® chipset device software installation

This section provides the instructions on how to install the Intel® chipset device software on the system.

You need to manually install the Intel® chipset device software on a Windows operating system.

To install the Intel® chipset device software:

1. Restart the computer, and then log on with **Administrator** privileges.
2. Insert the motherboard/system support DVD to the optical drive. The support DVD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file **ASSETUP.EXE** from the **BIN** folder. Double-click the **ASSETUP.EXE** to run the support DVD.

3. Click the item **Intel Chipset Device Software** from the menu.



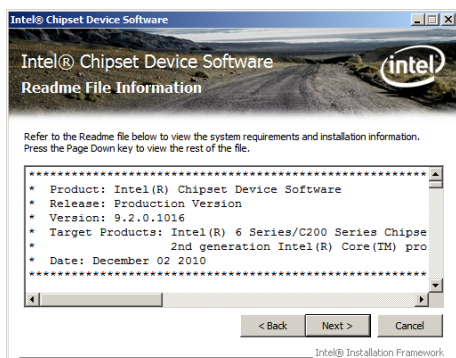
4. The **Intel(R) Chipset Device Software** window appears. Click **Next** to start installation.



5. Select **Yes** to accept the terms of the **License Agreement** and continue the process.



6. Read the **Readme File Information** and press **Next** to continue the installation.



7. After completing the installation, click **Finish** to complete the setup process.



7.3 LAN driver installation

This section provides the instructions on how to install the Intel® Gigabit LAN controller drivers on the system.

You need to manually install the LAN controller driver on a Windows® operating system.

To install the LAN controller drivers:

1. Restart the computer, and then log on with **Administrator** privileges.
2. Insert the motherboard/system support DVD to the optical drive. The support DVD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



- Windows® automatically detects the LAN controllers and displays a New Hardware Found window. Click **Cancel** to close this window.
- If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file **ASSETUP.EXE** from the **BIN** folder. Double-click the **ASSETUP.EXE** to run the DVD.

3. Click the **Intel® PRO/1000 Gigabit Adapters Driver** to begin installation.



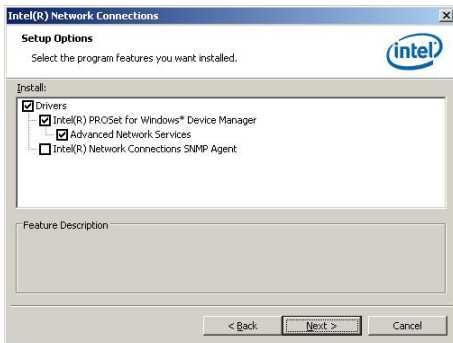
4. Click **Next** when the **Intel(R) Network Connections–InstallShield Wizard** window appears.



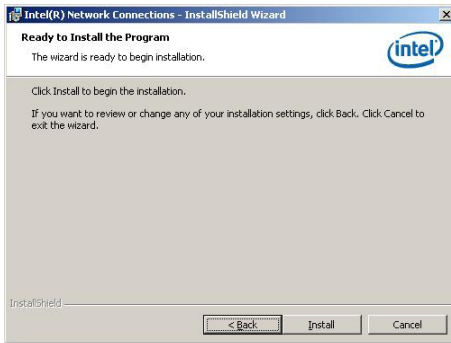
5. Toggle **I accept the terms in the license agreement** and click **Next** to continue.



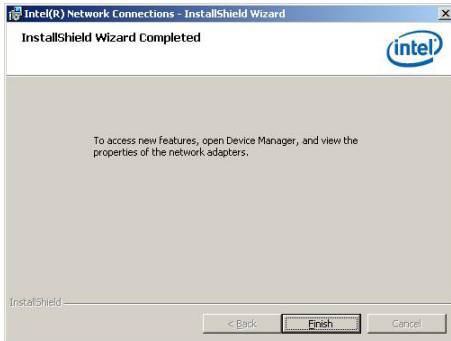
6. Click the **Intel(R) PROSet for Windows Device Manager** box, and then click **Next** to start the installation.



7. Follow the screen instructions to complete installation.



8. When finished, press **Finish** to continue.



7.4 VGA driver installation

This section provides the instructions on how to install the ASPEED Video Graphics Adapter (VGA) driver.

You need to manually install the ASPEED VGA driver on a Windows® operating system.

To install the ASPEED VGA driver:

1. Restart the computer, and then log on with **Administrator** privileges.
2. Insert the motherboard/system support DVD to the optical drive. The support DVD automatically displays the **Drivers** menu if Autorun is enabled in your computer.

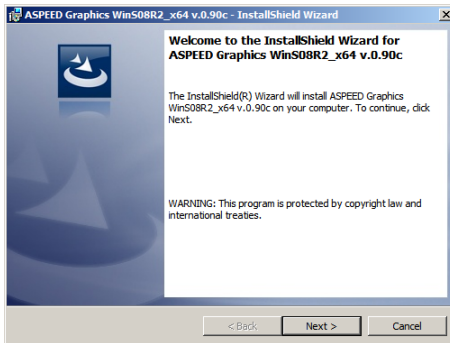


If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file **ASSETUP.EXE** from the **BIN** folder. Double-click the **ASSETUP.EXE** to run the support DVD.

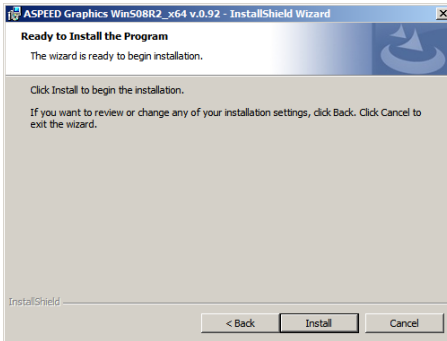
3. Click the **ASPEED AST2050/ AST1100 Display Driver** to begin installation.



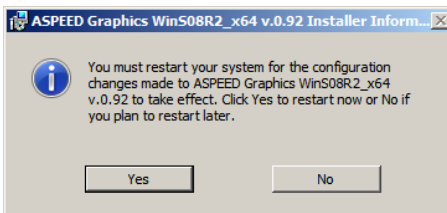
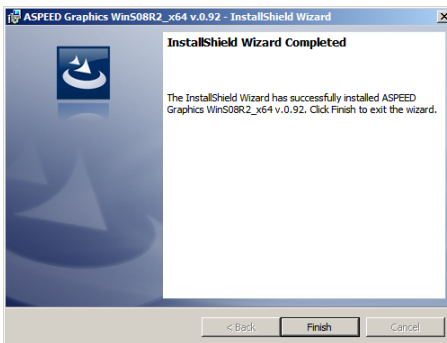
4. Click **Next** to start the installation.



5. To allow the system to update the VGA driver, follow the steps shown in the next few windows, and click **Next** when finished.
 - a. **Accept** the terms in the license agreement.
 - b. Fill in **User Name** and **Organization**. (optional)
 - c. Select a setup type.
6. Click **Install** to begin the installation.



7. When the installation completes, click **Finish** and select **Yes** to restart your computer for the configuration changes to take effect.



7.5 Management applications and utilities installation

The support DVD that came with the motherboard package contains the drivers, management applications, and utilities that you can install to avail all motherboard features.



The contents of the support DVD are subject to change at any time without notice. Visit the ASUS website (www.asus.com) for updates.

7.5.1 Running the support DVD

Place the support DVD to the optical drive. The DVD automatically displays the Drivers menu if Autorun is enabled in your computer.



If Autorun is NOT enabled in your computer, browse the contents of the support DVD to locate the file **ASSETUP.EXE** from the **BIN** folder. Double-click the **ASSETUP.EXE** to run the support DVD.

7.5.2 Drivers menu

The Drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

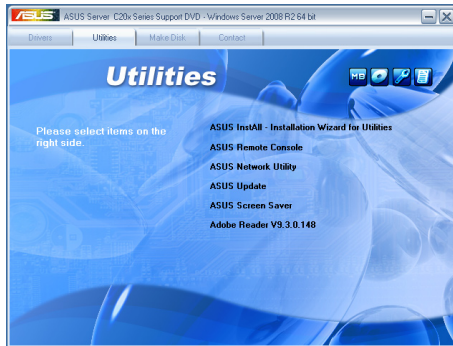


The screen display and driver options vary under different operating system versions.



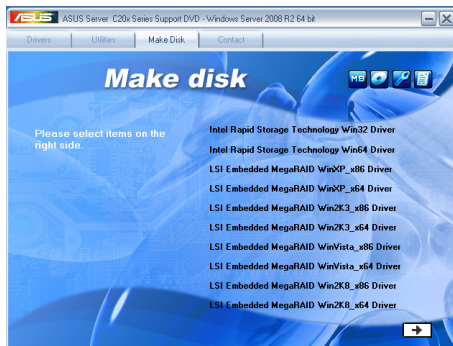
7.5.3 Utilities menu

The Utilities menu displays the software applications and utilities that the motherboard supports. Click an item to install.



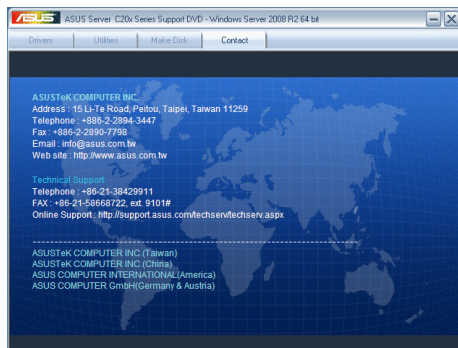
7.5.4 Make disk menu

The Make disk menu contains items to create the Intel RAID and LSI MegaRAID driver disks.



7.5.5 Contact information

Click the Contact tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.



ASUS contact information

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E-mail info@asus.com.tw
Web site <http://www.asus.com.tw>

Technical Support

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Fax +86-21-58668722 ext: 9101
Online Support <http://support.asus.com/techserv/techserv.aspx>

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Online Support <http://support.asus.com/techserv/techserv.aspx>

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Technical Support

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ASUS contact information

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Technical Support

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General support +1-812-282-2787
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Online contact <http://www.asus.de/sales>

Technical Support

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Support Fax +49-2102-959911
Online support <http://support.asus.com/techserv/techserv.aspx>

* EUR 0.14/minute from a German fixed landline; EUR 0.42/minute from a mobile phone.