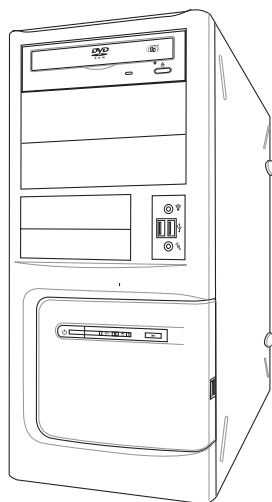




BA5190/AS-D900

ASUS PC

User Manual



E4638

First Edition V1

April 2009

Copyright © 2009 ASUSTeK Computer Inc. All Rights Reserved.

No part of this manual, including the products and software described in it, may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form or by any means, except documentation kept by the purchaser for backup purposes, without the express written permission of ASUSTeK Computer Inc. ("ASUS").

Product warranty or service will not be extended if: (1) the product is repaired, modified or altered, unless such repair, modification or alteration is authorized in writing by ASUS; or (2) the serial number of the product is defaced or missing.

ASUS PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OR CONDITIONS OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL ASUS, ITS DIRECTORS, OFFICERS, EMPLOYEES OR AGENTS BE LIABLE FOR ANY INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES (INCLUDING DAMAGES FOR LOSS OF PROFITS, LOSS OF BUSINESS, LOSS OF USE OR DATA, INTERRUPTION OF BUSINESS AND THE LIKE), EVEN IF ASUS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES ARISING FROM ANY DEFECT OR ERROR IN THIS MANUAL OR PRODUCT.

SPECIFICATIONS AND INFORMATION CONTAINED IN THIS MANUAL ARE FURNISHED FOR INFORMATIONAL USE ONLY, AND ARE SUBJECT TO CHANGE AT ANY TIME WITHOUT NOTICE, AND SHOULD NOT BE CONSTRUED AS A COMMITMENT BY ASUS. ASUS ASSUMES NO RESPONSIBILITY OR LIABILITY FOR ANY ERRORS OR INACCURACIES THAT MAY APPEAR IN THIS MANUAL, INCLUDING THE PRODUCTS AND SOFTWARE DESCRIBED IN IT.

Products and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

ASUS contact information

ASUSTeK Computer Inc.

Address	15 Li-Te Road, Peitou, Taipei, Taiwan 11259
Telephone	+886-2-2894-3447
Fax	+886-2-2890-7798
E-mail	info@asus.com.tw
Web site	www.asus.com.tw

Technical Support

Telephone	+86-21-38429911
Online support	support.asus.com

ASUS Computer International (America)

Address	800 Corporate Way, Fremont, CA 94539, USA
Telephone	+1-510-739-3777
Fax	+1-510-608-4555
Web site	usa.asus.com

Technical Support

Telephone	+1-812-282-2787
Support fax	+1-812-284-0883
Online support	support.asus.com

ASUS Computer GmbH (Germany and Austria)

Address	Harkort Str. 21-23, D-40880 Ratingen, Germany
Fax	+49-2102-959911
Web site	www.asus.de
Online contact	www.asus.de/sales

Technical Support

Telephone (Component)	+49-1805-010923
Telephone (System/Notebook/Eee/LCD)	+49-1805-010920
Support Fax	+49-2102-9599-11
Online support	support.asus.com

Contents

Notices.....	vii
Safety information	viii
General precautions	ix
About this guide	x
System package contents.....	xii

Chapter 1: System introduction

1.1	Front panel.....	1-2
1.2	Rear panel.....	1-3
1.3	Connecting to the keyboard and the mouse	1-4
1.4	Connecting to other peripheral devices	1-4

Chapter 2: Getting started

2.1	Installing an operating system	2-2
2.2	Powering your system.....	2-2
2.3	Support DVD information	2-3
2.3.1	Running the Support DVD	2-3
2.3.2	Drivers menu.....	2-4
2.3.3	Utilities menu	2-5
2.3.4	Make disk menu.....	2-6
2.3.5	Manual menu	2-7
2.3.6	ASUS contact information.....	2-7
2.3.7	Other information	2-8
2.4	ASUS AI Manager	2-10
2.4.1	Installing AI Manager	2-10
2.4.2	Launching AI Manager	2-10
2.4.3	AI Manager Quick Bar.....	2-10
2.4.4	Main	2-11
2.4.5	My favorites.....	2-15
2.4.6	Support	2-16
2.4.7	Information	2-16
2.5	ASUS MyLogo 2™	2-17
2.6	ASUS EPU-6 Engine	2-19
2.7	ASUS Express Gate	2-23
2.8	Realtek Teaming Utility	2-31

2.9	RAID configurations	2-35
2.9.1	RAID definitions	2-35
2.9.2	Installing Serial ATA hard disks	2-36
2.9.3	Intel® RAID configurations.....	2-36
2.9.4	Marvel® SAS RAID configurations.....	2-44
2.10	Creating a RAID driver disk.....	2-53
2.10.1	Creating a RAID driver disk without entering the OS	2-53
2.10.2	Creating a RAID driver disk in Windows®.....	2-53
2.11	Loading the initial OS default settings.....	2-55
2.12	Recovery DVD	2-55
2.12.1	Recovering a Windows® XP OS:.....	2-55
2.12.2	Recovering a Windows® Vista OS:.....	2-56

Chapter 3: BIOS setup

3.1	Managing and updating your BIOS	3-2
3.1.1	ASUS Update utility	3-2
3.1.2	ASUS EZ Flash 2 utility.....	3-5
3.1.3	Creating a bootable floppy disk.....	3-6
3.1.4	AFUDOS utility	3-7
3.1.5	ASUS CrashFree BIOS 3 utility	3-9
3.2	BIOS setup program	3-10
3.2.1	BIOS menu screen.....	3-11
3.2.2	Menu bar	3-11
3.2.3	Navigation keys.....	3-11
3.2.4	Menu items	3-12
3.2.5	Sub-menu items.....	3-12
3.2.6	Configuration fields	3-12
3.2.7	Pop-up window	3-12
3.2.8	Scroll bar	3-12
3.2.9	General help	3-12
3.3	Main menu	3-13
3.3.1	System Time	3-13
3.3.2	System Date	3-13
3.3.3	Language	3-13
3.3.4	SATA 1-6	3-14

3.3.5	Storage Configuration	3-15
3.3.6	AHCI Configuration	3-16
3.3.7	System Information	3-17
3.4	Advanced menu	3-18
3.4.1	CPU Configuration	3-18
3.4.2	Chipset	3-21
3.4.3	Onboard Device Configuration	3-22
3.4.4	USB Configuration	3-23
3.4.5	PCIePnP	3-24
3.5	Power menu	3-25
3.5.1	Suspend Mode	3-25
3.5.2	Repost Video on S3 Resume	3-25
3.5.3	ACPI 2.0 Support	3-25
3.5.4	ACPI APIC Support	3-25
3.5.5	APM Configuration	3-26
3.5.6	Hardware Monitor	3-27
3.6	Boot menu	3-28
3.6.1	Boot Device Priority	3-28
3.6.2	Boot Settings Configuration	3-29
3.6.3	Security	3-30
3.7	Tools menu	3-32
3.7.1	ASUS EZ Flash 2	3-32
3.7.2	Express Gate	3-33
3.7.3	ASUS O.C. Profile	3-34
3.7.4	Ai Net 2	3-35
3.8	Exit menu	3-36
 Appendix: G.P. Diagnosis card		
A.1	G.P. Diagnosis card installation	A-2
A.1.1	G.P. Diagnosis card layout	A-2
A.1.2	Installing G.P. Diagnosis card	A-2
A.1.3	G.P. Diagnosis card check codes	A-3

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 B 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.



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, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at <http://green.asus.com/english/REACH.htm>.

Safety information

Electrical safety

- To prevent electric shock hazard, disconnect the power cable from the electric outlet before relocating the system.
- When adding or removing any devices to or from the system, contact a qualified service technician or your retailer. Ensure that all the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all the power cables from the existing system before you add or remove a device to or from the system.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing devices into the system, carefully read all the documentation that comes with the package.
- Before using the product, ensure that all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets, and circuitry.
- Avoid dust, humidity, and extreme temperatures. Do not place this product in a location where it may get wet. Place this product on a flat and stable surface.
- When using this product, do not block any air inlet/outlet on the chassis.
- We recommend that you use this product in environments with an ambient temperature below 40°C.
- If you encounter technical problems with this product, contact a qualified service technician or your retailer.

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.

VORSICHT: Explosionsgefahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlenem ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

LASER PRODUCT WARNING

CLASS 1 LASER PRODUCT

General precautions

Before using the ASUS BA5190/AS-D900 Desktop PC, carefully read the general precautions below. Improper operation could lead to personal injury or damage to the product.

- Before using this product, ensure that all components are correctly installed and all cables are correctly connected. If you detect any damage, contact your dealer immediately.
- Avoid dust and extreme temperatures. Do not place this product in a location where it may receive direct sunlight.
- Do not place this product in a location where it may get wet.
- Do not block the air vents on the chassis. Always provide proper ventilation for this product.
- Before turning on the system, check if all the peripherals are correctly connected.
- To avoid short circuits, keep scraps, screws, and threads away from connectors, slots, sockets, and circuitry.
- Do not insert any object or spill liquid into the air vents on the chassis.
- If this product has been used for a long time, avoid direct contact with the heatsinks and the surfaces of IC as they may become very warm and hot. Check if the system receives proper ventilation.
- Before you add or remove a peripheral device to or from the system, ensure that you unplugged the system from the power source.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Do not service this product yourself.
- Though the system casing is elaborately designed to protect users from scratches, be careful with those sharp tips and edges. Put on a pair of gloves before you remove or replace the system cover.
- Unplug this product from the power source when it is left unused for a long period of time.
- We recommend that you use this product in environments with an ambient temperature below 40°C.
- Use this product only with the correct voltage as instructed by the manufacturer.
- To prevent fire or electric shock, do not overload power outlets and extension cords.
- Warning: Ensure that you replace the battery with a correct type; otherwise, it may cause an explosion hazard.

About this guide

Audience

This guide provides general information about ASUS BA5190/AS-D900 Desktop PC and instructions on how to use the Support DVD that comes with the system package.

How this guide is organized

This guide contains the following parts:

Chapter 1: System introduction

This chapter gives a general description of ASUS BA5190/AS-D900 Desktop PC. The chapter lists the system features, including introduction on the front and rear panels.

Chapter 2: Getting started

This chapter helps you power up the system and install drivers and utilities from the Support DVD.

Chapter 3: BIOS setup

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

Appendix: G.P. Diagnosis card

This chapter gives an introduction on the G.P. Diagnosis card that provides quick system checks and displays errors on the LED display.

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this guide.



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 aid in completing a task.

Where to find more information

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

1. **ASUS Websites**

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

2. **Optional Documentation**

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

System package contents

Check your BA5190/AS-D900 system package for the following items.

Standard items	
1.	ASUS BA5190/AS-D900 Desktop PC with
	• ASUS Desktop x1
	• Mouse x1
	• Keyboard x1
2.	Cables
	• Power cord x1
3.	Accessories
	• Mouse pad x1
4.	DVD
	• Support DVD x1
5.	Documentation
	• User Manual x1
	• Warranty card x1



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

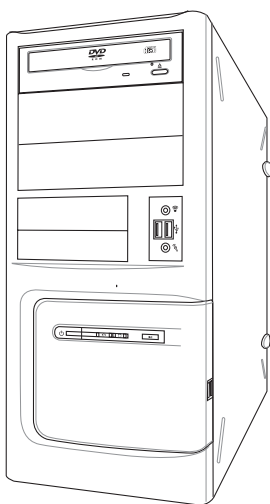
Optional items	
1.	Optical disk drive (ODD)
2.	Storage card reader
3.	LAN cable
4.	Power strip



- Optional items are not included in the system package. They are purchased separately.
- Specifications depend on the desktop PC you purchased. Check with your supplier for the exact specifications.

Chapter 1

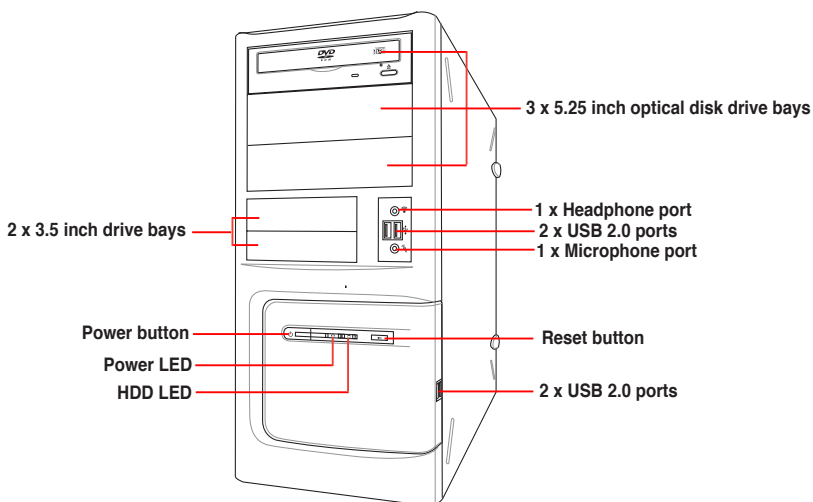
This chapter gives a general description of the desktop PC. The chapter lists the system features including introduction on the front and rear panels.



System introduction

1.1 Front panel

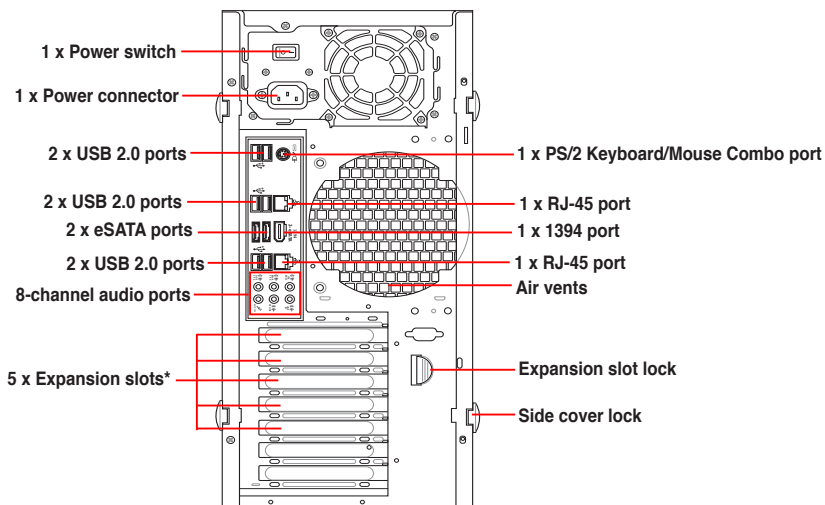
The ASUS BA5190/AS-D900 Desktop PC includes an ASUS motherboard, a power supply unit, a front panel, and a rear panel. All of these components are integrated in a system casing elaborately designed by ASUS.



- The storage card reader and optical disk drive are optional items which are not included in the system package. They are purchased separately.
- The 5.25 inch optical disk drive bay is for a 5.25 inch DVD-ROM / CD-RW / DVD-RW device.
- The 3.5 inch drive bay is for a 3.5 inch hard disk drive / USB storage card reader.
- The storage card reader is for Secure Digital™ / MultimediaCard / Memory Stick® / CompactFlash® / Microdrive™ storage cards and smart cards.

1.2 Rear panel

The system rear panel includes the power connector and several I/O ports that allow you to conveniently connect devices.



Only five expansion slots are available on this desktop PC.

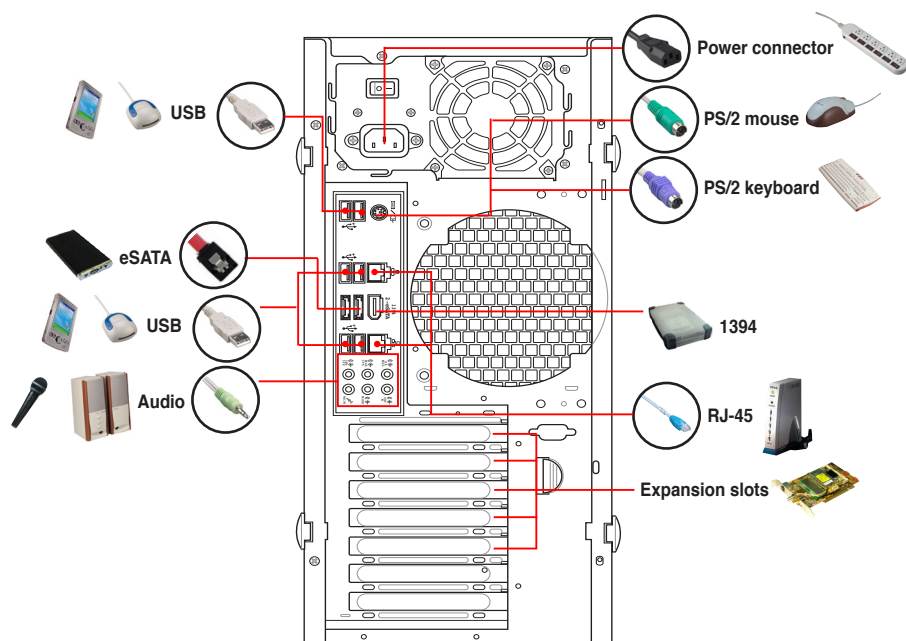
1.3 Connecting to the keyboard and the mouse

Your ASUS BA5190/AS-D900 Desktop PC package includes a PS/2 keyboard or a USB keyboard and a USB mouse. Connect the PS/2 keyboard to the PS/2 keyboard port at the rear panel or the USB keyboard to a USB port either at the rear panel or front panel. Connect the USB mouse to a USB port either at the rear panel or front panel.

1.4 Connecting to other peripheral devices

The ASUS BA5190/AS-D900 Desktop PC is equipped with a number of ports at the rear and front panels where you can connect peripheral devices to the system.

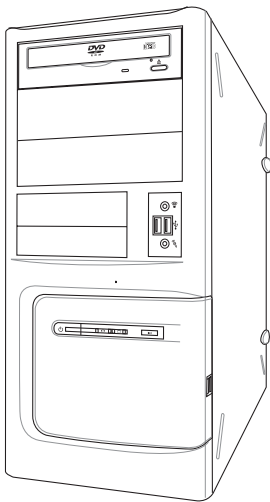
Refer to the illustration below for details.



Before you connect a peripheral device to the system, refer to the documentation that comes with the device or contact your supplier directly for information on how to install it.

Chapter 2

This chapter helps you to power up the system and install drivers and utilities from the Support DVD.



Getting started

2.1 Installing an operating system

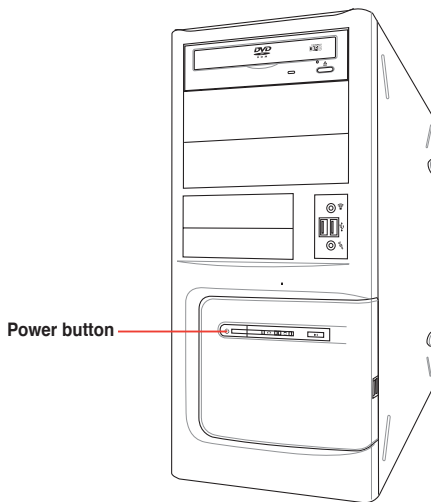
This motherboard supports Windows® XP / Vista operating systems (OS). Always install the latest OS version and the corresponding updates to maximize the features of your hardware. When you start the system for the first time, the system automatically detects the built-in audio and graphics chips and attempts to install the drivers that come with the OS. Select **NO** when a window appears asking if you want to restart the system. Install drivers according to the instructions in the following sections.



- To ensure that the OS works properly, install the drivers included in the Support DVD.
- Motherboard settings and hardware options vary. Use the setup procedures presented in this chapter for reference only. Refer to your OS documentation for detailed information.

2.2 Powering your system

Press the Power button to power up the system.



2.3 Support DVD information

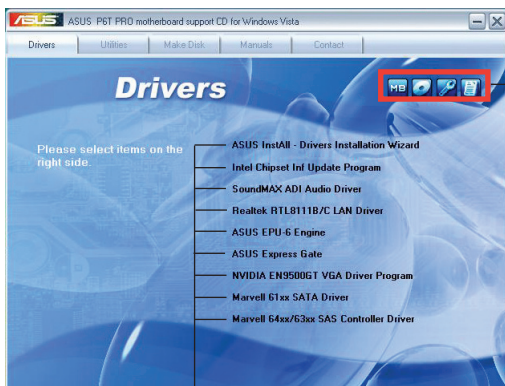
The Support DVD that comes with the system package contains the drivers, software applications, and utilities that you can install to get all system features.



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

2.3.1 Running the Support DVD

Place the Support DVD into the optical drive. The DVD automatically displays the Drivers menu if Autorun is enabled on your computer.



Click an icon to display Support DVD/motherboard information

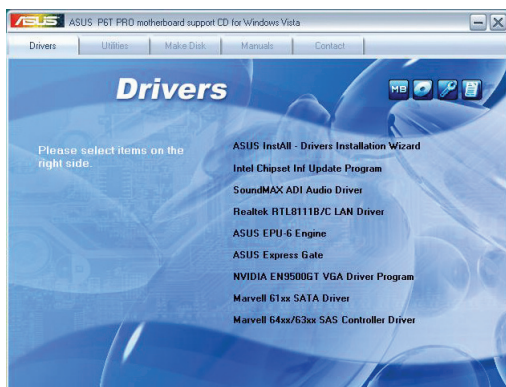
Click an item to install



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

2.3.2 Drivers menu

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



ASUS InstAll - Drivers Installation Wizard

Installs drivers for this desktop PC using the installation wizard.

Intel Chipset Inf Update Program

Installs the Intel® chipset Inf update program.

SoundMAX ADI Audio Driver

Installs the SoundMAX ADI audio driver.

Realtek RTL8111B/C LAN Driver

Installs the Realtek® RTL8111B/C LAN driver.

ASUS EPU-6 Engine

Installs ASUS EPU-6 Engine.

ASUS Express Gate

Installs ASUS Express Gate.

NVIDIA EN9500GT VGA Driver Program

Installs the NVIDIA® EN9500GT VGA driver.

Marvell 61xx SATA Driver

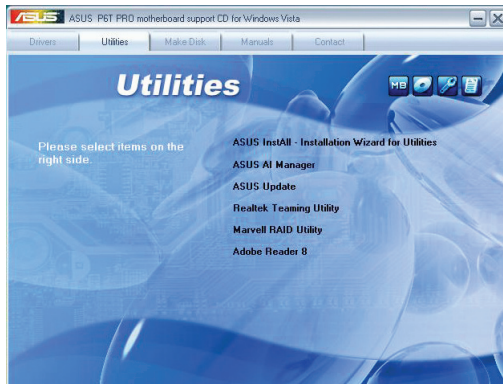
Installs the Marvell 61xx SATA driver.

Marvell 64xx/63xx SAS Controller Driver

Installs the Marvell 64xx/63xx SAS controller driver.

2.3.3 Utilities menu

The Utilities menu shows the applications that the system supports. Tap an item from the screen to install.



ASUS InstAll - Installation Wizard for Utilities

Installs utilities for this desktop PC using the installation wizard.

ASUS AI Manager

Installs ASUS AI Manager where you can launch AI Disk, AI Security, and AI Probe easily.

ASUS Update

Allows you to download the latest version of the BIOS from the ASUS website.



Before using the ASUS Update, ensure that you have an Internet connection to connect to the ASUS website.

Realtek Teaming Utility

Installs the Realtek® Teaming Utility.

Marvell RAID Utility

Installs the Marvell RAID utility.

Adobe Reader 8

Installs the Adobe Acrobat Reader that allows you to open, view, and print documents in Portable Document Format (PDF).

2.3.4 Make disk menu

The **Make disk** menu allows you to make a RAID driver disk.



Intel ICH10R 32 bit AHCI/RAID Driver

Allows you to create an Intel® ICH10R Serial ATA (SATA) AHCI/RAID driver disk for 32bit XP/Vista operating systems.

Intel ICH10R 64 bit AHCI/RAID Driver

Allows you to create an Intel® ICH10R Serial ATA (SATA) AHCI/RAID driver disk for 64bit XP/Vista operating systems.

Marvell 61xx 32/64bit SATA RAID Driver

Allows you to create a Marvell 61xx Serial ATA (SATA) RAID driver disk for 32/64bit XP/Vista operating systems.

Marvell 64xx/63xx SAS Controller Driver

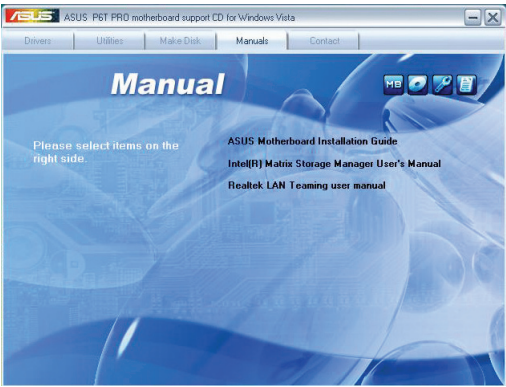
Allows you to create a Marvell 64xx/63xx SAS controller driver disk for 32/64bit XP/Vista operating systems.

2.3.5 Manual menu

The **Manual** menu contains a list of supplementary user manuals. Click an item to open the folder of the user manual.

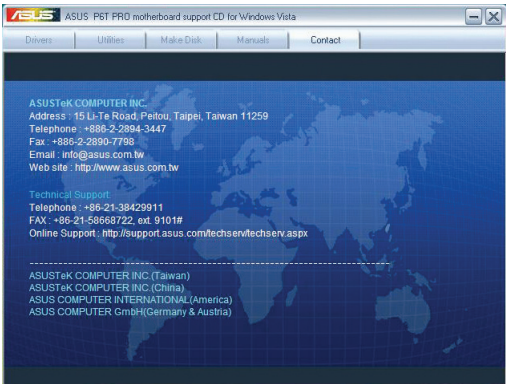


The user manual files are in Portable Document Format (PDF). Install the Adobe® Reader from the Utilities menu before opening a user manual file.



2.3.6 ASUS contact information

Click **Contact** to display the ASUS contact information.

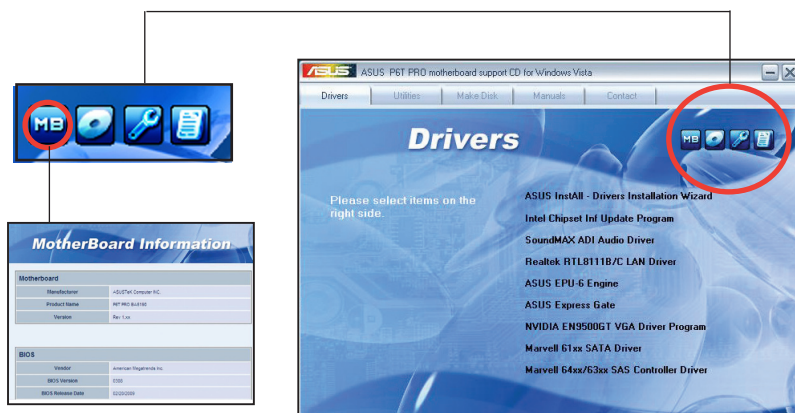


2.3.7 Other information

The icons on the top right corner of the screen give additional information on the motherboard and the contents of the Support DVD. Click an icon to display the specified information.

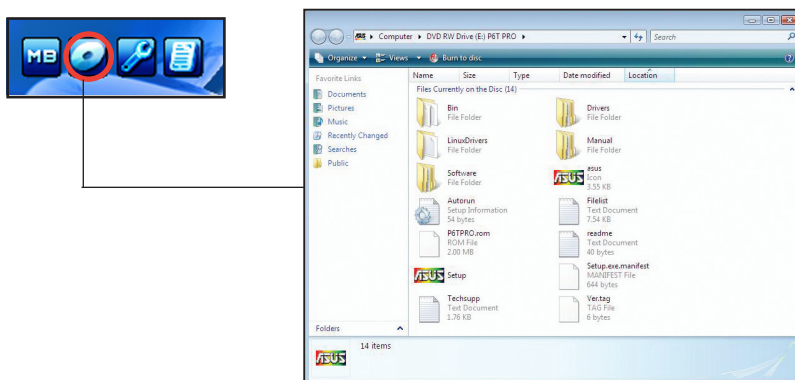
Motherboard Info

Displays the general specifications of the motherboard.

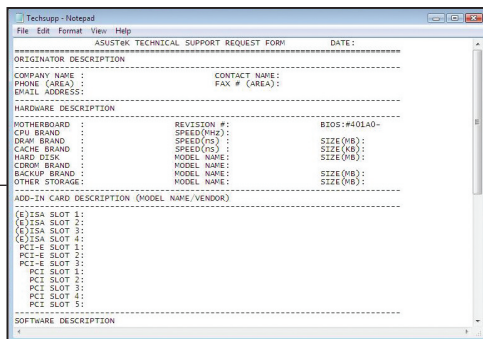


Browse this DVD

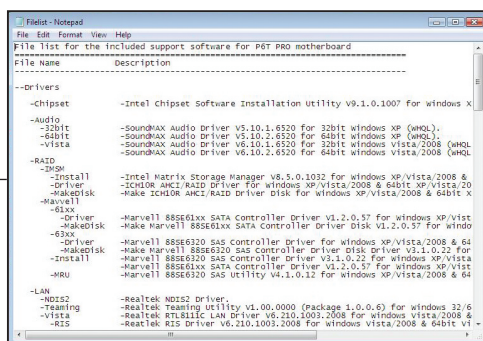
Displays the Support DVD contents in graphical format.



Displays the ASUS Technical Support Request Form that you have to fill out when requesting technical support.



Displays the contents of the Support DVD and a brief description of each in text format.



2.4 ASUS AI Manager

ASUS AI Manager allows you to launch AI Disk, AI Security, and AI Probe easily.

2.4.1 Installing AI Manager

To install AI Manager on your computer:

1. Place the Support DVD into the optical drive. The DVD automatically displays the **Drivers** menu if Autorun is enabled on your computer.



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

2. Click the **Utilities** tab, then click **ASUS AI Manager**.
3. Follow the onscreen instructions to complete the installation.

2.4.2 Launching AI Manager

You can launch AI Manager right after installation or anytime from the Windows® desktop.

To launch AI Manager from the Windows® desktop, click **Start > All Programs > ASUS > AI Manager > AI Manager v1.xx.xx**. The AI Manager Quick Bar appears.




After launching the application, the AI Manager icon appears in the Windows® taskbar. Right-click this icon for more options.




2.4.3 AI Manager Quick Bar

Click the Main, My favorites, Support, and Information icon from the Quick Bar to show the corresponding menu.



Click  to switch between a full-screen AI Manager window and the Quick bar.

Click  to keep AI Manager in the taskbar.

Click  to close AI Manager.

2.4.4 Main

Launch AI Disk, AI Security, and AI Probe from the Main menu. Click the small triangle to open or close the Main menu.



Click to open/close the Main menu

AI Disk

AI Disk allows you to easily clear the temporary IE files, IE URLs, IE cookies, IE history list, Recycle Bin, and recently opened files list. Select the item that you want to clear, then click **Apply**.



AI Security

AI Security allows you to set passwords to lock your removable storage devices such as a USB flash disk and a CD/DVD disk, which ensures more security for your data.

To lock a device:

1. If you are using AI Security for the first time, key in a password consisting of up to 20 alphanumeric characters.
2. Confirm your password.
3. Key in your password hint (optional).
4. Click **OK**.



5. Select the device you want to lock, then click **Apply**.



6. Key in your password, then click **OK**. The device you selected cannot be accessed without the password.

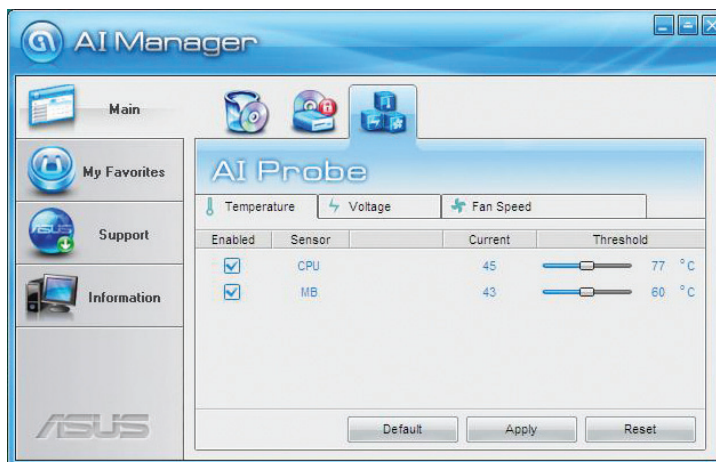
To unlock a device:

1. Deselect the device you locked, then click **Apply**.
2. Key in your password, then click **OK**.

To change your password, click **Change Password** and follow the onscreen instructions.

AI Probe

AI Probe automatically detects the motherboard and CPU temperatures, CPU fan speed, and CPU voltage. It also allows you to adjust these values manually.



2.4.5 My favorites

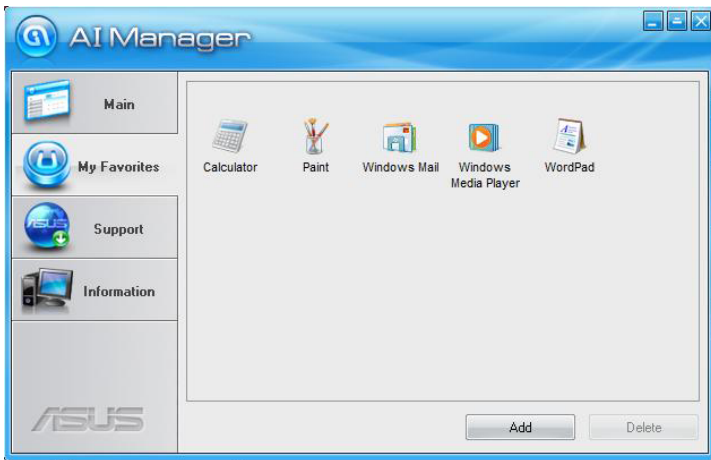
Add your favorite applications to the **My Favorites** menu.

To add an application:

1. Click **Add** and then from the succeeding screen select the application you want to add to the **My Favorites** menu.
2. Click **Open**. The application you selected is added and its icon appears.

Right-click an icon in the **My Favorites** menu to open, delete, or rename the corresponding application.

Double-click an icon to open the corresponding application.



2.4.6 Support

The **Support** menu displays links to the ASUS international website, online technical support website, online download support website, and contact information website.



2.4.7 Information

The **Information** menu displays the general information of your system, motherboard, CPU, BIOS, memory, and other devices installed.



2.5 ASUS MyLogo 2™

ASUS MyLogo 2™ allows you to customize the boot logo. The boot logo is the image that appears on the screen during the Power-On Self-Test (POST). ASUS MyLogo 2 is automatically installed when you install the ASUS Update utility from the Support DVD. See **2.3.3 Utilities menu** for details.



- Before using ASUS MyLogo 2, use the ASUS Update or AFUDOS utilities to make a copy of your original BIOS file or obtain the latest BIOS version from the ASUS website.
- Set the Full Screen Logo item in the BIOS to [Enabled] before using ASUS MyLogo 2.
- You can create your own boot logo image in GIF file format.

To launch ASUS MyLogo 2:

1. Launch the ASUS Update utility.
2. Select **Options** from the drop-down menu, and then click **Next**.
3. Check **Launch MyLogo** to replace the system boot logo before flashing BIOS, and then click **Next**.
4. Select **Update BIOS from a file** from the drop-down menu, and then click **Next**.
5. Locate the new BIOS file, and then click **Next**. The ASUS MyLogo 2 window appears.
6. From the left window pane, select the folder that contains the image you intend to use as your boot logo.



7. When the logo images appear on the right window pane, select an image to enlarge by clicking on it.



8. Adjust the boot image to your desired size by selecting a value on the Ratio box. Click **Next**.



9. When the screen returns to the ASUS Update utility, flash the BIOS to load the new boot logo.
10. After flashing the BIOS, restart the computer to display the new boot logo during POST.

2.6 ASUS EPU–6 Engine

ASUS EPU–6 Engine is an energy-efficient tool that satisfies different computing needs. This utility provides four modes that you can select to enhance system performance or save power. Selecting Auto mode will have the system shift modes automatically according to current system status. You can also customize each mode by configuring settings like CPU frequency, vCore Voltage, and Fan Control.

Installing 6 Engine

To install 6 Engine on your computer:

1. Place the Support DVD into the optical drive. The Drivers menu appears if Autorun is enabled on your computer.
2. Click the **Drivers** tab and then click **ASUS EPU–6 Engine**.
3. Follow the onscreen instructions to complete the installation.

Launching 6 Engine

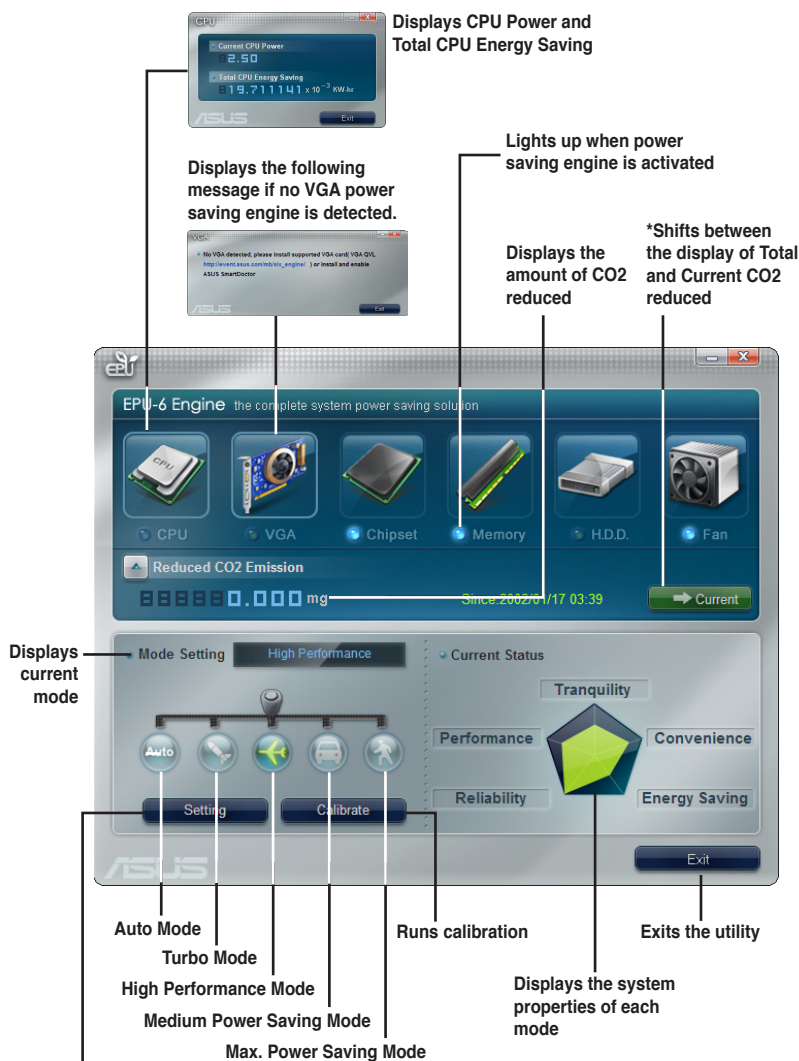
Launch 6 Engine by double-clicking the 6 Engine icon in the Windows® system tray.

The first time you launch 6 Engine, the following message appears, asking you to run Calibration first. Running calibration allows the system to detect CPU properties to optimize power management.

Click **Run Calibration** and wait for a few seconds. Then, the 6 Engine main menu appears.






6 Engine main menu



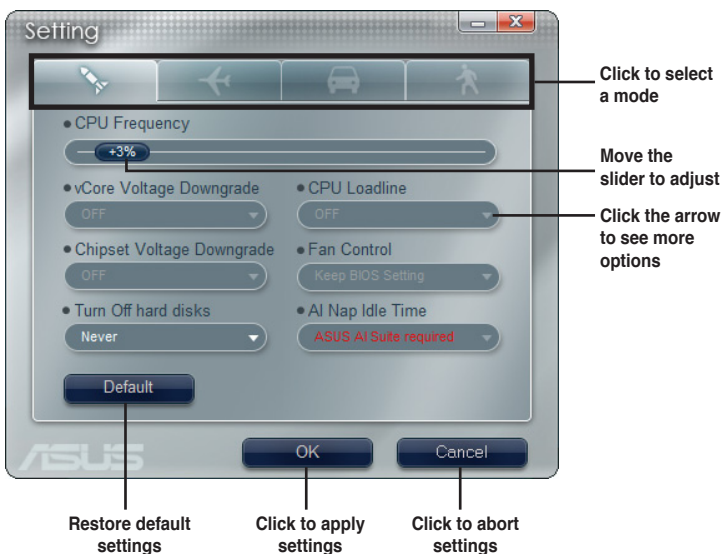
Advanced settings for each mode (refer to the next page for further information)



- Click **Current**  to show the CO2 that has been reduced since you click the **Renew** button .
- Click **Total**  to show the total CO2 that has been reduced since you launched 6 Engine.

Advanced settings menu

Click **Setting** from the 6 Engine main menu to display configuration options in each mode. Some options in certain modes are dimmed, meaning that they are not available.



Configuration options in Advanced settings menu

The following lists the configuration options and their definitions in Advanced settings menu.

- **CPU Frequency:** Raises or lowers CPU frequency to a certain percentage.
- **vCore Voltage Downgrade:** Lowers CPU vCore voltage.
 - **High:** Downgrades voltage to the highest level for CPU power saving.
 - **Small:** Downgrades voltage to the minimum level.
- **Chipset Voltage Downgrade:** Turns on/off chipset voltage.
- **Turn Off hard disks:** Turns off hard disk drives when they are not accessed after a certain time.
- **CPU Loadline:** Sets up the CPU loadline to manage CPU power saving.
 - **Light:** Saves CPU power to the minimum level.
 - **Heavy:** Saves CPU power to the highest level.

- **Fan Control:** Adjusts fan speeds to reduce noise and save system power.
 - **Quiet:** Lowers CPU fan speed and shuts off two chassis fans.
 - **Slow:** Lowers CPU fan and two chassis fan speeds.
- **AI Nap Idle Time:** Enters AI Nap mode after a certain time during system idle process.

Refer to the following table for the configuration options in each mode.

Configuration options	Turbo Mode	High Performance Mode	Medium Power Saving Mode	Maximum Power Saving Mode
CPU Frequency	Overclocking +1% to +5%	N/A	Downclocking -1% to -10%	Downclocking -1% to -10%
vCore Voltage Downgrade	N/A	N/A	Small/High	Small/High
Chipset Voltage Downgrade	N/A	N/A	On/Off	On/Off
Turn Off hard disks	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours
CPU Loadline	N/A	N/A	Light/Heavy	Light/Heavy
Fan Control	N/A	N/A	Keep Bios Setting/Slow	Keep Bios Setting/Quiet
AI Nap Idle Time	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours	Never/After 3 mins–After 5 hours



The values in the table above are subject to change at any time without notice. Visit the ASUS website at www.asus.com for updates.

2.7 ASUS Express Gate

ASUS Express Gate is an instant-on environment that gives you quick access to the Internet. Five seconds after powering on your computer, you can instantly surf the Internet, use Skype or other Express Gate applications.



Download the latest Express Gate version from the ASUS website at www.asus.com.

Installing ASUS Express Gate



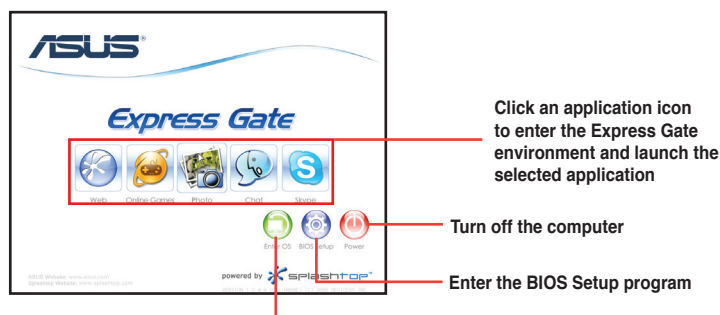
- Ensure to install ASUS Express Gate from the motherboard Support DVD before use.
 - ASUS Express Gate supports installation on SATA HDDs, USB HDDs, and Flash drives. When installing ASUS Express Gate on USB HDDs and Flash drives, connect the drives to the motherboard USB port before turning on the computer.
 - ASUS Express Gate supports SATA devices in IDE mode only.
 - ASUS Express Gate supports SATA devices connected to **motherboard chipset-controlled onboard SATA ports** only. All onboard extended SATA ports and external SATA ports are NOT supported.
 - ASUS Express Gate supports a screen resolution of 1024 x 768 only. Ensure to set your screen resolution to 1024 x 768 before using ASUS Express Gate; otherwise, it will not launch after bootup and your computer boots to the OS directly.
-

To install Express Gate on your computer:

1. Place the Support DVD into the optical drive. The **Drivers** menu appears if Autorun is enabled on your computer.
2. Click the **Utilities** tab, then click **ASUS Express Gate**.
3. Select your preferred language, then click **OK**.
4. The InstallShield Wizard for Express Gate appears. Click **Next** to continue.
5. Select the target drive where you want to install Express Gate. If you have multiple partitions installed on your computer, it is recommended to install Express Gate in **Drive C**. Click **Next** to continue.
6. Follow the onscreen instructions to complete the installation.

The Splash Screen

The Express Gate's splash screen appears within a few seconds after bootup.



Continue booting to the existing OS when the timer counts down to zero (0); click to immediately enter the existing OS

Splash screen hot keys

Key	Function
<PAUSE/BREAK>	Power off
<ESC> / <F8>	Continue to boot OS
	Enter BIOS setup



The Express Gate's splash screen supports a screen resolution of 1024 x 768 only.

Express Gate hot keys

Key	Function
<Alt> + <Tab>	Switch between applications
<Ctrl> + <Alt> + 	Bring the Power-Off dialog box
<Ctrl> + <Alt> + <Print Screen>	Save screen snapshots

Using the LaunchBar

Click an icon on the LaunchBar to launch the corresponding application.



Launches the **Web Browser** for quick access to the Internet.



Launches the **Online Games**.



Launches the **Photo Manager** album / organizer tool.



Launches the **Chat** instant messaging tool.



Launches the **Skype** application which allows you to chat with or call other people on Skype.



Launches the **Configuration Panel** which allows you to specify network settings and other settings.



If an application stops responding, right-click its icon then select **Close** to force it to close.

The smaller icons on the right side of the LaunchBar are:



Launches **File Manager** which allows you to access files on a USB drive. If a USB device is detected, the icon contains a green arrow.



ASUS Express Gate supports file uploading from SATA HDDs, ODDs, and USB drives. It supports file downloading to USB drives only.



Configures the network.



Adjusts the volume.



Sets the input language and keyboard shortcuts (Ctrl-Space by default).



Configures the LaunchBar settings such as auto-hide mode and docking position.



Displays the **ASUS Utility Panel** (if supported).



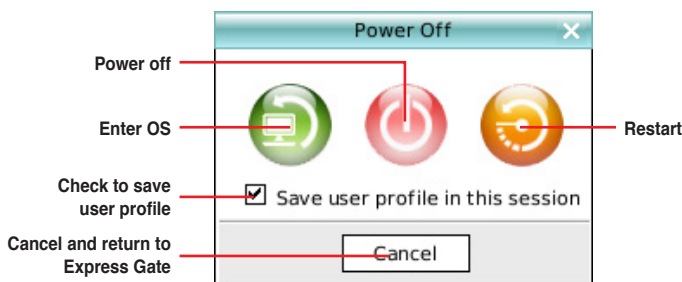
Displays your Express Gate version.



Launches the help file.



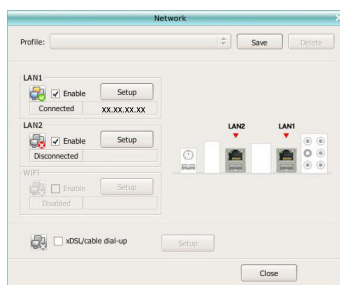
Launches the Power Off window where you may choose to enter OS, restart the computer, or power off the computer. This window also appears when you press <Ctrl> + <Alt> + on the keyboard.



Accessing the Internet

To configure the network settings:

1. Click **Configuration Panel** on the LaunchBar.
2. Click **Network**.
3. Make the proper network configurations. Each network interface is enabled immediately after you tick the **Enable** checkbox.



The number of the LAN ports vary with the motherboard.

- **LAN settings**

If you use a network cable connected to a home router that is connected to your DSL/cable modem, enable all the LAN ports. Express Gate automatically uses the available port.



If you plug the network cable into a different port while Express Gate is running (e.g. move the cable from LAN1 to LAN2, restart Express Gate to activate the new setting).

If your computer does not automatically get network settings from a DHCP server, click **Setup** to configure the static IP settings manually. If your computer automatically gets network settings from a DHCP server, skip this step.

- **WiFi settings (if supported)**

If you want to connect to a wireless network, click **Setup** to configure the WiFi options. In the **WiFi** tab of the **Advanced Network Settings** box, key in the network name of the wireless access point in the **SSID** field. If Security is enabled on the wireless access point, select the corresponding security algorithm from the dropdown list such as WEP or WAP in the **Encryption Type** field, and key in the password. Click **OK** to enable WiFi and establish the wireless connection.

- **xDSL / Cable dial-up (PPPoE) settings:**

If you use a network cable connected directly to your DSL/cable modem, click **Setup** to configure the xDSL/cable dial-up settings. Choose whether the DSL/cable modem is connected to your computer's LAN port. Key in the username and password for your account. Click **OK** to enable xDSL/cable dial-up and establish the PPPoE connection. When PPPoE is enabled, the port it uses will automatically be unchecked.

Using the Online Games

Express Gate introduces a **Splashtop Gaming** portal site which provides interesting games in different categories.

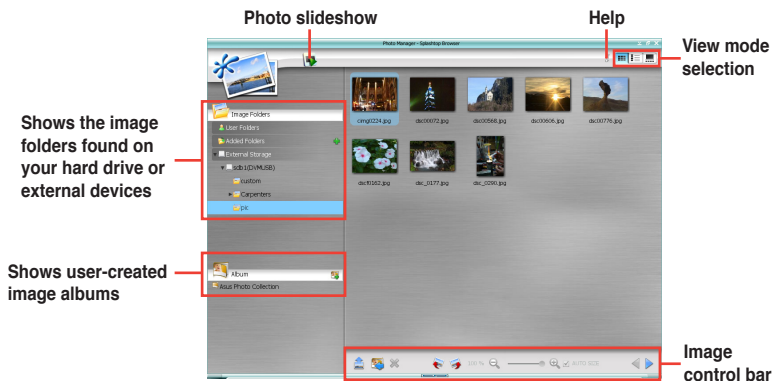


Enable the Internet connection to use the Online Games feature.



Using the Photo Manager

Photo Manager allows you to view pictures saved on your hard drive or external storage devices. You can view pictures in thumbnail view, in an enlarged view individually, in a filename/data list view, or play them in a slideshow with background music and fancy transition effects. JPEG, GIF, BMP, and PNG formats are supported. Refer to the online Help for details.



ASUS Express Gate supports SATA devices connected to **motherboard chipset-controlled onboard SATA ports** only. All onboard extended SATA ports and external SATA ports are NOT supported.

Restoring to factory settings

To restore Express Gate to the factory settings:

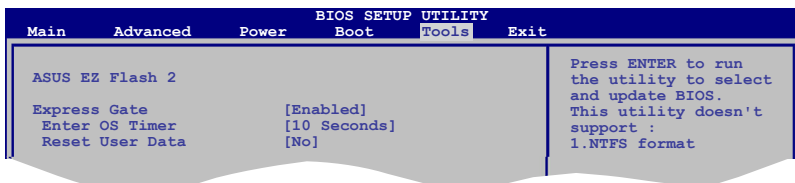
1. Click **Configuration Panel** on the LaunchBar.
2. Click **Environment Settings**.
3. Click **Restore** from the **General** tab. A confirmation dialog box appears. Click **Yes** to immediately restart Express Gate to finish clearing system settings. All bookmarks, network settings, and other changes you made will be cleared.



The first-time Wizard will run again when you enter the Express Gate environment after clearing its settings.

Configuring Express Gate in BIOS Setup

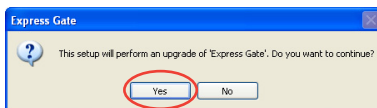
To enter the BIOS Setup program, press **** during POST or click the BIOS Setup button on the Express Gate's splash screen. Go to the Tools menu to configure Express Gate.



Updating Express Gate

To update Express Gate:

1. Double-click the Express Gate setup file to start the software update.
2. A software update confirmation dialog box appears. Click **Yes** to continue.
3. The InstallShield Wizard for Express Gate appears. Click **Next** to continue.
4. Follow the onscreen instructions to complete the updating process.



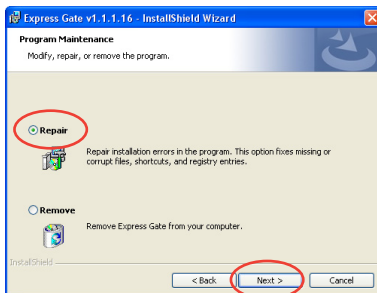
Download the latest Express Gate version from the ASUS website at www.asus.com.

Repairing Express Gate

In case Express Gate does not start normally, reinstall the software or use the repair utility to repair Express Gate.

To repair Express Gate:

- Click **Start > All Programs > Express Gate > Express Gate Installer > Repair this software**.
- You may also double-click the Express Gate setup file, choose **Repair**, and click **Next** to continue.



2.8 Realtek Teaming Utility

This motherboard features two Realtek® 8111C PCIe Gigabit LAN controllers and supports Teaming function, which allows two single connections to be grouped as one single connection, providing benefits such as bandwidth increase, load balancing, and fault tolerance.



The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

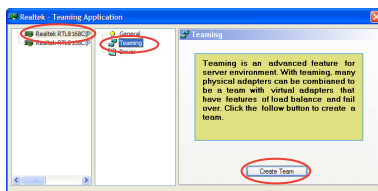
To install Realtek Teaming Utility:

1. Place the support DVD into the optical drive. Click **Realtek Teaming Utility** from the Utilities tab.
2. Follow the onscreen instructions to complete the installation.

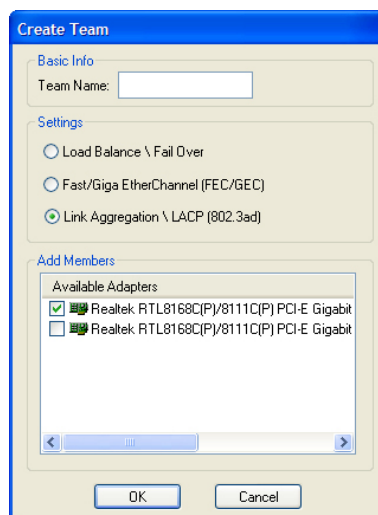
Configuring Realtek Teaming Utility in Windows® XP

To create a teaming set in Windows® XP:

1. Launch the Realtek Teaming Utility by clicking **Start > All Programs > Realtek > Teaming Utility > Teaming Utility**.
2. Select a LAN adapter from the left column, select **Teaming** in the middle column, and then click **Create Team**.

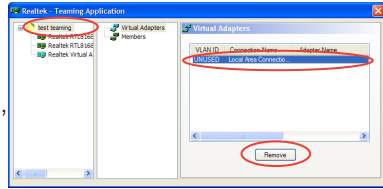


3. Enter a name for the teaming in the **Team Name** box. Select a teaming mode that best suits your network environment, and then choose the adapters to join the teaming set. Click **OK** to finish the teaming setting.



To remove a teaming set in Windows® XP:

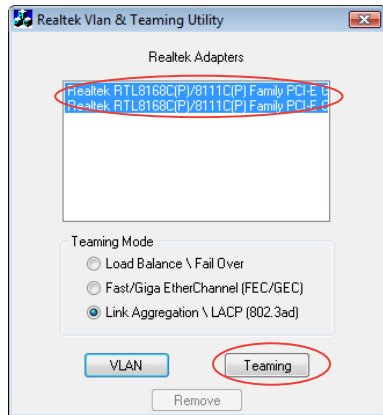
1. Launch the Realtek Teaming Utility.
2. Select the teaming set that you want to remove in the left column, select the virtual adapter in the right column, and then click **Remove**.



Configuring Realtek Teaming Utility in Windows® Vista

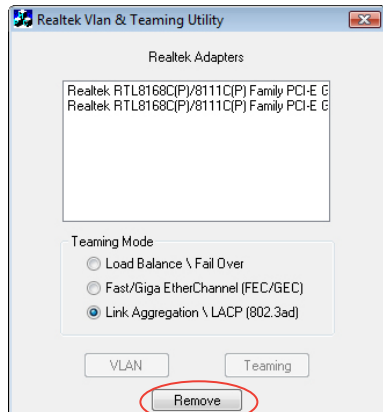
To create a teaming set in Windows® Vista:

1. Launch the Realtek VLAN & Teaming Utility by clicking **Start > All Programs > Realtek Teaming and VLAN Utility > Realtek Teaming and VLAN Utility**.
2. Choose the adapters to join the teaming set, and then select a teaming mode that best suits your network environment. Click **Teaming** to create the teaming set. Click **OK** to close the message windows and finish creating the teaming set.



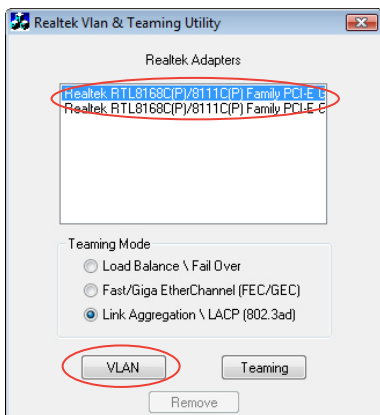
To remove a teaming set in Windows® Vista:

1. Launch the Realtek VLAN & Teaming Utility.
2. Click **Remove** to remove the existing teaming set.

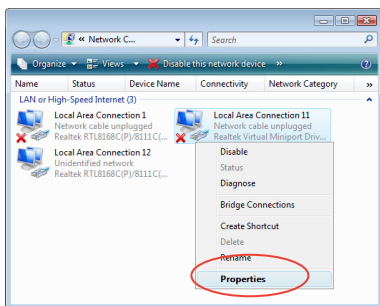


To create a virtual LAN adapter in Windows® Vista:

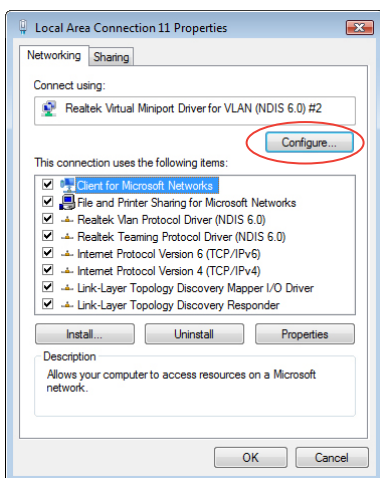
1. Launch the Realtek VLAN & Teaming Utility.
2. Choose one adapter to create the virtual LAN adapter, and then click **VLAN**. Click **OK** to close the message window and finish creating the virtual LAN adapter.



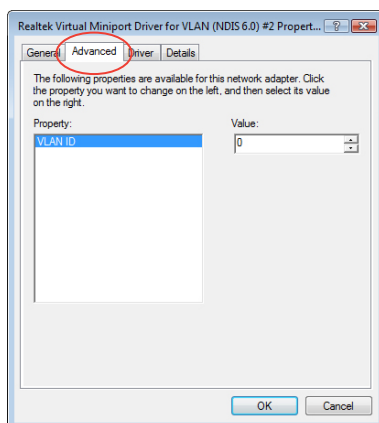
3. Click **Start > Control Panel > Network and Sharing Center**, and then click **Manage network connections** from the left Tasks list.
Right-click the virtual LAN adapter icon and select **Properties**.



4. Conduct necessary settings for the virtual LAN adapter, and then click **Configure**.

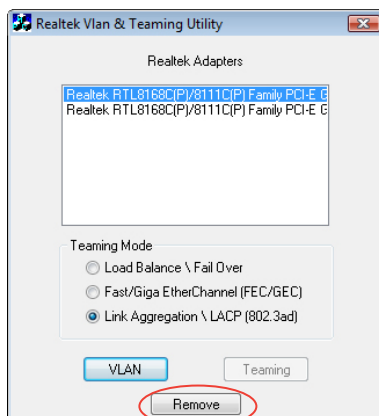


- Click the **Advanced** tab in the **Realtek Virtual Miniport Driver for VLAN (NDIS 6.0) Properties** window and conduct necessary VLAN settings. Close all windows when finished.



To remove a virtual LAN adapter in Windows® Vista:

- Launch the Realtek VLAN & Teaming Utility.
- Click **Remove** to remove the existing virtual LAN adapter.



2.9 RAID configurations

The motherboard comes with the Intel® ICH10R Southbridge controller that supports RAID 0, RAID 1, RAID 10, and RAID 5 for six independent Serial ATA channels.

2.9.1 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.

RAID 5 stripes both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

RAID 10 is data striping and data mirroring combined without parity (redundancy data) having to be calculated and written. With the RAID 10* configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

Intel® Matrix Storage. The Intel® Matrix Storage technology supported by the ICH10R chip allows you to create a RAID 0, RAID 1, RAID 5, and RAID 10* function to improve both system performance and data safety. You can also combine two RAID sets to get higher performance, capacity, or fault tolerance provided by the difference RAID function. For example, RAID 0 and RAID 1 set can be created by using only two identical hard disk drives.



If you want to boot the system from a hard disk drive included in a created RAID set, copy the RAID driver from the support DVD to a floppy disk before you install an operating system to the selected hard disk drive. Refer to section **2.10 Creating a RAID driver disk** for details.

2.9.2 Installing Serial ATA hard disks

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

To install the SATA hard disks for a RAID configuration:

1. Install the SATA hard disks into the drive bays.
2. Connect the SATA signal cables.
3. Connect a SATA power cable to the power connector on each drive.

2.9.3 Intel® RAID configurations

This motherboard supports RAID 0, RAID 1, RAID 5, RAID 10 and Intel® Matrix Storage configurations for Serial ATA hard disks drives through the Intel® ICH10R Southbridge chip.

Setting the RAID item in BIOS

You must set the RAID item in the BIOS Setup before you can create a RAID set(s). To do this:

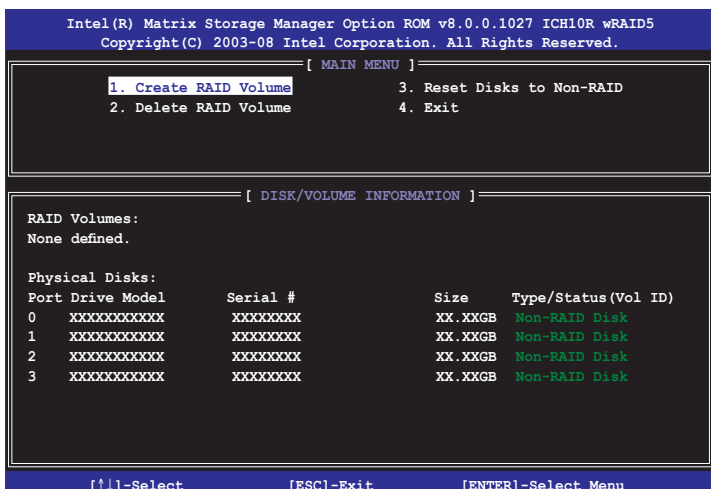
1. Enter the BIOS Setup during POST.
2. Go to **Main > Storage Configuration > Configure SATA as**, then press **<Enter>**.
3. Select **[RAID]**, then press **<Enter>**.
5. Save your changes, then exit the BIOS Setup.

Intel® Matrix Storage Manager option ROM utility

The Intel® Matrix Storage Manager Option ROM utility allows you to create RAID 0, RAID 1, RAID 10 (RAID 0+1), and RAID 5 set(s) from Serial ATA hard disk drives that are connected to the Serial ATA connectors supported by the Southbridge.

To enter the Intel® Matrix Storage Manager 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.



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.

Creating a RAID 0 set (striped)

To create a RAID 0 set:

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

```
Intel(R) Matrix Storage Manager option ROM v8.0.0.1027 ICH10R wRAID5
Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

[ CREATE VOLUME MENU ]

Name: Volume0
RAID Level: RAID0 (Stripe)
Disks: Select Disks
Strip Size: 128KB
Capacity: XXX GB

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 RAID 0 set and press <Enter>.
3. When the RAID Level item is highlighted, press the up/down arrow key to select **RAID 0(Stripe)**, and then press <Enter>.
4. When the Disks item is highlighted, press <Enter> to select the hard disk drives to configure as RAID. The following screen appears.

```
[ SELECT DISKS ]

Port Drive Model          Serial #          Size Status
0  XXXXXXXXXXXX          XXXXXXXX          XX.XGB Non-RAID Disk
1  XXXXXXXXXXXX          XXXXXXXX          XX.XGB Non-RAID Disk
2  XXXXXXXXXXXX          XXXXXXXX          XX.XGB Non-RAID Disk
3  XXXXXXXXXXXX          XXXXXXXX          XX.XGB Non-RAID Disk

Select 2 to 6 disks to use in creating the volume.

[↑↓]-Previous/Next [SPACE]-SelectsDisk [ENTER]-Done
```

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

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

7. Enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum capacity allowed.
8. Press <Enter> when the Create Volume item is highlighted. The following warning message appears.



9. Press <Y> to create the RAID volume and return to the main menu, or <N> to go back to the Create Volume menu.

Creating a RAID 1 set (mirrored)

To create a RAID 1 set:

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

```
Intel(R) Matrix Storage Manager option ROM v8.0.0.1027 ICH10R wRAID5
Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

[ CREATE VOLUME MENU ]

Name: Volume1
RAID Level: RAID1(Mirror)
Disks: Select Disks
Strip Size: N/A
Capacity: XXX GB

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 RAID 1 set and press <Enter>.
3. When the RAID Level item is highlighted, press the up/down arrow key to select **RAID 1(Mirror)**, then press <Enter>.
4. When the Capacity item is highlighted, enter the RAID volume capacity that you want, and then press <Enter>. The default value indicates the maximum capacity allowed.
5. Press <Enter> when the Create Volume item is highlighted. 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):
```

6. Press <Y> to create the RAID volume and return to main menu or <N> to go back to Create Volume menu.

Creating a RAID 10 set (RAID 0+1)

To create a RAID 10 set:

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

```
Intel(R) Matrix Storage Manager option ROM v8.0.0.1027 ICH10R wRAID5
Copyright(C) 2003-08 Intel Corporation. All Rights Reserved.

[ CREATE VOLUME MENU ]

Name: Volume10
RAID Level: RAID10 (RAID0+1)
Disks: Select Disks
Strip Size: 64KB
Capacity: XXX GB

Create Volume

[ HELP ]

Enter a unique volume name that has no special characters and is
16 characters or less.

[F5]-Change [TAB]-Next [ESC]-Previous Menu [Enter]-Select
```

2. Enter a name for the RAID 10 set and press <Enter>.
3. When the RAID Level item is highlighted, press the up/down arrow key to select **RAID 10 (RAID 0+1)**, and then press <Enter>.
4. When the Stripe Size item is highlighted, press the up/down arrow key to select the stripe size for the RAID 10 array, and then press <Enter>. The available stripe size values range from 4 KB to 64 KB. The default stripe size is 64 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.

5. Enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum capacity allowed.

- Press <Enter> when the Create Volume item is highlighted. The following warning message appears.

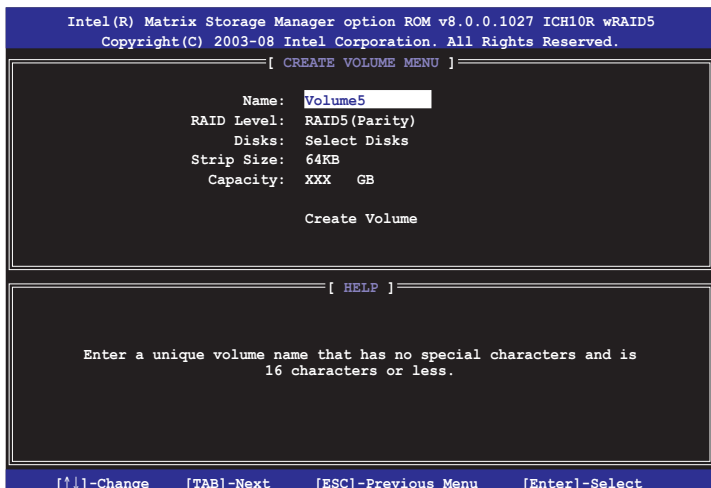


- Press <Y> to create the RAID volume and return to the main menu or <N> to go back to the Create Volume menu.

Creating a RAID 5 set (parity)

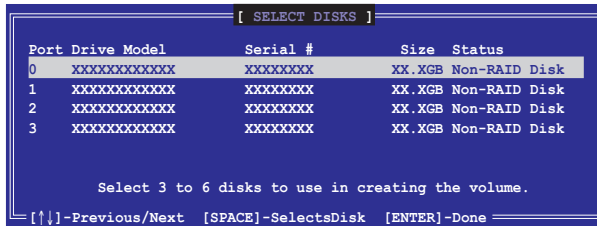
To create a RAID 5 set:

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



- Enter a name for the RAID 5 set and press <Enter>.
- When the RAID Level item is highlighted, press the up/down arrow key to select **RAID 5(Parity)**, and then press <Enter>.

- The Disks item is highlighted, press <Enter> to select the hard disk drives to configure as RAID. The following screen appears.



- Use the up/down arrow key to highlight the drive you want to set, and then press <Space> to select. A small triangle marks the selected drive. Press <Enter> after completing your selection.
- When the Stripe Size item is highlighted, press the up/down arrow key to select the stripe size for the RAID 5 array, and then press <Enter>. The available stripe size values range from 16 KB to 128 KB. The default stripe size is 64 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.

- Enter the RAID volume capacity that you want and then press <Enter>. The default value indicates the maximum allowed capacity.
- Press <Enter> when the Create Volume item is highlighted. The following warning message appears.



- Press <Y> to create the RAID volume and return to the main menu or <N> to go back to the Create Volume menu.

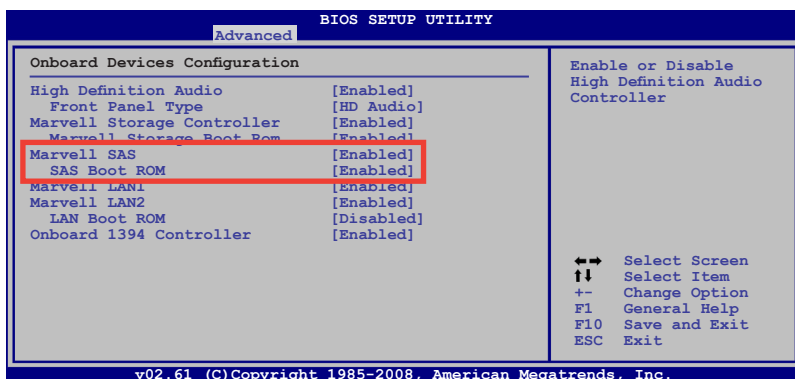
2.9.4 Marvell® SAS RAID configurations

The Marvell® 88SE6320 SAS controller allows you to configure RAID 0 and 1 set on the SAS hard disk drives.

Setting the RAID item in BIOS

You must set the RAID item in the BIOS Setup before you can create a RAID set. To do this:

1. Install two internal SAS hard disk drives to the SAS connectors labeled **SAS1/2**.
2. Boot up your computer, and press during POST to enter the BIOS setup.
3. In the **Advanced** menu, go to **Onboard Devices Configuration**, and enable both **Marvell SAS** and **SAS Boot ROM**.
4. Press <F10> to save the changes and exit.

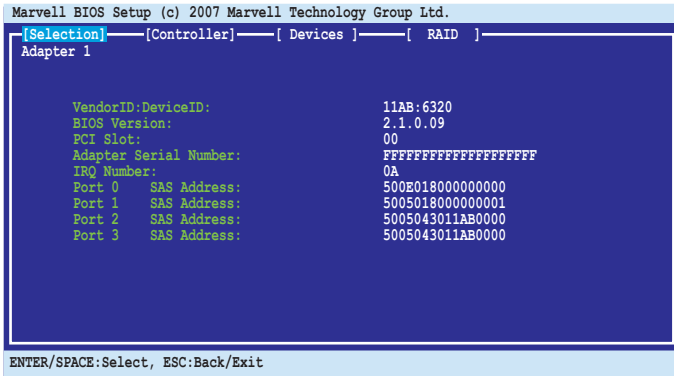


The RAID BIOS setup screens shown in this section are for reference only, and may not exactly match the items on your screen.

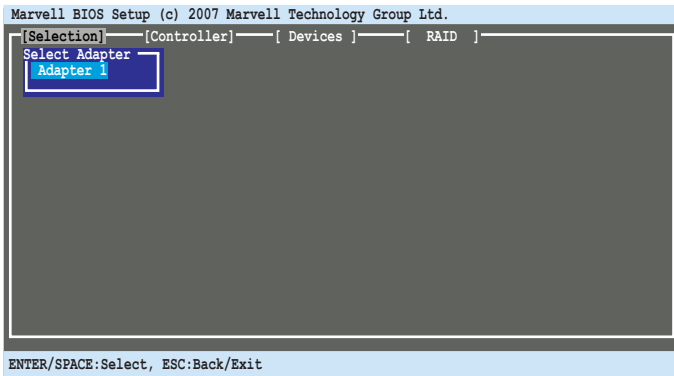
Marvell® RAID BIOS Configuration utility

To enter the Marvell® RAID BIOS setup utility

1. Boot up your computer.
2. During POST, press <Ctrl> + <M> to enter the utility main menu.



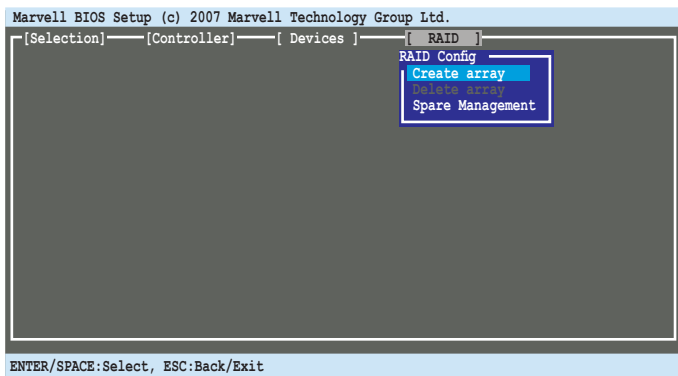
3. Press <Enter> and select a desired adapter for RAID configuration.



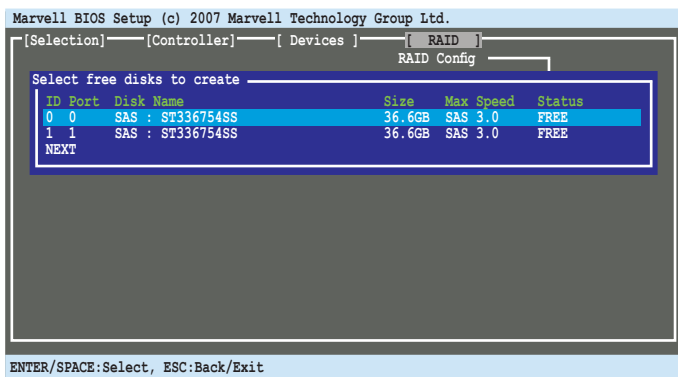
Creating a RAID 0 or RAID 1 set

To create a RAID set:

1. From the utility menu bar, select **RAID > Create array**.

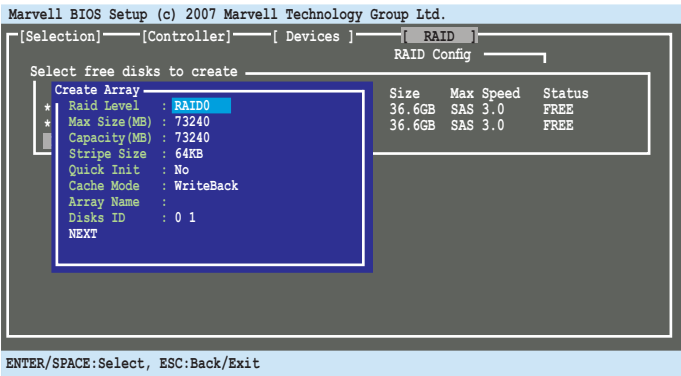


2. Press <Enter>. The screen shows the disks you can add to make up the RAID set. Use the arrow key to select a disk and press <Enter> or <Space> to include this disk in the array.

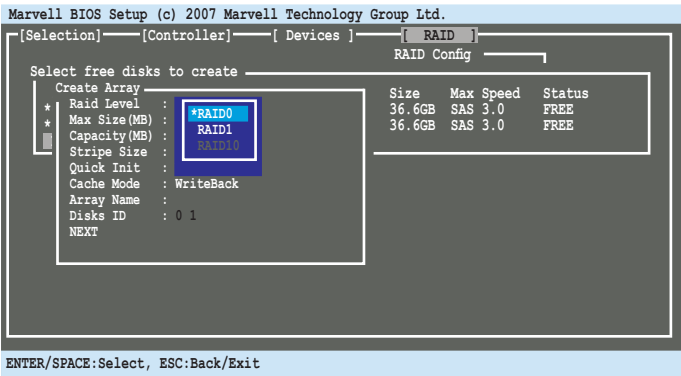


3. After you have selected the desired disks, select NEXT to create array.

4. The Create Array screen appears.

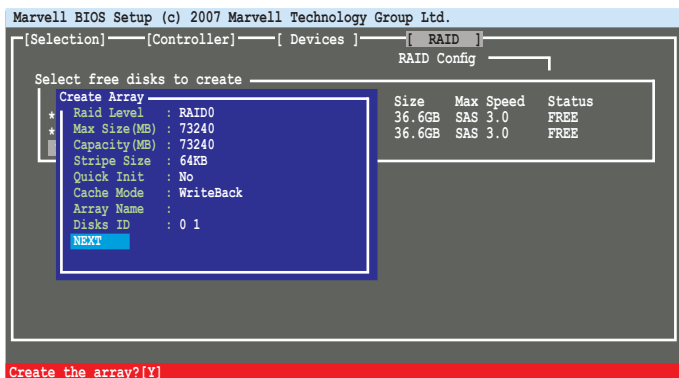


5. Use the arrow key to select the **RAID Level** item and press <Enter> to display the available RAID set. Select a RAID set and press <Enter>. After you have selected the desired RAID set, select Next to create array.

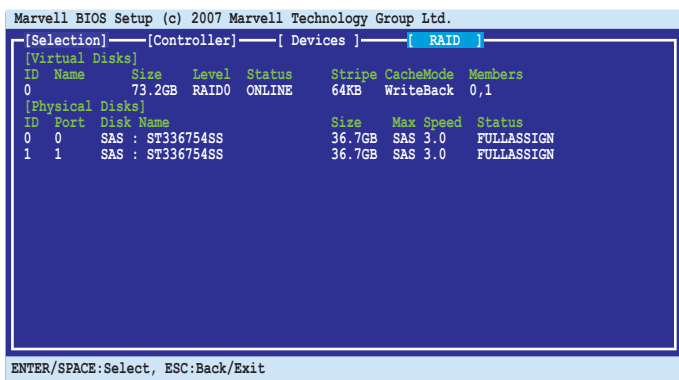


- The available RAID sets vary with the number of disks you select. The RAID sets that you are not allowed to create are grayed out.
- Except for the RAID Level item, we recommend you keep the default values for the other items in Create Array screen.

6. A confirmation screen appears. Press <Y> to confirm the array creation.



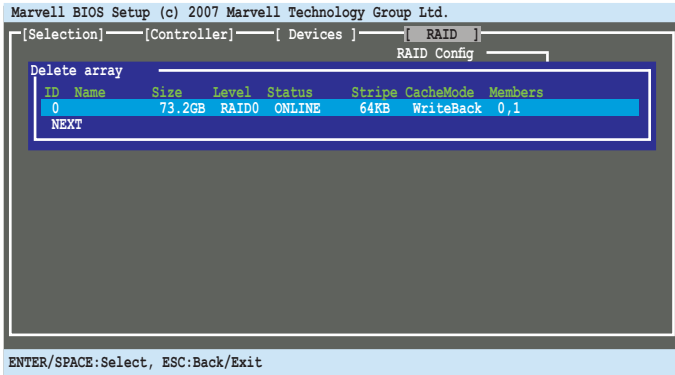
7. The newly created array appears in the RAID menu.



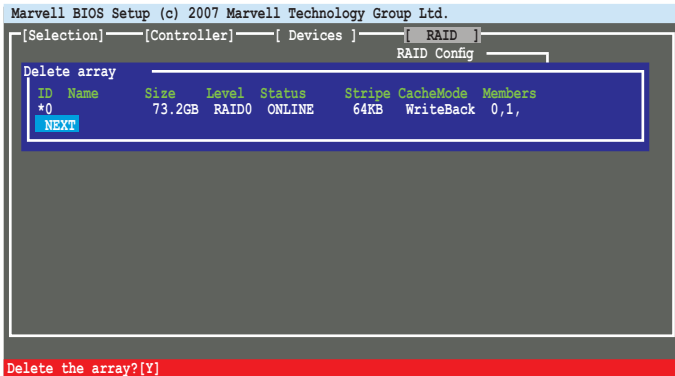
Deleting an array

To delete a RAID set

1. From the utility menu bar, select **RAID > Delete array**, and then press <Enter>. The **Delete array** screen appears.



2. Select a desired array to delete and select **NEXT**. Press <Y> after the confirmation screen appears.



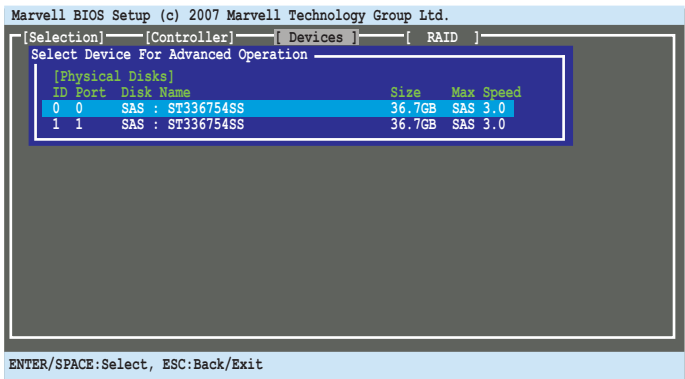
3. Press <Y> again to confirm and delete the selected array.



You cannot recover lost data if you delete an array. Make sure you back up important data before deleting an array.

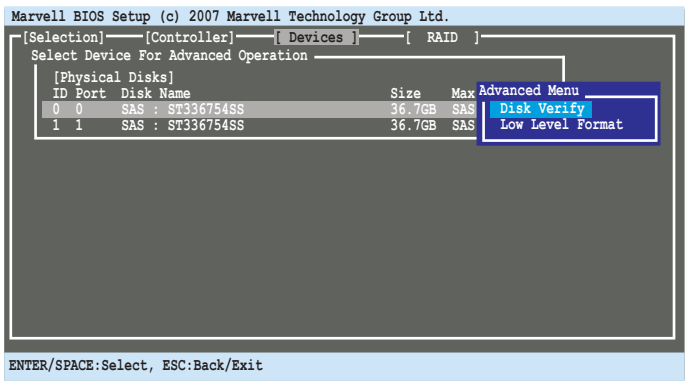
Advanced Operation

From the utility menu bar, select **Devices**, and then press <Enter>. The **Advanced Operation** screen appears. You can run **Disk Verify** and **Low Level Format** in the Advanced Operation screen.



To run Disk Verify

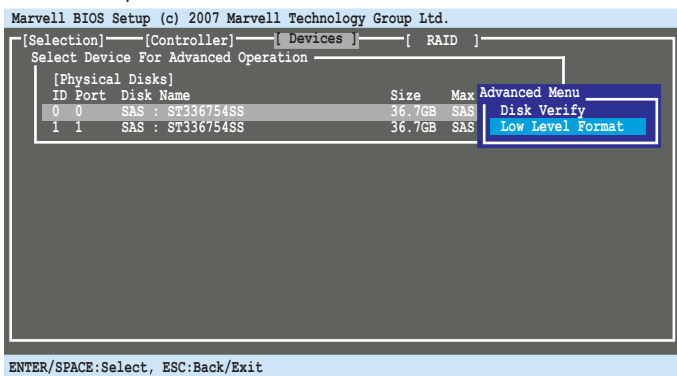
1. In the Advanced Operation screen, use the arrow key to select a disk and press <Enter> or <Space>. The **Advanced Menu** appears. Select **Disk Verify** and press <Enter>.



2. Press <Y> after the confirmation screen appears.
3. The utility verifies the selected disk. When completed, press <ESC> to return to the Advanced Operation screen.

To run Low Level Format

1. In the Advanced Operation screen, use the arrow key to select a disk and press <Enter> or <Space>. The **Advanced Menu** appears. Select **Low Level Format** and press <Enter>.



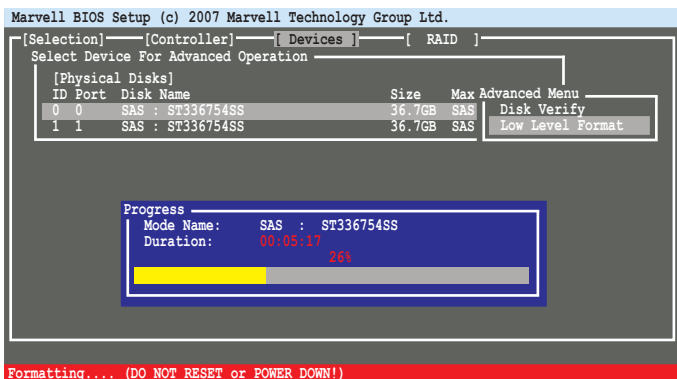
The Low Level Format feature supports SAS HDDs only.

2. Press <Y> after the confirmation screen appears.



You cannot recover lost data if you run low level format on the selected disk. Make sure you back up important data before running low level format.

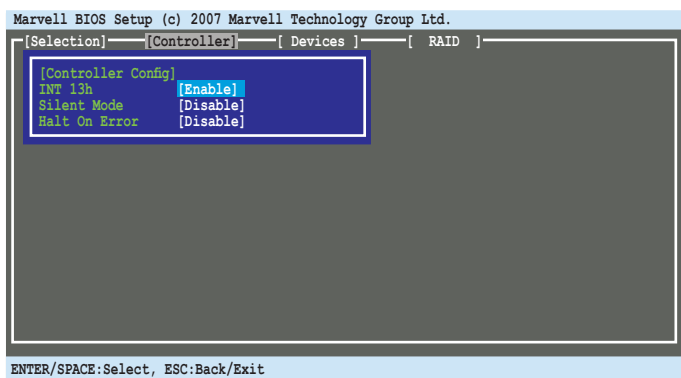
3. The utility runs low level format on the selected disk. DO NOT reset the computer or shut down the power during the operation.



4. When completed, press <ESC> to return to the Advanced Operation screen.

Controller Configuration

From the utility menu bar, select **Controller**, and then press <Enter>. The **Controller Config** screen appears and allows you to change controller settings.



INT 13h [Enable]

Allows you to enable or disable the Interrupt 13h support. Set this item to [Enable] if you want to use the device(s) connected to Marvell® 88SE6320 SAS controller as boot device. Set this item to [Disable] if you want to use the device(s) connected to Marvell® 88SE6320 SAS controller as data device.

Configuration options: [Disable] [Enable]

Silent Mode [Disable]

Allows you to enable or disable the BIOS POST silent mode. When enabled, the information of the drives connected to Marvell® 88SE6320 SAS controller will be hidden during system POST.

Configuration options: [Disable] [Enable]

Halt On Error [Disable]

Allows you to enable or disable the Halt On Error function. When enabled, the BIOS POST will halt when an error (such as virtual drive status changes) occurs and require user's confirmation to continue.

Configuration options: [Disable] [Enable]

2.10 Creating a RAID driver disk

A floppy disk with the RAID driver is required when installing Windows® XP/Vista and later operating system on a hard disk drive that is included in a RAID set. For Windows Vista user, you can create a RAID driver disk with a floppy disk drive or a USB flash disk drive.

2.10.1 Creating a RAID driver disk without entering the OS

To create a RAID driver disk without entering the OS:

1. Boot your computer.
2. Press during POST to enter the BIOS setup utility.
3. Set the optical drive as the primary boot device.
4. Insert the support DVD into the optical drive.
5. Save changes and exit BIOS.
6. Press any key when the system prompts "Press any key to boot from the optical drive."
7. When the menu appears, press <1> to create a RAID driver disk.
8. Insert a formatted floppy disk into the floppy drive then press <Enter>.
9. Follow succeeding screen instructions to complete the process.

2.10.2 Creating a RAID driver disk in Windows®

To create a RAID driver disk in Windows®:

1. Start Windows®.
2. Place the motherboard support DVD into the optical drive.
3. Go to the **Make disk** menu, and then click **Intel ICH10R 32/64 bit RAID Driver Disk** to create an Intel® ICH10R RAID driver disk.
4. Insert a floppy disk into the floppy disk drive or connect a USB flash disk if you are using Windows Vista OS.
5. Follow succeeding screen instructions to complete the process.



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

To install the RAID driver in Windows® XP:

1. During the OS installation, the system prompts you to press the <F6> key to install third-party SCSI or RAID driver.
2. Press <F6> then insert the floppy disk with RAID driver into the floppy disk drive.
3. When prompted to select the SCSI adapter to install, make sure you select **Intel(R) SATA RAID Controller (Desktop ICH10R)**.
4. Follow the succeeding screen instructions to complete the installation.

To install the RAID driver in Windows Vista:

1. Insert the floppy disk/USB device with RAID driver into the floppy disk drive/USB port.
2. During the OS installation, select **Intel(R) SATA RAID Controller (Desktop ICH10R)**.
3. Follow the succeeding screen instructions to complete the installation.

2.11 Loading the initial OS default settings

If you want to load the initial default settings for your system, press <F3> during the Power-On Self-Test (POST).

2.12 Recovery DVD

The ASUS PC Recovery DVD assists you in reinstalling the OS and restoring it to its original working state. Before using the Recovery DVD, copy your data files to a USB flash disk or to a network drive and make note of any customized configuration settings such as network settings.

2.12.1 Recovering a Windows® XP OS:

1. Turn on your system. Insert the Recovery DVD into the optical disk drive.
2. Restart the system and press <F8> when the ASUS logo appears. Select the optical drive as the boot device.
3. Select where to install a new system. Options are:

Recover system to a partition

This option deletes only the partition you selected, allows you to keep other partitions, and creates a new system partition as drive “C”.

Recovery system to entire HD

This option deletes all partitions from your hard disk and creates a new system partition as drive “C”.

4. A confirmation screen pops up. Click **Next** to confirm.
5. Check **I accept** from the succeeding screen and click **Next**.
6. A list displays the contents you are going to recover. Click **Yes** to confirm. The recovery process starts.
7. Insert the Support DVD when prompted, then click **OK**. The system restarts.
8. After the system reboots, Windows® XP begins its system configurations. Follow the onscreen instructions to complete the process, then the system restarts. Adjust the screen to a suitable display resolution.



The ASUS PC Recovery DVD is for ASUS Desktop PC only. **DO NOT** use it on other systems. Visit the ASUS website at www.asus.com for updates.

2.12.2 Recovering a Windows® Vista OS:

1. Turn on your system and press **<F8>** when the ASUS logo appears.
2. Insert the Recovery DVD into the optical drive when a **Please select boot device** menu appears. Select the optical drive as the boot device then press **Enter**. The system restarts.



If you want to recover the system from the hidden partition, press **<F9>** when the ASUS logo appears, then follow steps 3-6 below.

3. After the system reboots, an **ASUS Preload** window appears. Press **Next** to continue.
4. Select where to install a new system. Options are:

Recover Windows to first partition only:

This option deletes only the first partition, allows you to keep other partitions, and creates a new system partition as drive "C".

Recover Windows to entire HD:

This option deletes all partitions from your hard disk and creates a new system partition as drive "C".

Recover Windows to entire HD with 2 partitions:

This option deletes all partitions from your hard disk and creates two new system partitions. The first partition takes up 60% of the whole hard disk size and the second partition takes up 40%. The new system is installed in the first partition. You can back up your data in the second partition.

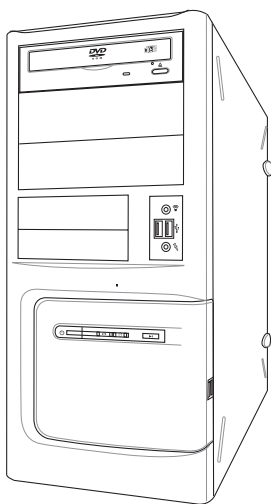
5. When a window appears querying **Are you sure you want to recover now**, click **Finish**. The process percentage is displayed on the screen.
6. When a **Recovery finish** message appears, click **OK** and the system restarts. After it restarts, follow the onscreen instructions to complete the system configurations.



The ASUS PC Recovery DVD is for ASUS Desktop PC only. **DO NOT** use it on other systems. Visit the ASUS website at www.asus.com for updates.

Chapter 3

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

3.1 Managing and updating your BIOS

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

1. **ASUS Update:** Updates the BIOS in Windows® environment.
2. **ASUS EZ Flash 2:** Updates the BIOS using a floppy disk or USB flash disk.
3. **AFUDOS:** Updates the BIOS using a bootable floppy disk.
4. **ASUS CrashFree BIOS 3:** Updates the BIOS using a floppy disk, USB flash disk, or the motherboard Support DVD when the BIOS file fails or gets corrupted.

Refer to the corresponding sections for details on these utilities.



Save a copy of the original motherboard BIOS file to a bootable floppy disk or USB flash disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

3.1.1 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file;
- Download the latest BIOS file from the Internet;
- Update the BIOS from an updated BIOS file;
- Update the BIOS directly from the Internet; and,
- View the BIOS version information.

This utility is available in the Support DVD that comes with the motherboard package.



ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

Installing ASUS Update

To install ASUS Update:

1. Place the support DVD in the optical drive. The Drivers menu appears.
2. Click the **Utilities** tab, then click **ASUS Update**.
3. Follow the onscreen instructions to complete the installation.

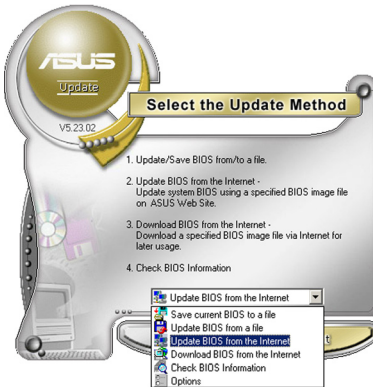
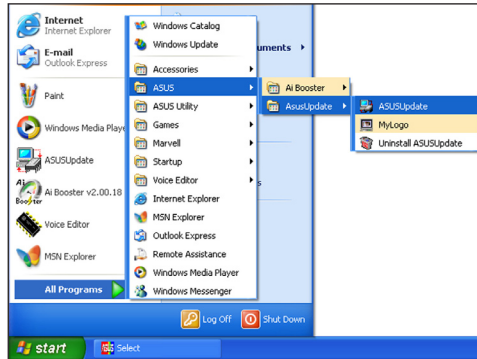


Quit all Windows® applications before you update the BIOS using this utility.

Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.



2. Select **Update BIOS** from the Internet option from the drop-down menu, then click **Next**.

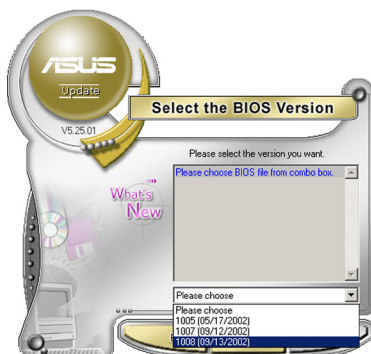


3. Select the ASUS FTP site nearest you to avoid network traffic, or click **Auto Select**. Click **Next**.

- From the FTP site, select the BIOS version that you wish to download. Click **Next**.
- Follow the screen instructions to complete the update process.



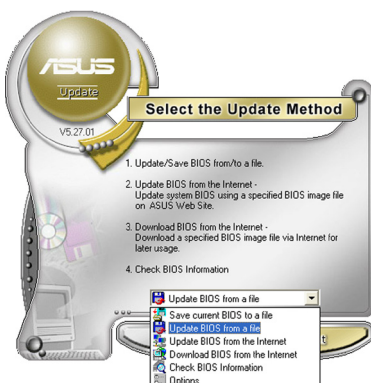
The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.



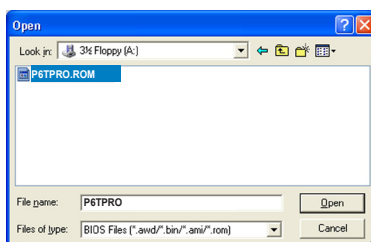
Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

- Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.
- Select **Update BIOS** from a file option from the drop-down menu, then click **Next**.



- Locate the BIOS file from the Open window, then click **Open**.
- Follow the screen instructions to complete the update process.

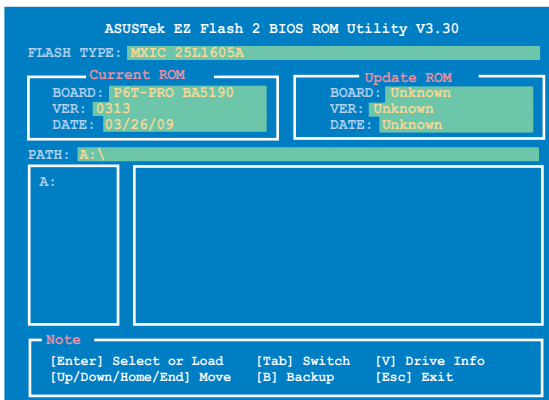


3.1.2 ASUS EZ Flash 2 utility

The ASUS EZ Flash 2 feature allows you to update the BIOS without having to go through the long process of booting from a floppy disk and using a DOS-based utility. The EZ Flash 2 utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self Tests (POST).

To update the BIOS using EZ Flash 2:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard.
2. Save the BIOS file to a floppy disk or a USB flash disk, then restart the system.
3. You can launch the EZ Flash 2 by two methods.
 - (1) Insert the floppy disk / USB flash disk that contains the BIOS file to the floppy disk drive or the USB port.
Press <Alt> + <F2> during POST to display the following.



- (2) Enter BIOS setup program. Go to the **Tools** menu to select **EZ Flash2** and press <Enter> to enable it.
You can switch between drives by pressing <Tab> before the correct file is found. Then press <Enter>.
4. When the correct BIOS file is found, EZ Flash 2 performs the BIOS update process and automatically reboots the system when done.



- This function can support devices such as a USB flash disk or a floppy 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!

3.1.3 Creating a bootable floppy disk



The motherboard does not provide a floppy drive connector. You have to use a USB floppy drive when creating a bootable floppy disk.

1. Do either one of the following to create a bootable floppy disk.


DOS environment

- a. Insert a 1.44MB floppy disk into the drive.
- b. At the DOS prompt, type `format A: /S` then press <Enter>.

Windows® XP environment

- a. Insert a 1.44 MB floppy disk to the floppy disk drive.
- b. Click **Start** from the Windows® desktop, then select **My Computer**.
- c. Select the 3 1/2 Floppy Drive icon.
- d. Click File from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
- e. Select **Create an MS-DOS startup disk** from the format options field, then click **Start**.

Windows® Vista environment

- a. Insert a formatted, high density 1.44 MB floppy disk to the floppy disk drive.
 - b. Click  from the Windows® desktop, then select **Computer**.
 - c. Right-click **Floppy Disk Drive** then click **Format** to display the **Format 3 1/2 Floppy** dialog box .
 - d. Select the **Create an MS-DOS startup disk** check box.
 - e. Click **Start**.
2. Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

3.1.4 AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.



The motherboard does not provide a floppy drive connector. You have to use a USB floppy drive to use the AFUDOS utility.

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility



- Make sure that the floppy disk is not write-protected and has at least 1024KB free space to save the file.
- The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support DVD to the bootable floppy disk you created earlier.
2. Boot the system in DOS mode, then at the prompt type:

```
afudos /o[filename]
```

where the [filename] is any user-assigned filename not more than eight alphanumeric characters for the main filename and three alphanumeric characters for the extension name.

```
A:\>afudos /oOLDBIOS1.rom
```

Main filename Extension name

3. Press <Enter>. The utility copies the current BIOS file to the floppy disk.

```
A:\>afudos /oOLDBIOS1.rom
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
Reading flash ..... done
Write to file..... ok
A:\>
```

The utility returns to the DOS prompt after copying the current BIOS file.

Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1. Visit the ASUS website (www.asus.com) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.



Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

- Copy the AFUDOS utility (afudos.exe) from the motherboard support DVD to the bootable floppy disk you created earlier.
- Boot the system in DOS mode, then at the prompt type:
afudos /i[filename]

where [filename] is the latest or the original BIOS file on the bootable floppy disk.

```
A:\>afudos /iP6TPRO.ROM
```

- The utility verifies the file and starts updating the BIOS.

```
A:\>afudos /iP6TPRO.ROM
AMI Firmware Update Utility - Version 1.19 (ASUS V2.07 (03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

WARNING!! Do not turn off power during flash BIOS
Reading file ..... done
Reading flash ..... done

Advance Check .....
Erasing flash ..... done
Writing flash ..... 0x0008CC00 (9%)
```



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

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

```
A:\>afudos /iP6TPRO.ROM
AMI Firmware Update Utility - Version 1.19 (ASUS V2.07 (03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

WARNING!! Do not turn off power during flash BIOS
Reading file ..... done
Reading flash ..... done

Advance Check .....
Erasing flash ..... done
Writing flash ..... done
Verifying flash .... done

Please restart your computer

A:\>
```

3.1.5 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 the motherboard support DVD, the floppy disk, or the USB flash disk that contains the updated BIOS file.



Prepare the motherboard support DVD, the floppy disk or the USB flash disk containing the updated motherboard BIOS before using this utility.

Recovering the BIOS from the support DVD

To recover the BIOS from the support DVD:

1. Turn on the system.
2. Insert the motherboard support DVD to the optical drive.
3. The utility displays the following message and automatically checks the DVD for the BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "P6TPRO.ROM". Completed.
Start flashing...
```

4. Restart the system after the utility completes the updating process.

Recovering the BIOS from the floppy disk or USB flash disk

To recover the BIOS from the floppy disk or USB flash disk:

1. Insert the floppy disk or USB flash disk that contains BIOS file to the floppy disk drive or USB port.
2. Turn on the system.
3. The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.
4. Restart the system after the utility completes the updating process.



- Only the USB flash disk with FAT 32/16 format and single partition can support ASUS CrashFree BIOS 3. The device size should be smaller than 8GB.
- DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

3.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section **3.1 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.

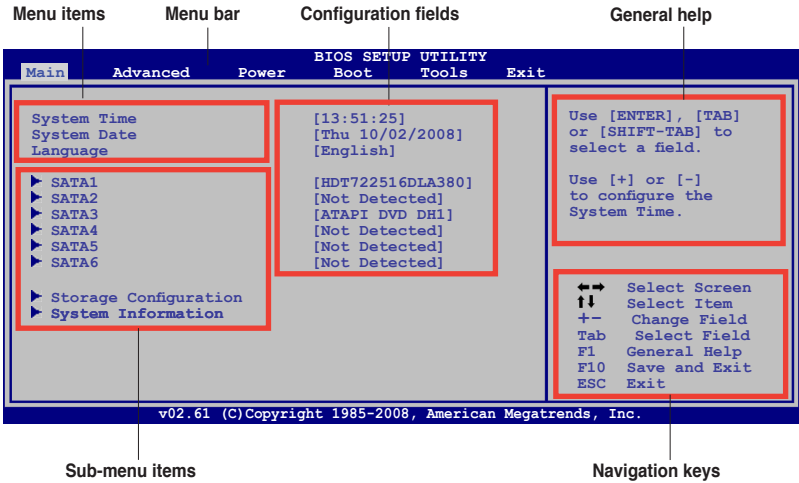
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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. Select the **Load Setup Defaults** item under the Exit menu. See section **3.8 Exit Menu**.
 - 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 at www.asus.com to download the latest BIOS file for this motherboard.
-

3.2.1 BIOS menu screen



3.2.2 Menu bar

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

Main	For changing the basic system configuration
Advanced	For changing the advanced system settings
Power	For changing the advanced power management (APM) configuration
Boot	For changing the system boot configuration
Tools	For configuring options for special functions
Exit	For selecting the exit options and loading default settings

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

3.2.3 Navigation keys

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

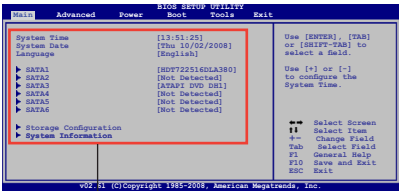


The navigation keys may differ from one screen to another.

3.2.4 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 (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.



Main menu items

3.2.5 Sub-menu items

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

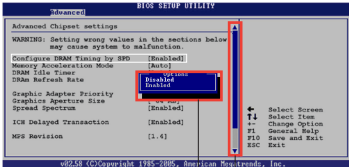
3.2.6 Configuration fields

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 then press <Enter> to display a list of options. Refer to 3.2.7 Pop-up window.

3.2.7 Pop-up window

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



Pop-up window

Scroll bar

3.2.8 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.

3.2.9 General help

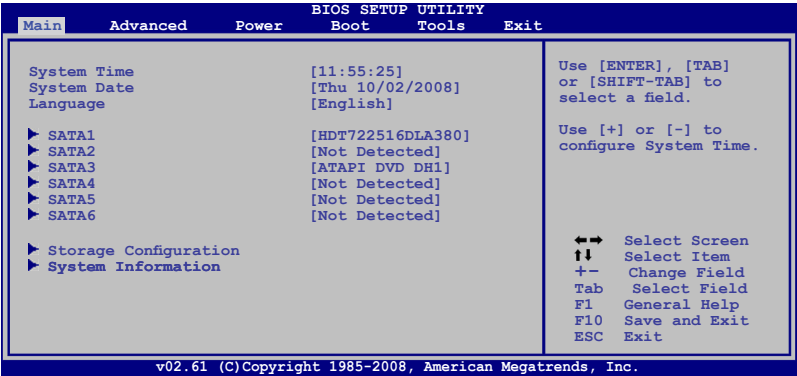
At the top right corner of the menu screen is a brief description of the selected item.

3.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.



Refer to section **3.2.1 BIOS menu screen** for information on the menu screen items and how to navigate through them.



3.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

3.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

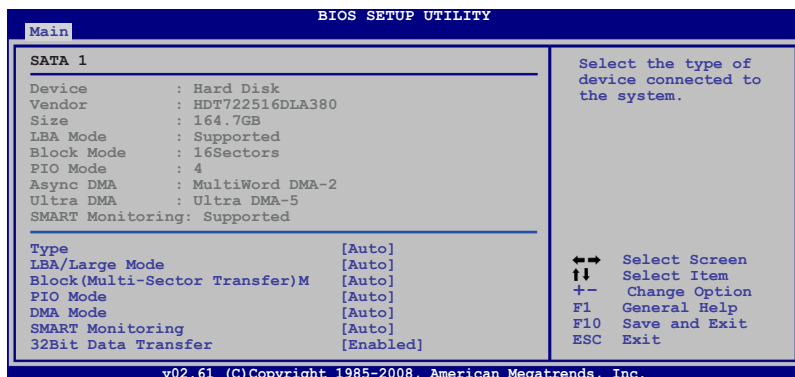
3.3.3 Language [English]

Allows you to select the display language for the BIOS setup screen.

Configuration options: [Chinese(BIG5)] [Chinese(GB)] [Japanese] [French] [German] [English]

3.3.4 SATA 1-6

While entering Setup, the BIOS automatically detects the presence of Serial ATA devices. There is a separate sub-menu for each SATA device. Select a device item then press <Enter> to display the SATA device information.



The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no SATA device is installed in the system.

Type [Auto]

Selects the type of drive connected to the system. Setting to [Auto] allows automatic selection of the appropriate SATA device type. Select [CDROM] if you are specifically configuring a CD-ROM drive. Select [ARMD] (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.

Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to [Auto] enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

Block (Multi-Sector Transfer) M [Auto]

Enables or disables data multi-sectors transfers. When set to [Auto], the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time.

Configuration options: [Disabled] [Auto]

PIO Mode [Auto]

Allows you to select the data transfer mode.

Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode.
Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

SMART Monitoring [Auto]

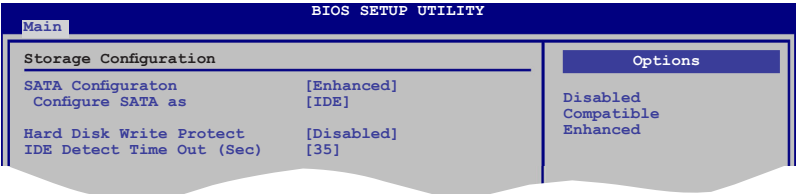
Sets the Self-Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

3.3.5 Storage Configuration

The items in this menu allow you to set or change the configurations for the SATA devices installed in the system. Select an item then press <Enter> if you want to configure the item.



SATA Configuration [Enhanced]

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

Configure SATA as [IDE]

Sets the configuration for the Serial ATA connectors supported by the Southbridge chip. Configuration options: [IDE] [RAID] [AHCI]



- If you want to use the Serial ATA hard disk drives as Parallel ATA physical storage devices, keep the default setting [IDE].
- If you want the Serial ATA hard disk drives to use the Advanced Host Controller Interface (AHCI), set this item to [AHCI]. 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 a RAID 0, RAID 1, RAID 5, RAID 10, or the Intel® Matrix Storage Technology configuration from the Serial ATA hard disk drives, set this item to [RAID].

Hard Disk Write Protect [Disabled]

Disables or enables device write protection. This will be effective only if the device is accessed through BIOS.

Configuration option: [Disabled] [Enabled]

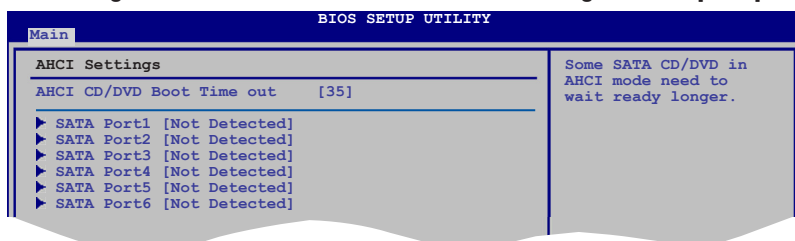
IDE Detect Time Out (Sec) [35]

Selects the time out value for detecting ATA/ATAPI devices.

Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

3.3.6 AHCI Configuration

This menu is the section for AHCI configuration. It appears only when you set the item **Configure SATA as** from the sub-menu of **SATA Configuration** to [AHCI].



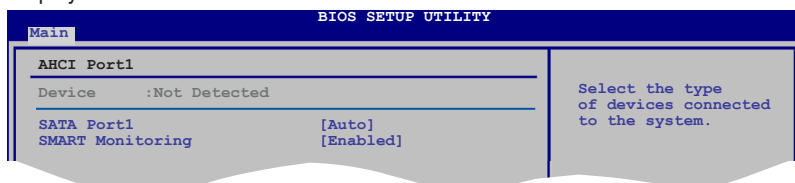
AHCI CD/DVD Boot Time out [35]

Selects the boot time out value for SATA CD/DVD devices in AHCI mode.

Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

AHCI Port1–6 [XXXX]

Displays the status of auto-detection of SATA devices.



SATA Port1 [Auto]

Allows you to select the type of device connected to the system.

Configuration options: [Auto] [Not Installed]

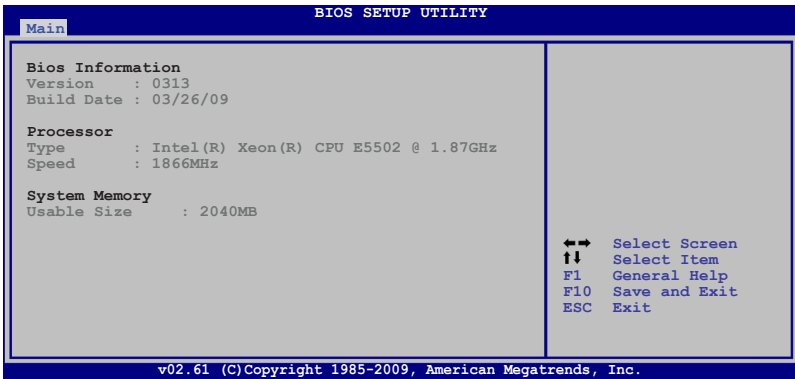
SMART Monitoring [Enabled]

Allows you to set the Self-Monitoring, Analysis and Reporting Technology.

Configuration options: [Disabled] [Enabled]

3.3.7 System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.



Bios Information

Displays the auto-detected BIOS information.

Processor

Displays the auto-detected CPU specification.

System Memory

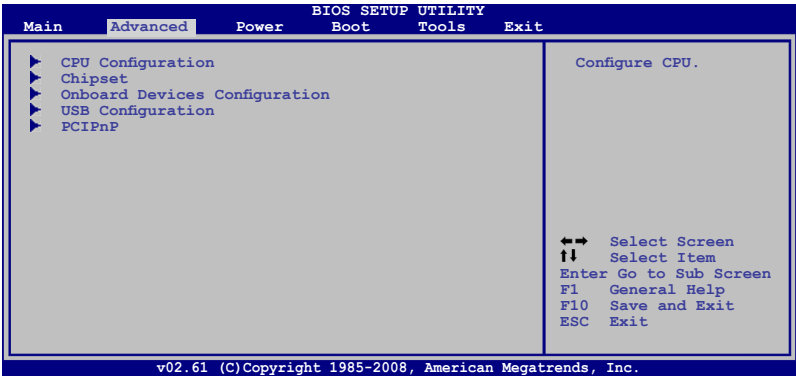
Displays the auto-detected system memory.

3.4 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.

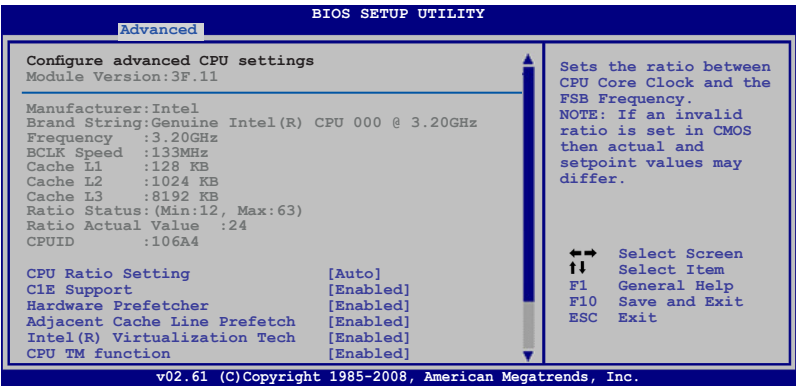


3.4.1 CPU Configuration

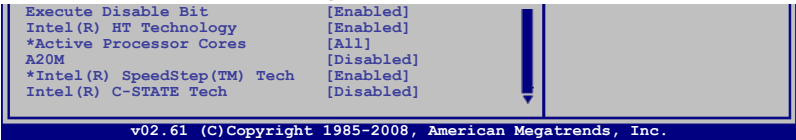
The items in this menu show the CPU-related information that the BIOS automatically detects.



The items shown in this screen may be different due to the CPU you installed.



Scroll down to display the following items:



CPU Ratio Setting [Auto]

Allows you to adjust the ratio between CPU Core Clock and BCLK Frequency. Use the <+> and <-> keys to adjust the value.

Configuration options: [Auto] [12.0] [13.0] [14.0] [15.0] [16.0] [17.0] [18.0] [19.0] [20.0]

C1E Support [Enabled]

Allows you to enable or disable Enhanced Halt State support.

Configuration options: [Disabled] [Enabled]

Hardware Prefetcher [Enabled]

Allows you to enable or disable the Hardware Prefetcher function.

Configuration options: [Disabled] [Enabled]

Adjacent Cache Line Prefetch [Enabled]

Allows you to enable or disable the Adjacent Cache Line Prefetch function.

Configuration options: [Disabled] [Enabled]

Intel(R) 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]

CPU TM Function [Enabled]

This function enables the overheated CPU to throttle the clock speed to cool down.

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(R) HT Technology [Enabled]

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]

A20M [Disabled]

Legacy OSeS and APs may need A20M enabled.

Configuration options: [Disabled] [Enabled]

***Intel(R) SpeedStep (TM) Tech [Enabled]**

When set to [Disabled], the CPU runs at its default speed. When set to [Enabled], the CPU speed is controlled by the operating system.

Configuration options: [Disabled] [Enabled]

Intel(R) C-STATE Tech [Disabled]

The Intel® C-State Technology allows the CPU to save more power under idle mode. Enable this item only when you install a C-State Technology-supported CPU. Configuration options: [Disabled] [Enabled]



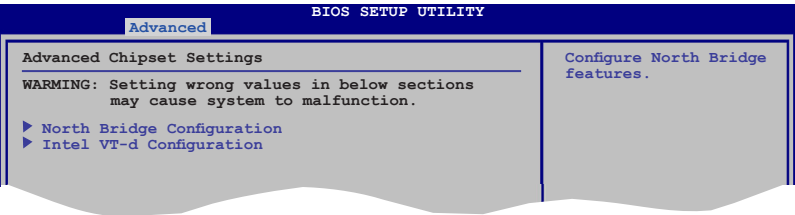
The following item appears only when set **Intel(R) C-STATE Tech** to **[Enabled]**.

C State package limit setting [Auto]

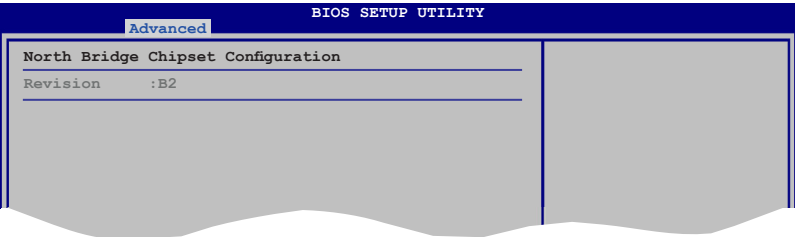
This item appears only when you set the **Intel(R) C-STATE Tech** item to [Enabled]. We recommend that you set this item to [Auto] for BIOS to automatically detect the C-State mode supported by your CPU. Configuration options: [Auto] [C1] [C3] [C6] [C7]

3.4.2 Chipset

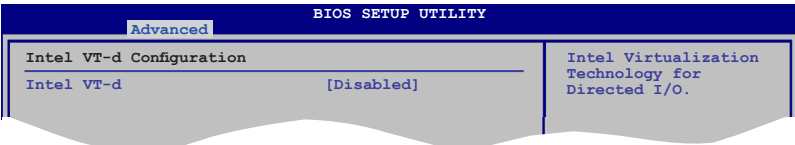
The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu.



North Bridge Chipset Configuration



Intel VT-d Configuration

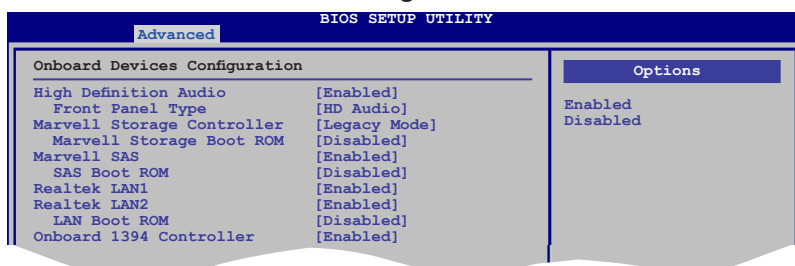


Intel VT-d [Disabled]

Allows you to enable or disable the Intel Virtualization Technology for Directed I/O.

Configuration options: [Disabled] [Enabled]

3.4.3 Onboard Device Configuration



High Definition Audio [Enabled]

Allows you to enable or disable the High Definition Audio Controller.

Configuration options: [Enabled] [Disabled]

Front Panel Type [HD Audio]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or high-definition audio depending on the audio standard that the front panel audio module supports.

Configuration options: [AC97] [HD Audio]

Marvell Storage Controller [Legacy Mode]

Allows you to select the onboard Marvell storage controller mode.

Configuration options: [Legacy Mode] [RAID Mode] [Disabled]

Marvell Storage Boot ROM [Disabled]

This item appears only when you set the previous item to [Legacy Mode] or [RAID Mode].

Configuration options: [Disabled] [Enabled]

Marvell SAS [Enabled]

Allows you to enable or disable the onboard Marvell SAS controller.

Configuration options: [Enabled] [Disabled]

SAS Boot ROM [Disabled]

This item appears only when you set the previous item to [Enabled].

Configuration options: [Disabled] [Enabled]



Due to DOS environment limitation, only one Boot ROM can be enabled and set as the boot device. If you enable the **Marvell Storage Boot ROM** item or set ICH10R SATA mode to [RAID], the **SAS Boot ROM** item will be disabled and hidden.

Realtek LAN1/2 [Enabled]

Allows you to enable or disable the onboard Realtek LAN port1/2.

Configuration options: [Enabled] [Disabled]

LAN Boot ROM [Disabled]

This item appears only when you enable the previous item.

Configuration options: [Disabled] [Enabled]

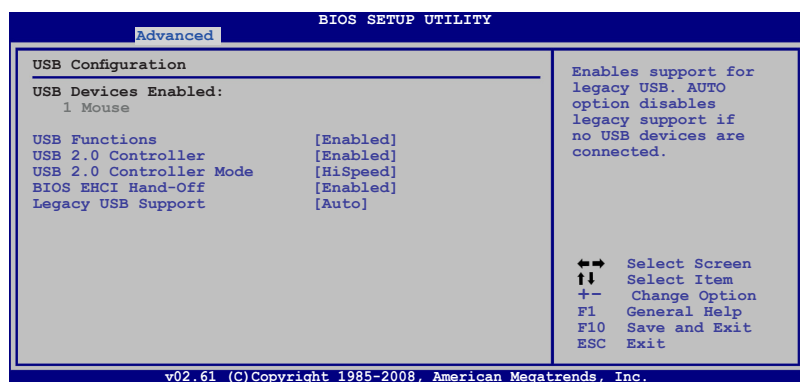
Onboard 1394 Controller [Enabled]

Allows you to enable or disable the onboard IEEE 1394a controller.

Configuration options: [Enabled] [Disabled]

3.4.4 USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.



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

USB Functions [Enabled]

Allows you to enable or disable the USB Host Controllers.

Configuration options: [Disabled] [Enabled]



The following items appear only when you set **USB Functions** to [Enabled].

USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.

Configuration options: [Enabled] [Disabled]

USB 2.0 Controller Mode [HiSpeed]

Allows you to set the USB 2.0 controller mode to HiSpeed (480 Mbps) or FullSpeed (12 Mbps).

Configuration options: [FullSpeed] [HiSpeed]



The **USB 2.0 Controller Mode** item appears only when you enable the **USB 2.0 Controller**.

BIOS EHCI Hand-off [Enabled]

Allows you to enable the support for operating systems without an EHCI hand-off feature.

Configuration options: [Disabled] [Enabled]

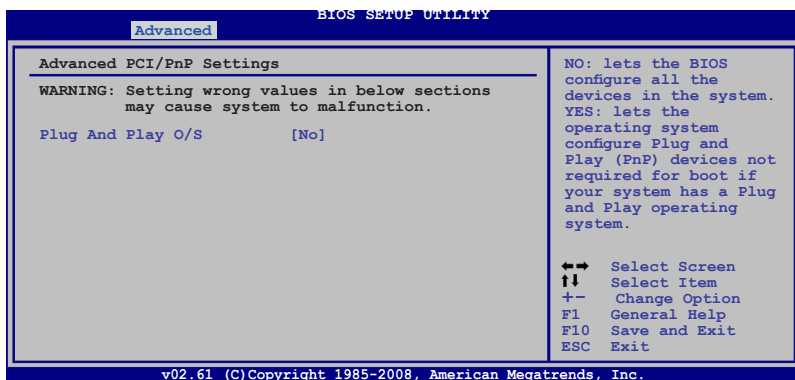
Legacy USB Support [Auto]

Allows you to enable or disable the 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]

3.4.5 PCIPnP

The PCIPnP menu items allow you to change the advanced settings for PCI/PnP devices.



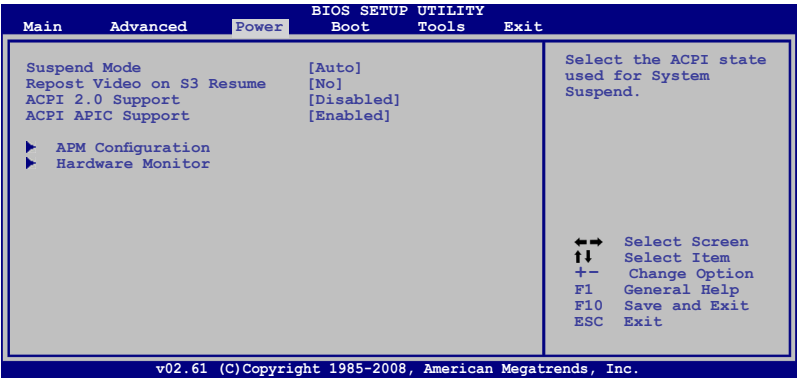
Plug And Play O/S [No]

When set to [NO], BIOS configures all the devices in the system. When set to [YES] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot.

Configuration options: [No] [Yes]

3.5 Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM). Select an item then press <Enter> to display the configuration options.



3.5.1 Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.

Configuration options: [S1 (POS) Only] [S3 Only] [Auto]

3.5.2 Repost Video on S3 Resume [No]

Determines whether to invoke VGA BIOS POST on S3/STR resume.

Configuration options: [No] [Yes]

3.5.3 ACPI 2.0 Support [Disabled]

Add additional tables as per ACPI 2.0 specifications.

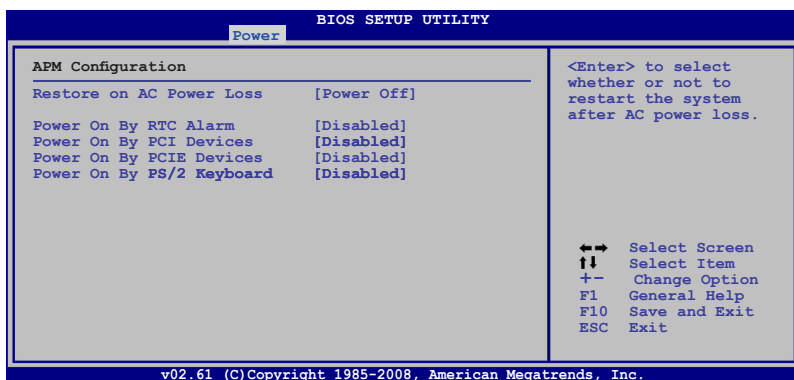
Configuration options: [Disabled] [Enabled]

3.5.4 ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Advanced Programmable Interrupt Controller (APIC). When set to [Enabled], the ACPI APIC table pointer is included in the RSDT pointer list.

Configuration options: [Disabled] [Enabled]

3.5.5 APM Configuration



Restore on 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 goes on 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]

Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to [Enabled], the items **RTC Alarm Date/ RTC Alarm Hour/ RTC Alarm Minute/ RTC Alarm Second** will become user-configurable with set values.

Configuration options: [Disabled] [Enabled]

Power On By PCI Devices [Disabled]

Allows you to enable or disable the PME to wake up from S5 by PCI devices.

Configuration options: [Disabled] [Enabled]

Power On By PCIE Devices [Disabled]

Allows you to enable or disable the PCIE devices to generate a wake event.

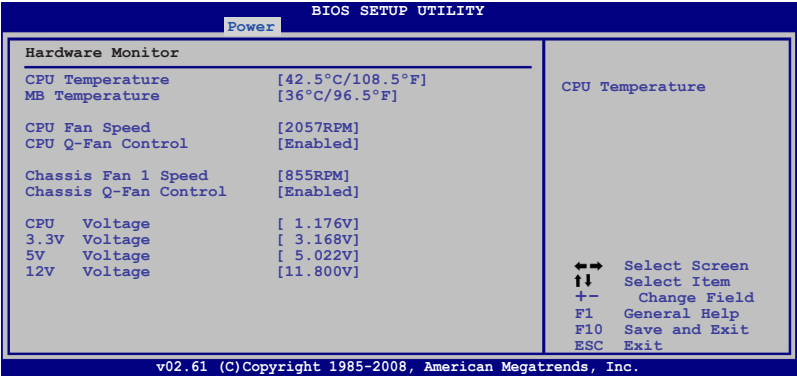
Configuration options: [Disabled] [Enabled]

Power On By PS/2 Keyboard [Disabled]

Allows you to disable the Power On by PS/2 keyboard function or set specific keys on the PS/2 keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

Configuration options: [Disabled] [Space Bar] [Ctrl-Esc] [Power Key]

3.5.6 Hardware Monitor



CPU Temperature [xxx°C/xxx°F]

MB Temperature [xxx°C/xxx°F]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select [Ignored] if you do not wish to display the detected temperatures.

CPU Fan Speed [xxxxRPM] or [Ignored] / [N/A]

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

CPU Q-Fan Control [Enabled]

Allows you to enable or disable the CPU Q-fan control feature.
Configuration options: [Disabled] [Enabled]

Chassis Fan 1 Speed [xxxxRPM] or [Ignored] / [N/A]

The onboard hardware monitor automatically detects and displays the chassis fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows [N/A].

Chassis Q-Fan Control [Enabled]

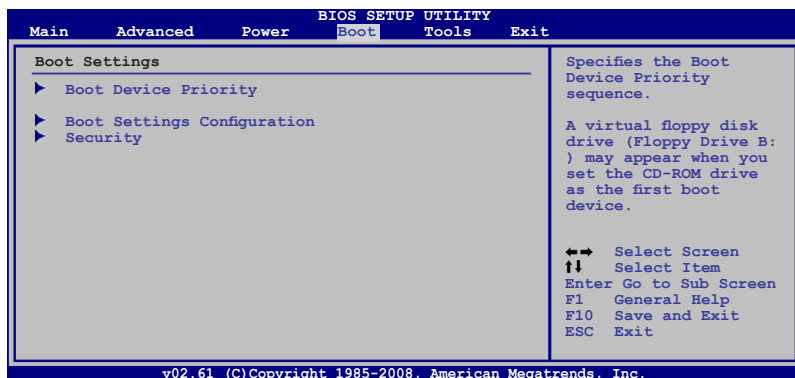
Allows you to enable or disable the Chassis Q-fan control feature.
Configuration options: [Disabled] [Enabled]

CPU Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

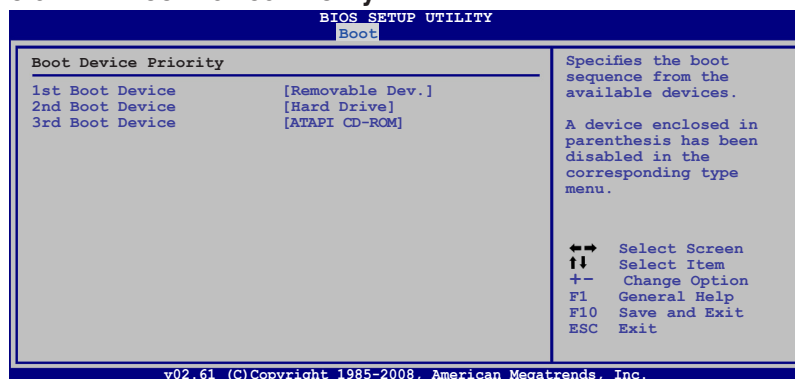
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators. Select [Ignored] if you do not want to detect this item.

3.6 Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu.



3.6.1 Boot Device Priority

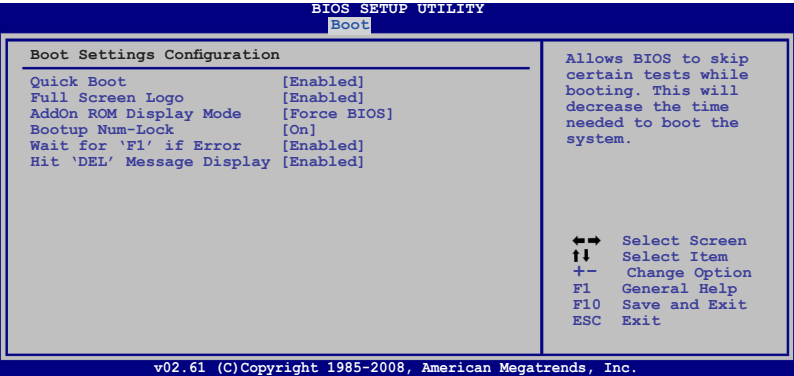


1st ~ xxx Boot Device [xxx Drive]

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.

Configuration options: [Removable Dev.] [Hard Drive] [ATAPI CD-ROM] [Disabled]

3.6.2 Boot Settings Configuration



Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.

Configuration options: [Disabled] [Enabled]

Full Screen Logo [Enabled]

This 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 MyLogo 2 feature.

AddOn ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.

Configuration options: [Force BIOS] [Keep Current]

Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.

Configuration options: [Off] [On]

Wait for 'F1' If Error [Enabled]

When set to [Enabled], the system waits for the <F1> key to be pressed when error occurs.

Configuration options: [Disabled] [Enabled]

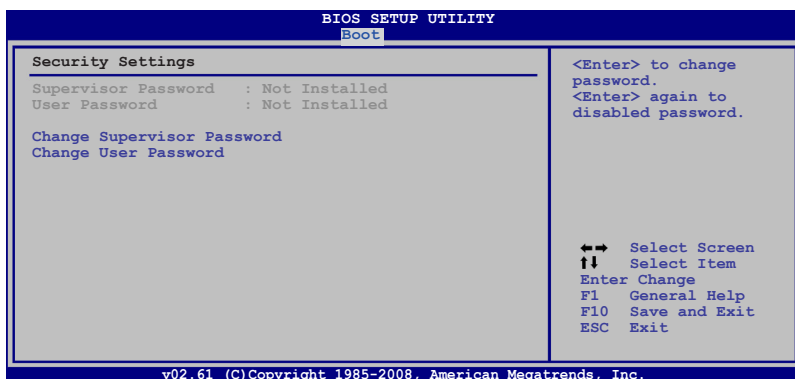
Hit 'DEL' Message Display [Enabled]

When set to [Enabled], the system displays the message "Press DEL to run Setup" during POST.

Configuration options: [Disabled] [Enabled]

3.6.3 Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.



Change Supervisor Password

Select this item to set or change the supervisor password. The **Supervisor Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a Supervisor Password:

1. Select the **Change Supervisor Password** item and press <Enter>.
2. From the password box, type a password composed of up to six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

The message "Password Installed" appears after you successfully set your password.

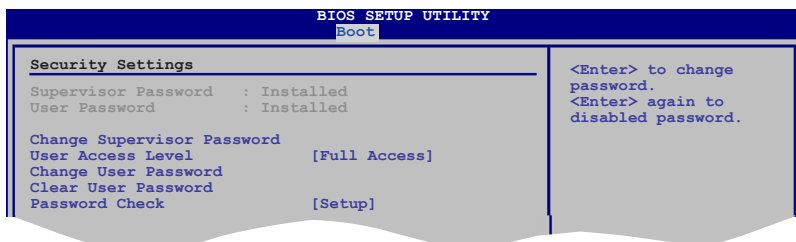
To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the **Change Supervisor Password** then press <Enter> twice. The message "Password Uninstalled" appears.



If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.



User Access Level [Full Access]

This item allows you to select the access restriction to the Setup items.

Configuration options: [No Access] [View Only] [Limited] [Full Access]

[No Access] prevents user access to the Setup utility.

[View Only] allows access but does not allow change to any field.

[Limited] allows changes only to selected fields, such as Date and Time.

[Full Access] allows viewing and changing all the fields in the Setup utility.

Change User Password

Select this item to set or change the user password. 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 **Change User Password** item and press <Enter>.
2. On the password box that appears, type a password composed of up to six letters and/or numbers, then press <Enter>.
3. Confirm the password when prompted.

The message "Password Installed" appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

Clear User Password

Select this item to clear the user password.

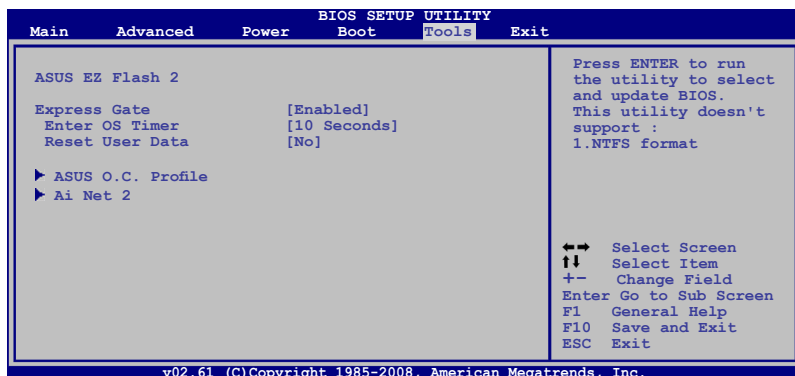
Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.

Configuration options: [Setup] [Always]

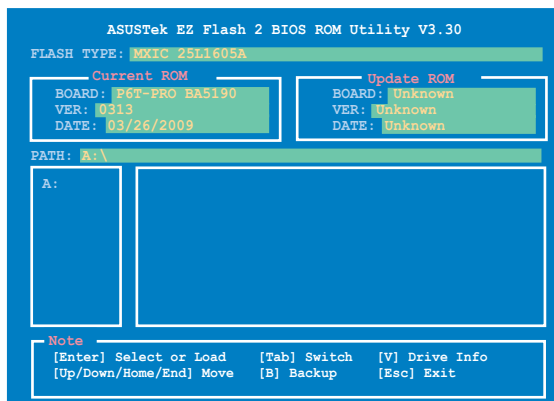
3.7 Tools menu

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



3.7.1 ASUS EZ Flash 2

Allows you to run ASUS EZ Flash 2. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice. Please see section 3.1.2 for details.



3.7.2 Express Gate [Enabled]

Allows you to enable or disable the ASUS Express Gate feature. The ASUS Express Gate feature is a unique instant-on environment that provides quick access to the Internet browser and Skype.

Configuration options: [Enabled] [Disabled]

Enter OS Timer [10 Seconds]

Sets countdown duration that the system waits at the Express Gate's first screen before starting Windows or other installed OS. Choose [Prompt User] to stay at the first screen of Express Gate for user action.

Configuration options: [Prompt User] [1 second] [3 seconds] [5 seconds] [10 seconds] [15 seconds] [20 seconds] [30 seconds]

Reset User Data [No]

Allows you to clear Express Gate's user data.

Configuration options: [No] [Reset]

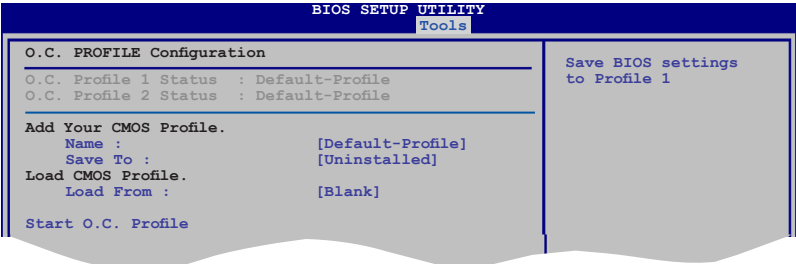
When setting this item to [Reset], make sure to save the setting to the BIOS so that the user data will be cleared the next time you enter the Express Gate. User data includes the Express Gate's settings as well as any personal information stored by the web browser (bookmarks, cookies, browsing history, etc.). This is useful in the rare case where corrupt settings prevent the Express Gate environment from launching properly.



The first time wizard will run again when you enter the Express Gate environment after clearing its settings.

3.7.3 ASUS O.C. Profile

This item allows you to store or load multiple BIOS settings.



Add Your CMOS Profile.

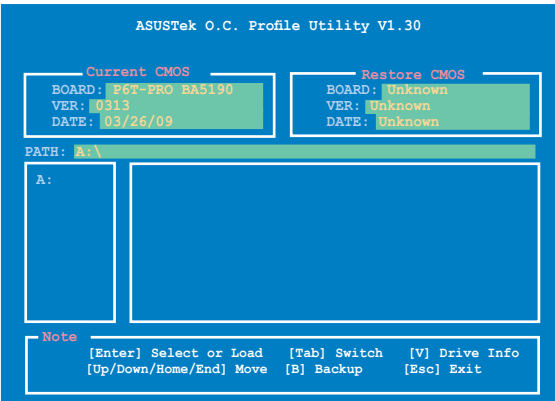
Allows you to save the current BIOS file to the BIOS Flash. In the **Name** sub-item, type your profile name and press <Enter>, and then choose a profile number to save your CMOS settings in the **Save To** sub-item. You can save two (2) CMOS profiles.

Load CMOS Profile.

Allows you to load the previous BIOS settings saved in the BIOS Flash. Press <Enter>, and choose a profile to load.

Start O.C. Profile

Allows you to run the utility to save and load CMOS. Press <Enter> to run the utility.



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

3.7.4 Ai Net 2



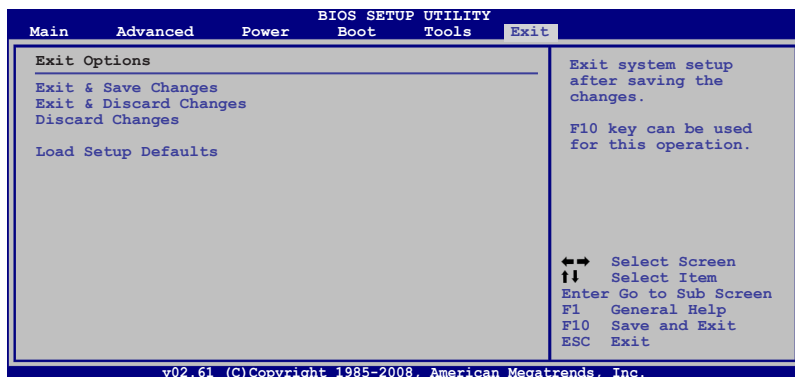
Check Realtek LAN Cable [Disabled]

Enables or disables checking of the Realtek LAN cable during the Power-On Self-Test (POST).

Configuration options: [Disabled] [Enabled]

3.8 Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and 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.

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **Ok** to save changes and exit.



If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

Discard Changes

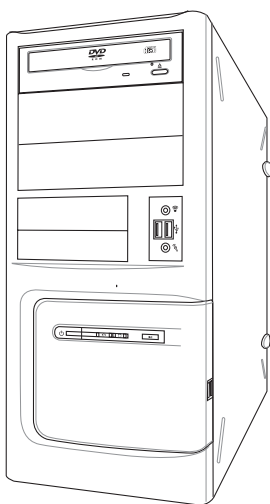
This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **Ok** to discard any changes and load the previously saved values.

Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **Ok** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.

Appendix

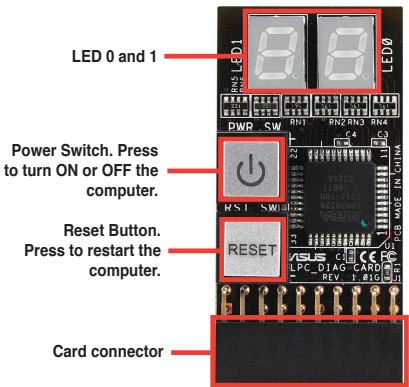
This chapter gives an introduction on the G.P. Diagnosis card that provides quick system checks and displays errors on the LED display.



G.P. Diagnosis card

A.1 G.P. Diagnosis card installation

A.1.1 G.P. Diagnosis card layout

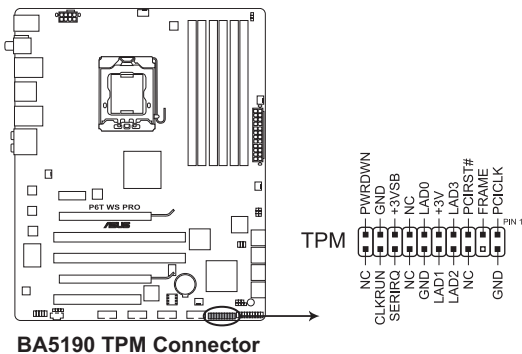


A.1.2 Installing G.P. Diagnosis card

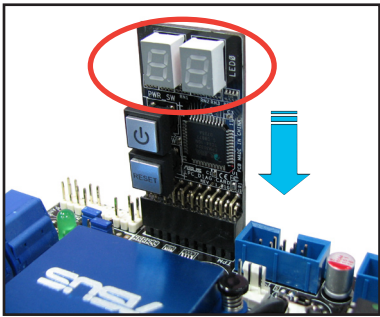


Ensure to turn off the power supply unit before installing the diagnosis card to avoid electrical shock hazard.

1. Locate the **TPM connector (20-1 pin TPM)** on the motherboard.



2. With the LEDs of the diagnosis card facing to the SATA ports, align the card connector with the TPM connector and press firmly until the card sits on the connector completely.



A.1.3 G.P. Diagnosis card check codes

D0	Initiate chip	75	Detect IDE
D1	Enable IO device for bootlock	78	Initiate option ROM
D2	Check and wake up system	85	Show post error
D3	Prepare system for memory detection and sizing	87	Enter BIOS setup
		A4	BIOS boot menu
D4	Memory test	AC	OS in PIC mode
D5	Copy BIOS from ROM to RAM	AA	OS in APIC mode
C0	Early CPU initiation	01	S1
C5	Wake up AP	03	S3
0A	Initiate KBC8042	04	S4
0B	Detect PS2 mouse	05	S5
0C	Detect PS2 keyboard	10	Resume from S1
2A	Initiate VGA BIOS	30	Resume from S3
38	USB initiation	40	Resume from S4
52	Display USB devices	00	Leave BIOS and pass control to OS

Manufacturer:	ASUSTeK Computer Inc.
Address:	No.150, LI-TE RD., PEITOU, TAIPEI 112, TAIWAN
Authorised representative in Europe:	ASUS Computer GmbH
Address:	HARKORT STR. 21-23, 40880 RATINGEN, GERMANY