



P4 Combo

User Manual

Version 1.0

Published July 2004

Copyright©2004 ASRock INC. All rights reserved.

Copyright Notice:

No part of this manual may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRock Inc.

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.

Disclaimer:

Specifications and information contained in this manual are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRock. ASRock assumes no responsibility for any errors or omissions that may appear in this manual.

With respect to the contents of this manual, ASRock does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose.

In no event shall ASRock, 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 data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product.



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

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

ASRock Website: <http://www.asrock.com>

Contents

1	Introduction	5
1.1	Package Contents	5
1.2	Specifications	6
1.3	Motherboard Layout	8
1.4	ASRock I/O Plus™	9
2	Installation	10
	Pre-installation Precautions	10
2.1	CPU Sockets	11
2.2	CPU Installation	12
2.3	Installation of Heatsink and CPU Fan	15
2.4	Installation of Memory Modules (DIMM)	16
2.5	Expansion Slots (PCI and AGP Slots)	17
2.6	Jumpers Setup	18
2.7	Onboard Headers and Connectors	19
2.8	Serial ATA (SATA) Hard Disks Installation	22
3	BIOS SETUP UTILITY	23
3.1	Introduction	23
3.1.1	BIOS Menu Bar	23
3.1.2	Navigation Keys	24
3.2	Main Screen	24
3.3	Advanced Screen	25
3.3.1	CPU Configuration	25
3.3.2	Chipset Configuration	26
3.3.3	ACPI Configuration	28
3.3.4	IDE Configuration	29
3.3.5	PCIPnP Configuration	31
3.3.6	Floppy Configuration	32
3.3.7	Super IO Configuration	32
3.3.8	USB Configuration	34
3.4	Hardware Health Event Monitoring Screen	34
3.5	Boot Screen	35
3.5.1	Boot Settings Configuration	35
3.5.2	Boot Device Priority	36
3.6	Security Screen	36
3.7	Exit Screen	37

4 Software Support	38
4.1 Install Operating System	38
4.2 Support CD Information	38
4.2.1 Running Support CD	38
4.2.2 Drivers Menu	38•
4.2.3 Utilities Menu	38
4.2.4 ASRock "PC-DIY Live Demo" Program	38
4.2.5 "LGA 775 CPU Installation Live Demo" Program ...	38
4.2.6 Contact Information	38

1. Introduction

Thank you for purchasing ASRock **P4 Combo** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest memory and CPU support lists on ASRock website as well. ASRock website <http://www.asrock.com>

1.1 Package Contents

ASRock **P4 Combo** Motherboard

(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)

ASRock **P4 Combo** Quick Installation Guide

ASRock **P4 Combo** Support CD (including *LGA 775 CPU Installation Live Demo*)

One 80-conductor Ultra ATA 66/100 IDE Ribbon Cable

One Ribbon Cable for a 3.5-in Floppy Drive

One Serial ATA (SATA) Data Cable

One Serial ATA (SATA) HDD Power Cable (Optional)

One ASRock I/O Plus™ Shield

1.2 Specifications

Platform:	ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm
CPU:	<ol style="list-style-type: none">1. 775-Pin Socket Supporting Intel® Pentium® 4 / Celeron® processor (in 775-land LGA package)2. 478-Pin Socket Supporting Intel® Pentium® 4 / Celeron® (Prescott, Northwood, Willimite) processor
Chipsets:	North Bridge: Intel® 848P chipset, FSB @ 800 / 533 / 400MHz, supports Hyper-Threading Technology (see CAUTION 1) South Bridge: Intel® ICH5, supports SATA 1.5Gb/s
Memory:	2 DDR DIMM slots: DDR1 and DDR2 supports PC3200 (DDR400) / PC2700 (DDR333) / PC2100 (DDR266), Max. 2GB (see CAUTION 2)
IDE:	IDE1: ATA 100 / Ultra DMA Mode 5 IDE2: ATA 100 / Ultra DMA Mode 5 Supports up to 4 IDE devices
Serial ATA:	Supports up to 2 SATA devices at 1.5Gb/s data transfer rate No Support for “RAID” and “Hot Plug” functions
Floppy Port:	Supports up to 2 floppy disk drives
Audio:	5.1 channels AC'97 Audio
PCI LAN:	Speed: 802.3u (10/100 Ethernet), supports Wake-On-LAN
Hardware Monitor:	CPU temperature sensing, Motherboard temperature sensing, CPU overheat shutdown to protect CPU life (ASRock U-COP)(see CAUTION 3), CPU fan tachometer, Chassis fan tachometer, Voltage monitoring: +12V, +5V, +3V, Vcore
PCI slots:	4 PCI slots with PCI Specification 2.3
AGP slot:	1 AGP slot, supports 1.5V, 8X/4X AGP card (see CAUTION 4)
USB 2.0:	8 USB 2.0 ports: includes 6 default USB 2.0 ports on the rear panel, plus one header to support 2 additional USB 2.0 ports (see CAUTION 5)
ASRock I/O Plus™:	1 PS/2 mouse port, 1 PS/2 keyboard port, 1 serial port: COM1, 1 parallel port: ECP/EPP support, 6 default USB 2.0 ports, 1 RJ-45 port, Audio Jack: Line In / Line Out / Microphone

-
- BIOS:** AMI legal BIOS,
Supports "Plug and Play",
ACPI 1.1 compliance wake up events,
CPU frequency stepless control
(only for advanced users' reference, see **CAUTION 6**)
- OS:** Microsoft® Windows® 98 SE / ME / 2000 / XP compliant

CAUTION!

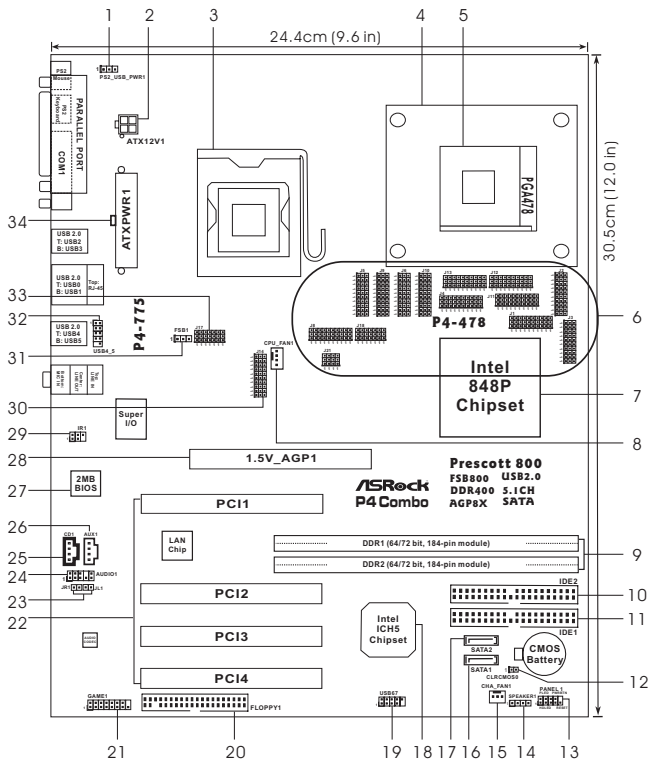
1. About the setting of "Hyper Threading Technology", please check page 26.
2. Please check the table below for the memory support frequency and its corresponding CPU FSB frequency.

CPU FSB Frequency	Memory Support Frequency
800	DDR266, DDR320*, DDR400
533	DDR266, DDR333
400	DDR266

* When you use an FSB800-CPU on this motherboard, it will run at DDR320 if you adopt a DDR333 memory module.

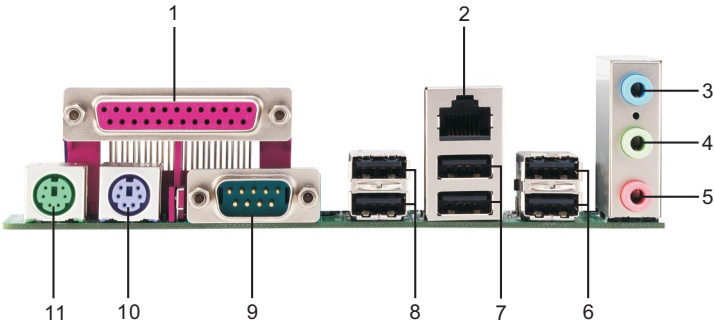
3. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
4. Do NOT use a 3.3V AGP card on the AGP slot of this motherboard!
It may cause permanent damage!
5. Power Management for USB 2.0 works fine under Microsoft® Windows® XP SP1 / 2000 SP4. It may not work properly under Microsoft® Windows® 98/ ME. Please refer to Microsoft® official document at <http://www.microsoft.com/whdc/hwdev/bus/USB/USB2support.mspx>
6. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU.

1.3 Motherboard Layout



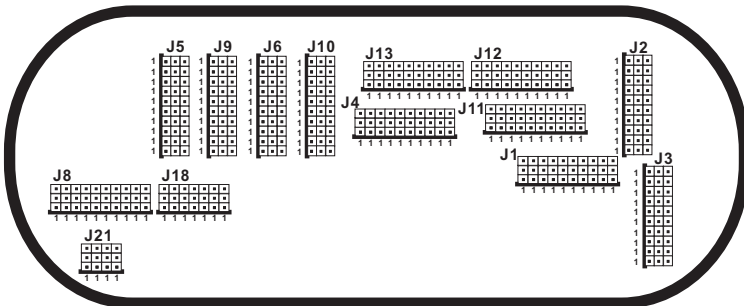
- | | | | |
|----|--|----|--|
| 1 | PS2_USB_PWR1 Jumper | 17 | Secondary Serial ATA Connector (SATA2) |
| 2 | ATX 12V Connector (ATX12V1) | 18 | South Bridge Controller |
| 3 | 775-Pin CPU Socket | 19 | USB 2.0 Header (USB67, Blue) |
| 4 | CPU Heatsink Retention Module
(for 478-Pin CPU) | 20 | Floppy Connector (FLOPPY1) |
| 5 | 478-Pin CPU Socket | 21 | Game Port Connector (GAME1) |
| 6 | J1- J6 Jumpers, J8- J13 Jumpers,
J18/ J21 Jumpers | 22 | PCI Slots (PCI1- 4) |
| 7 | North Bridge Controller | 23 | JR1 Jumper/ JL1 Jumper |
| 8 | CPU Fan Connector (CPU_FAN1) | 24 | Front Panel Audio Header (AUDIO1) |
| 9 | 184-pin DDR DIMM Slots (DDR1- 2) | 25 | Internal Audio Connector: CD1 (Black) |
| 10 | Secondary IDE Connector (IDE2, Black) | 26 | Internal Audio Connector: AUX1 (White) |
| 11 | Primary IDE Connector (IDE1, Blue) | 27 | BIOS FWH Chip |
| 12 | Clear CMOS Jumper (CLRCMOS0) | 28 | AGP Slot (1.5V_AGP1) |
| 13 | System Panel Header (PANEL1) | 29 | Infrared Module Header (IR1) |
| 14 | Chassis Speaker Header (SPEAKER 1) | 30 | J14 Jumper |
| 15 | Chassis Fan Connector (CHA_FAN1) | 31 | FSB Select Jumper (FSB1) |
| 16 | Primary Serial ATA Connector (SATA1) | 32 | Shared USB 2.0 Header (USB4_5, Blue) |
| | | 33 | J17 Jumper |
| | | 34 | ATX Power Connector (ATXPWR1) |

1.4 ASRock I/O Plus™



- | | | | |
|---|------------------------------|----|-----------------------------|
| 1 | Parallel Port | 7 | USB 2.0 Ports (USB01) |
| 2 | RJ-45 Port | 8 | USB 2.0 Ports (USB23) |
| 3 | Line In (Light Blue) | 9 | Serial Port: COM1 |
| 4 | Line Out (Lime) | 10 | PS/2 Keyboard Port (Purple) |
| 5 | Microphone (Pink) | 11 | PS/2 Mouse Port (Green) |
| 6 | Shared USB 2.0 Ports (USB45) | | |

Magnification of No. 6 on page 8
(J1-J6 Jumpers, J8-J13 Jumpers, J18 / J21 Jumpers)



2. Installation

P4 Combo is an ATX form factor (12.0-in x 9.6-in, 30.5 cm x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.



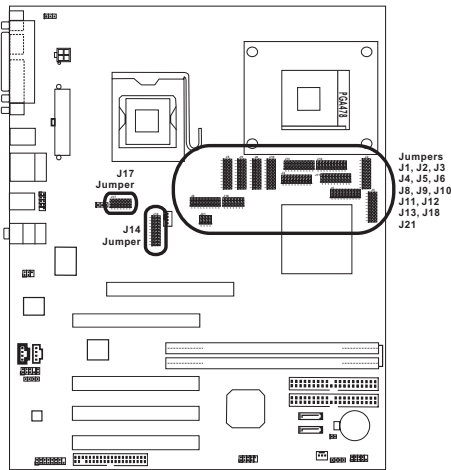
Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, **NEVER** place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 CPU Sockets

This motherboard is equipped with two types of CPU sockets. You may choose to install either Intel 775-Pin CPU or Intel 478-Pin CPU into this motherboard. However, to avoid instability and damage to the system, please do not install both of them into this motherboard.

Important: If you install a 775-Pin CPU into this motherboard, it is necessary to adjust the setting of J1--J6, J8--J14, J17, J18, and J21 Jumpers by shorting pin1 and pin2 of all these 16 sets of jumpers. These jumpers are set to support 478-Pin CPU by shorting pin2 and pin3 by default. Please refer to the figure below for these jumpers' location on the motherboard.



NOTE:
For clearer view of Jumpers J1-J6, J8 - J13, J18, and J21, please refer to the magnification on page 9.

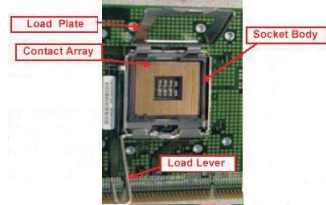
CPU Type	Jumper Settings			
	J1 / J4 / J8 / J11 / J12 / J13	J2 / J3 / J5 / J6 / J9 / J10 / J14	J17 / J18	J21
478-Pin CPU (all 16 Jumpers: short Pin2 and Pin3) (Default)	 (10 x 3-pin)	 (10 x 3-pin)	 (7 x 3-pin)	 (4 x 3-pin)
775-Pin CPU (all 16 Jumpers: short Pin1 and Pin2)	 (10 x 3-pin)	 (10 x 3-pin)	 (7 x 3-pin)	 (4 x 3-pin)

2.2 CPU Installation

This motherboard is equipped with two types of CPU sockets. You may choose to install either Intel 775-Pin CPU or Intel 478-Pin CPU into this motherboard. However, to avoid instability and damage to the system, please do not install both of them into this motherboard.

I.

For the installation of Intel 775-Pin CPU, please follow the steps below.



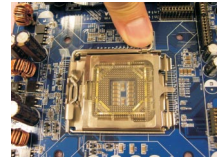
775-Pin Socket Overview



Before you insert the 775-Pin CPU into the socket, please check if the CPU surface is unclean or if there is any bent pin on the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

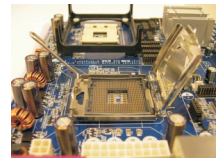
Step 1. Open the socket:

Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab.



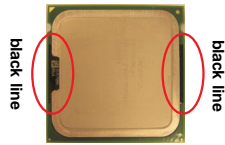
Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees.

Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

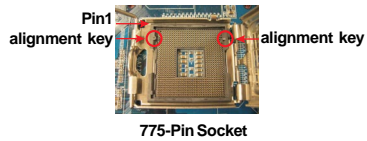
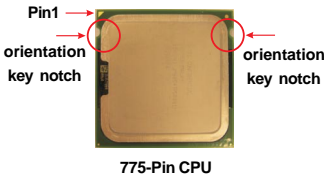


Step 2. Insert the 775-Pin CPU:

Step 2-1. Hold the CPU by the edges where are marked with black lines.



Step 2-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.



For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 2-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.



Step 3. Remove PnP Cap (Pick and Place Cap):

Use your left hand index finger and thumb to support the load plate edge, engage PnP cap with right hand thumb and peel the cap from the socket while pressing on center of PnP cap to assist in removal.



It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.

Step 4. Close the socket:

Step 4-1. Rotate the load plate onto the IHS.

Step 4-2. While pressing down lightly on load plate, engage the load lever.

Step 4-3. Secure load lever with load plate tab under retention tab of load lever.



II.

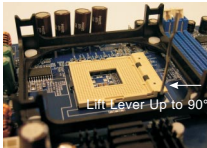
For the installation of Intel 478-Pin CPU, please follow the steps below.

- Step 1. Unlock the socket by lifting the lever up to a 90° angle.
- Step 2. Position the CPU directly above the socket such that its marked corner matches the base of the socket lever.
- Step 3. Carefully insert the CPU into the socket until it fits in place.

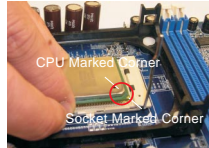


The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

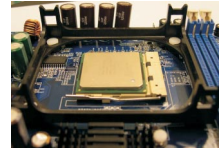
- Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



STEP 1:
Lift The Socket Lever up to 90°



STEP 2/STEP 3:
Match The CPU Marked Corner
to The Socket Marked Corner



STEP 4:
Push Down And Lock
The Socket Lever

2.3 Installation of CPU Fan and Heatsink

This motherboard is equipped with two types of CPU sockets. You may choose to install either Intel 775-Pin CPU or Intel 478-Pin CPU into this motherboard. It requires different types of heatsinks and cooling fans to fit with the installed CPU to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU_FAN connector (CPU_FAN1, see page 8, No. 8).

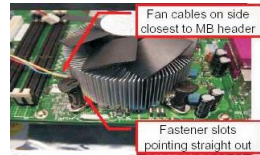
For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 775-Pin CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.

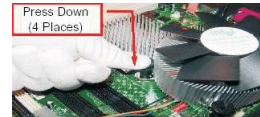


Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 8, No. 8).



Step 3. Align fasteners with the motherboard throughholes.

Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.



If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect the fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.

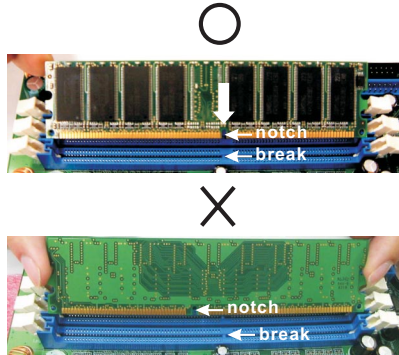
2.4 Installation of Memory Modules (DIMM)

P4 Combo motherboard provides two 184-pin DDR (Double Data Rate) DIMM slots.



Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

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



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

- Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.5 Expansion Slots (PCI and AGP Slots)

There are 4 PCI slots and 1 AGP slot on **P4 Combo** motherboard.

PCI slots: PCI slots are used to install expansion cards that have the 32-bit PCI interface.

AGP slot: The AGP slot is used to install a graphics card. The ASRock AGP slot has a special locking mechanism which can securely fasten the graphics card inserted.



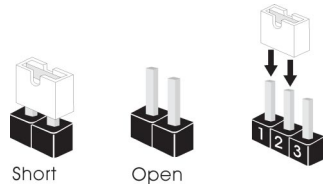
Please do NOT use a 3.3V AGP card on the AGP slot of this motherboard! It may cause permanent damage! For the voltage information of your graphics card, please check with the graphics card vendors.

Installing an expansion card

- Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).
- Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 5. Fasten the card to the chassis with screws.
- Step 6. Replace the system cover.

2.6 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



Jumper	Setting	Description
PS2_USB_PWR1 (see p.8 No. 1)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1_2</p> <p>+5V</p> </div> <div style="text-align: center;"> <p>2_3</p> <p>+5VSB</p> </div> </div>	Short pin2, pin3 to enable +5VSB (standby) for PS/2 or USB wake up events.

Note: To select +5VSB, it requires 2 Amp and higher standby current provided by power supply.

JR1 / JL1 Jumper

(see p.8 No. 23)



Note: If the jumpers JL1 and JR1 are short, both the front panel and the rear panel audio connectors can work.

Clear CMOS

(CLRCMOS0)

(see p.8 No. 12)



2-pin jumper

Note: CLRCMOS0 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short the Clear CMOS jumper for 5 seconds. After shorting the Clear CMOS jumper, please remove the jumper cap. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action.

FSB Select Jumper

(see p.8 No. 31)



Default Setting

Note: The default setting of the FSB Select jumper is shorting pin1 and pin2. Please keep the default setting for the system’s stability.

2.7 Onboard Headers and Connectors



Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

FDD connector
(33-pin FLOPPY1)
(see p.8 No. 20)



Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector.

Primary IDE connector (Blue)
(39-pin IDE1, see p.8 No. 11)



Secondary IDE connector (Black)
(39-pin IDE2, see p.8 No. 10)



connect the blue end
to the motherboard



connect the black end
to the IDE devices

80-conductor ATA 66/100 cable

Note: If you use only one IDE device on this motherboard, please set the IDE device as "Master". Please refer to the instruction of your IDE device vendor for the details. Besides, to optimize compatibility and performance, please connect your hard disk drive to the primary IDE connector (IDE1, blue) and CD-ROM to the secondary IDE connector (IDE2, black).

Serial ATA Connectors
(SATA1: see p.8 No. 16)
(SATA2: see p.8 No. 17)



SATA2



SATA1

These two Serial ATA (SATA) connectors support SATA data cables for internal storage devices. The current SATA interface allows up to 1.5 Gb/s data transfer rate.

Serial ATA (SATA)
Data Cable



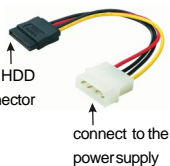
Either end of the SATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

Serial ATA (SATA)

Power Cable

(Optional)

connect to the SATA HDD
power connector



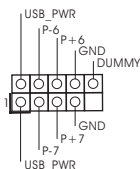
connect to the
powersupply

Please connect the black end of SATA power cable to the power connector on each drive. Then connect the white end of SATA power cable to the power connector of the power supply.

USB 2.0 Header

(9-pin USB67)

(see p.8 No. 19)

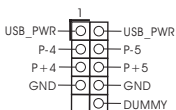


ASRock I/O Plus™ accommodates 6 default USB 2.0 ports. If those USB 2.0 ports on the I/O panel are not sufficient, this USB 2.0 header is available to support 2 additional USB 2.0 ports.

Shared USB 2.0 Header

(9-pin USB4_5)

(see p.8 No. 32)

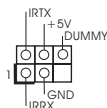


This USB4_5 connector is shared with the USB 2.0 ports 4,5 on ASRock I/O Plus™. When using the front panel USB ports by attaching the front panel USB cable to this connector (USB4_5), the USB ports 4,5 on ASRock I/O Plus™ will not be able to function.

Infrared Module Header

(5-pin IR1)

(see p.8 No. 29)



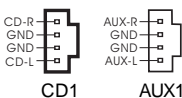
This header supports an optional wireless transmitting and receiving infrared module.

Internal Audio Connectors

(4-pin CD1, 4-pin AUX1)

(CD1: see p.8 No. 25)

(AUX1: see p.8 No. 26)

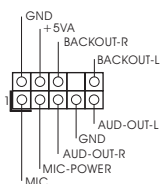


These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

Front Panel Audio Header

(9-pin AUDIO1)

(see p.8 No. 24)

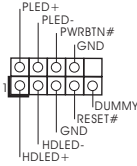


This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

System Panel Header

(9-pin PANEL1)

(see p.8 No. 13)

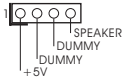


This header accommodates several system front panel functions.

Chassis Speaker Header

(4-pin SPEAKER1)

(see p.8 No. 14)

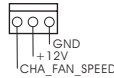


Please connect the chassis speaker to this header.

Chassis Fan Connector

(3-pin CHA_FAN1)

(see p.8 No. 15)

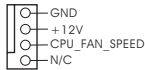


Please connect a chassis fan cable to this connector and match the black wire to the ground pin.

CPU Fan Connector

(4-pin CPU_FAN1)

(see p.8 No. 8)



You may connect either a 3-pin or a 4-pin CPU fan cable to this connector, then match the black wire to the ground pin.

Note: If you use a 3-pin CPU fan cable, insert it to the connector by aligning it with the pins "GND", "+12V", and "CPU_FAN_SPEED".

ATX Power Connector

(20-pin ATXPWR1)

(see p.8 No. 34)

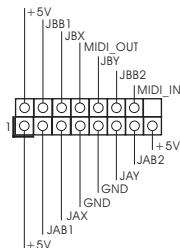


Please connect an ATX power supply to this connector.

Game Port Connector

(15-pin GAME1)

(see p.8 No. 21)



Connect a Game cable to this connector if the Game port bracket is installed.

ATX 12V Connector

(4-pin ATX12V1)

(see p.8 No. 2)



Please note that it is necessary to connect a power supply with ATX 12V plug to this connector so that it can provides CPU Vcore power. Failing to do so will cause the failure to power up.

2.8 Serial ATA (SATA) Hard Disks Installation

This motherboard adopts Intel ICH5 south bridge chipset that supports Serial ATA (SATA) hard disks. You may install SATA hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA hard disks.

- STEP 1: Install the SATA hard disks into the drive bays of your chassis.
- STEP 2: Connect the SATA power cable to the SATA hard disk.
- STEP 3: Connect one end of the SATA data cable to the motherboard's SATA connector.
- STEP 4: Connect the other end of the SATA data cable to the SATA hard disk.



Before you install OS into the SATA hard disk, you need to check and ensure the configuration of the **OnBoard IDE Operate Mode** option in BIOS setup is correct according to the condition of your system. For the configuration details, please refer to the instruction on page 29.

3. BIOS SETUP UTILITY

3.1 Introduction

This section explains how to use the BIOS SETUP UTILITY to configure your system. The BIOS FWH chip on the motherboard stores the BIOS SETUP UTILITY. You may run the BIOS SETUP UTILITY when you start up the computer. Please press <F2> during the Power-On-Self-Test (POST) to enter the BIOS SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the BIOS SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 BIOS Menu Bar

The top of the screen has a menu bar with the following selections:

- Main** To set up the system time/date information
- Advanced** To set up the advanced BIOS features
- H/W Monitor** To display current hardware status
- Boot** To set up the default system device to locate and load the Operating System
- Security** To set up the security features
- Exit** To exit the current screen or the BIOS SETUP UTILITY

Use <←> key or <→> key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

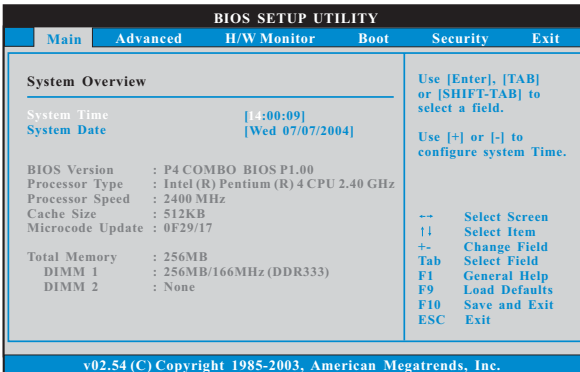
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the BIOS SETUP UTILITY
<ESC>	To jump to the Exit Screen or exit the current screen

3.2 Main Screen

When you enter the BIOS SETUP UTILITY, the Main screen will appear and display the system overview



System Time [Hour:Minute:Second]

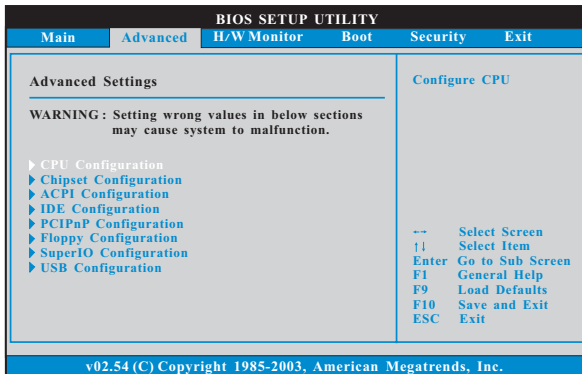
Use this item to specify the system time.

System Date [Day Month/Date/Year]

Use this item to specify the system date.

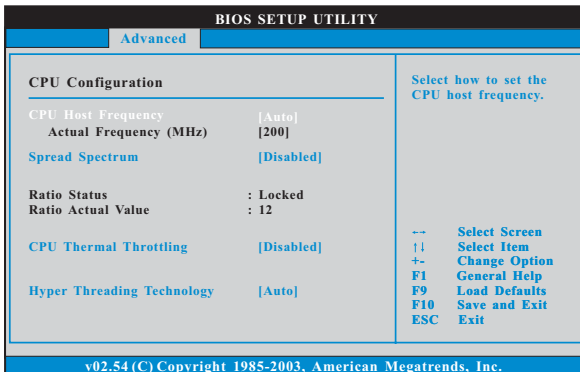
3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, ACPI Configuration, IDE Configuration, PCI/PnP Configuration, Floppy Configuration, SuperIO Configuration, and USB Configuration.



Setting wrong values in this section may cause the system to malfunction.

3.3.1 CPU Configuration



CPU Host Frequency

While entering setup, BIOS auto detects the present CPU host frequency of this motherboard. The actual CPU host frequency will show in the following item.

Spread Spectrum

This item should always be [Disabled] for better system stability.

Ratio Status

This is a read-only item, which displays whether the ratio status of this motherboard is “Locked” or “Unlocked”. If it shows “Unlocked”, you will find an item **Ratio CMOS Setting** appears to allow you changing the ratio value of this motherboard. If it shows “Locked”, then the item **Ratio CMOS Setting** will be hidden. If you use the ratio value to time the CPU frequency, it will be equal to the core speed of the installed processor.

Ratio Actual Value

This is a read-only item, which displays the ratio actual value of this motherboard.

CPU Thermal Throttling

You may select [Enabled] to enable P4 CPU internal thermal control mechanism to keep the CPU from overheated.

Hyper Threading Technology

To enable this feature, it requires a computer system with an Intel Pentium®4 processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® XP. Set to [Auto] if using Microsoft® Windows® XP, or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

3.3.2 Chipset Configuration

BIOS SETUP UTILITY	
Advanced	
Chipset Configuration	Options
DRAM Frequency	[Auto]
Flexibility Option	[Disabled]
Configure DRAM Timing by SPD	[Disabled]
DRAM CAS# Latency	[Auto]
DRAM RAS# Precharge	[4 Clocks]
DRAM RAS# to CAS# Delay	[4 Clocks]
DRAM Precharge Delay	[8 Clocks]
DRAM Burst Length	[8]
Memory Hole	[Disabled]
Init. Graphic Adapter Priority	[PCI/AGP]
Graphics Aperture Size	[64MB]
OnBoard LAN	[Enabled]
OnBoard AC'97 Audio	[Auto]
	133MHz (DDR266) 166MHz (DDR333) 200MHz (DDR400) Auto
	-- Select Screen F1 Select Item +- Change Option F1 General Help F9 Load Defaults F10 Save and Exit ESC Exit
v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.	

DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. You may also select other value as operating frequency: [133MHz (DDR 266)], [166MHz (DDR 333)], [200MHz (DDR 400)].

Flexibility Option

The default value of this option is [Disabled]. It will allow better tolerance for memory compatibility when it is set to [Enabled].

Configure DRAM Timing by SPD

Select [Enabled] will configure the following items by the contents in the SPD (Serial Presence Detect) device.

DRAM CAS# Latency

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [2.5], [2], and [3]. Please note that the configuration option [3] is available only for FSB 800 and FSB 533.

DRAM RAS# Precharge

This controls the idle clocks after a precharge command is issued. Configuration options: [4 Clocks], [3 Clocks], and [2 Clocks].

DRAM RAS# to CAS# Delay

This controls the latency between the DRAM active command and the read / write command. Configuration options: [4 Clocks], [3 Clocks], and [2 Clocks].

DRAM Precharge Delay

This controls the number of DRAM clocks for RAS minimum. Configuration options: [8 Clocks], [7 Clocks], [6 Clocks], and [5 Clocks].

DRAM Burst Length

DRAM Burst length can be set as [8] or [4].

Memory Hole

The default value of this item is [Disabled], or you may set the value of this item as [15MB-16MB].

Init. Graphic Adapter Priority

This allows you to select [PCI/AGP] and [AGP/PCI] as the initial graphics adapter priority. The default value is [PCI/AGP].

Graphics Aperture Size

It refers to a section of the PCI memory address range used for graphics memory. It is recommended to leave this field at the default value unless the installed AGP card's specifications requires other sizes.

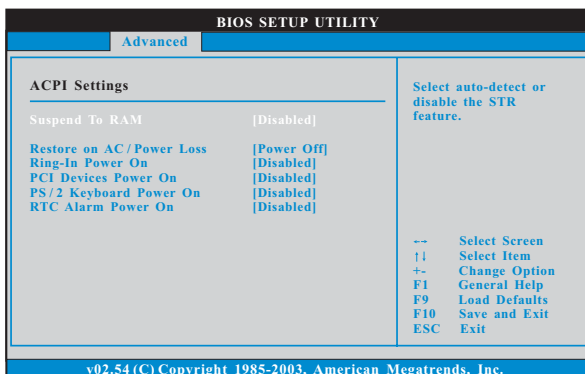
OnBoard LAN

This allows you to enable or disable the "OnBoard LAN" feature.

OnBoard AC'97 Audio

Select [Auto] or [Disabled] for the onboard AC'97 Audio feature.

3.3.3 ACPI Configuration



Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

Restore on AC/Power Loss

Use this item to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

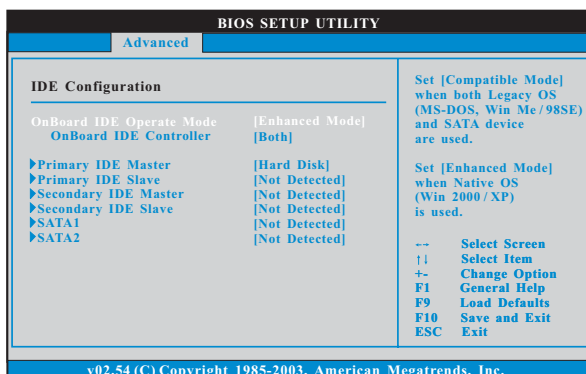
PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.4 IDE Configuration



OnBoard IDE Operate Mode

Please select **[Compatible Mode]** when you install legacy OS (Windows ME / 98SE) into SATA device. If you install legacy OS into IDE HDD while SATA devices are used, you also need to select **[Compatible Mode]**.

If native OS (Windows 2000 / XP) is installed into SATA device, please select **[Enhanced Mode]**. You also need to select **[Enhanced Mode]** while native OS is installed into IDE HDD and SATA devices are used.

If you do not install any SATA device, please also select **[Enhanced Mode]** no matter you use legacy OS or native OS for the system.

Please note that the following options will be varied depending on the “**OnBoard IDE Operate Mode**” (**[Compatible Mode]** or **[Enhanced Mode]**) that you selected.

When **[Enhanced Mode]** is selected:

OnBoard IDE Controller

You may enable either the primary IDE channel or the secondary IDE channel. Or you may enable both the primary and the secondary IDE channels by selecting **[Both]**. Set to **[Disabled]** will disable the both. Configuration options: **[Disabled]**, **[Primary]**, **[Secondary]**, **[Both]**.

When **[Compatible Mode]** is selected

Combined Mode Option

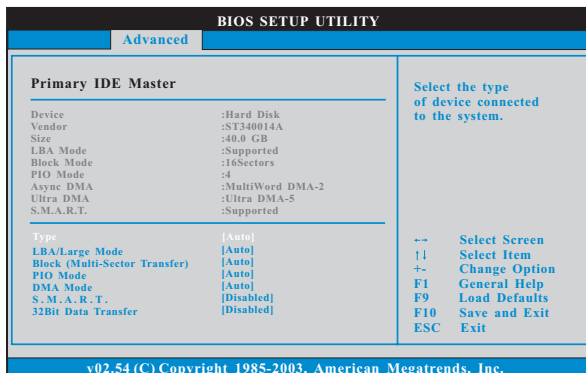
It allows you to select between **[Pri IDE + SATA]** and **[SATA + Sec IDE]**. If it is set to **[Pri IDE + SATA]**, then the secondary IDE will not work. Likewise, if it is set to **[SATA + Sec IDE]**, then the primary IDE will not work.



Because Intel® ICH5 south bridge only supports four IDE devices under legacy OS (Windows ME / 98SE), you have to choose either **[Pri IDE + SATA]** or **[SATA + Sec IDE]** when the installed SATA device is used with legacy OS.

IDE Device Configuration

You may set the IDE configuration for the device that you specify. We will use the "Primary IDE Master" as the example in the following instruction, which can be applied to the configurations of "Primary IDE Slave", "Secondary IDE Master", "Secondary IDE Slave", "SATA1" and "SATA2" as well.



TYPE

Use this item to configure the type of the IDE device that you specify. Configuration options: [Not Installed], [Auto], [CD/DVD], and [ARMD].

[Not Installed]: Select [Not Installed] to disable the use of IDE device.

[Auto]: Select [Auto] to automatically detect the hard disk drive.



After selecting the hard disk information into BIOS, use a disk utility, such as FDISK, to partition and format the new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

[CD/DVD]: This is used for IDE CD/DVD drives.

[ARMD]: This is used for IDE ARMD (ATAPI Removable Media Device), such as MO.

LBA/Large Mode

Use this item to select the LBA/Large mode for a hard disk > 512 MB under DOS and Windows; for Netware and UNIX user, select [Disabled] to disable the LBA/Large mode.

Block (Multi-Sector Transfer)

The default value of this item is [Auto]. If this feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

PIO Mode

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

DMA Mode

DMA capability allows the improved transfer-speed and data-integrity for compatible IDE devices.

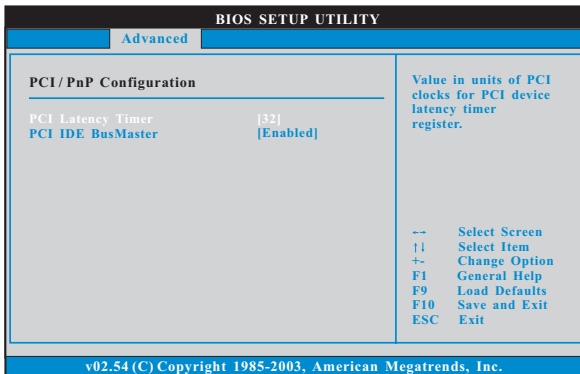
S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

32-Bit Data Transfer

Use this item to enable 32-bit access to maximize the IDE hard disk data transfer rate.

3.3.5 PCIPnP Configuration



PCI Latency Timer

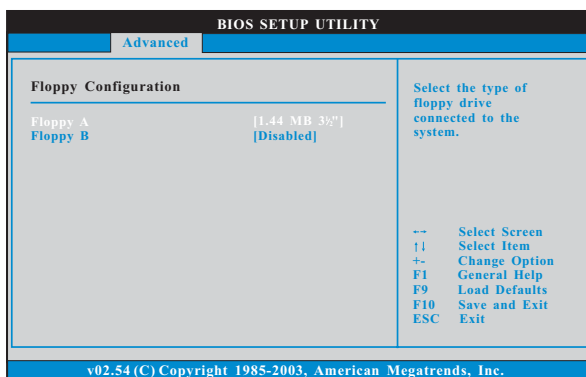
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

PCI IDE BusMaster

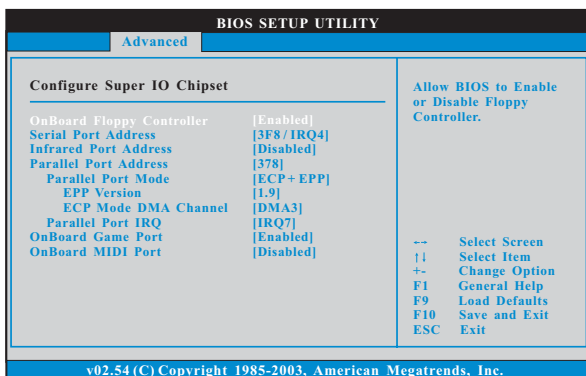
Use this item to enable or disable the PCI IDE BusMaster feature.

3.3.6 Floppy Configuration

In this section, you may configure the type of your floppy drive.



3.3.7 Super IO Configuration



OnBoard Floppy Controller

Use this item to enable or disable floppy drive controller.

Serial Port Address

Use this item to set the address for the onboard serial port or disable it.

Configuration options: [Disabled], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

Infrared Port Address

Use this item to set the address for the onboard infrared port or disable it.

Configuration options: [Disabled], [2F8 / IRQ3], and [2E8 / IRQ3].

Parallel Port Address

Use this item to set the address for the onboard parallel port or disable it. Configuration options: [Disabled], [378], and [278].

Parallel Port Mode

Use this item to set the operation mode of the parallel port. The default value is [ECP+EPP]. If this option is set to [ECP+EPP], it will show the EPP version in the following item, "EPP Version". Configuration options: [Normal], [Bi-Directional], and [ECP+EPP].

EPP Version

Use this item to set the EPP version. Configuration options: [1.9] and [1.7].

ECP Mode DMA Channel

Use this item to set the ECP mode DMA channel. Configuration options: [DMA0], [DMA1], and [DMA3].

Parallel Port IRQ

Use this item to set the IRQ for the parallel port. Configuration options: [IRQ5] and [IRQ7].

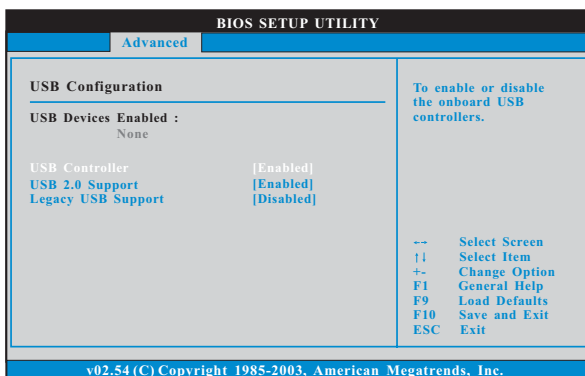
OnBoard Game Port

Use this item to enable the Game Port or disable it.

OnBoard MIDI Port

Use this item to select the address for the MIDI Port or disable it. Configuration options: [Disabled], [300], and [330].

3.3.8 USB Configuration



USB Controller

Use this item to enable or disable the use of USB controller.

USB 2.0 Support

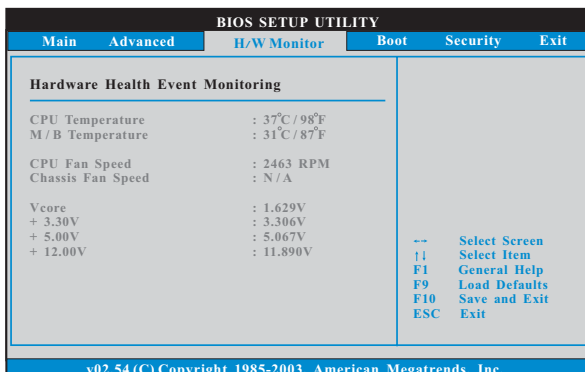
Use this item to enable or disable the USB 2.0 support.

Legacy USB Support

Use this item to enable or disable the support to emulate legacy I/O devices such as mouse, keyboard,... etc. Or you may select [Auto] so that the system will start to auto-detect; if there is no USB device connected, "Auto" option will disable the legacy USB support.

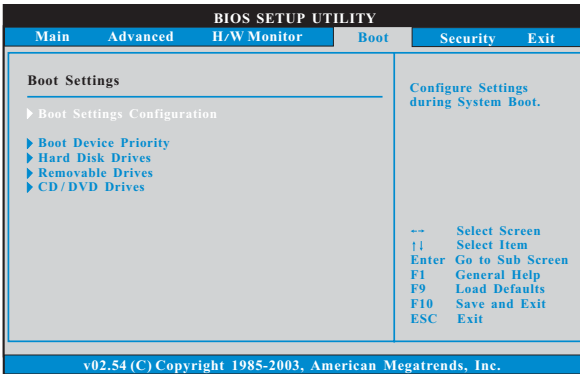
3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.

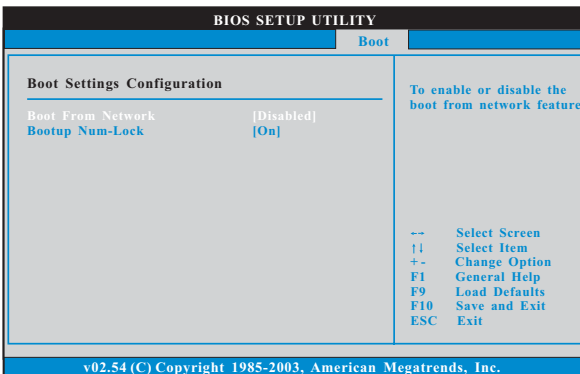


3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.



3.5.1 Boot Settings Configuration



Boot From Network

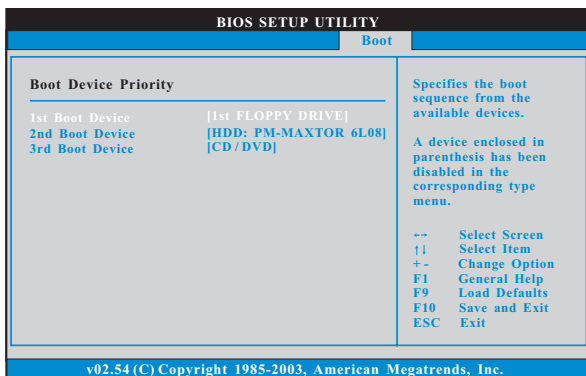
Use this item to enable or disable the Boot From Network feature.

Boot Up Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

3.5.2 Boot Device Priority

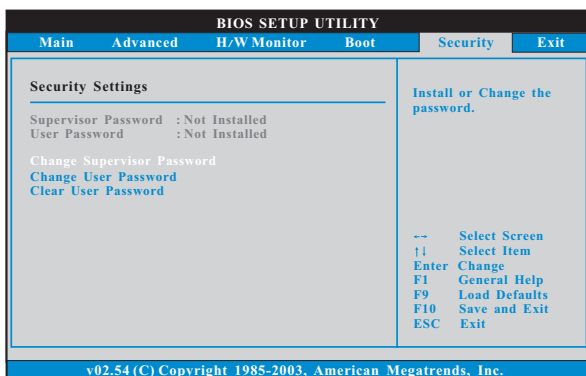
In this section, you may specify the boot sequence from the available devices in your system.



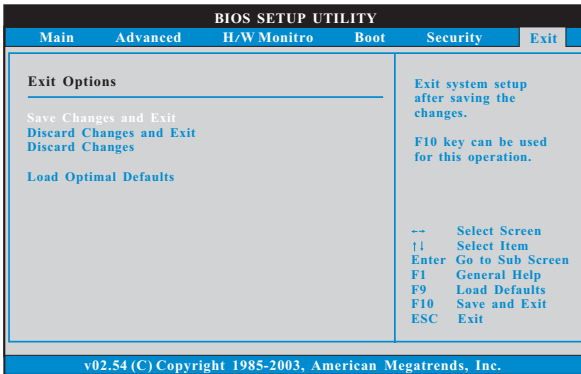
Likewise, you may also specify the boot sequence from the available devices for the hard disk drives, the removable drives, and the CD/DVD drives.

3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



3.7 Exit Screen



Save Changes and Exit

When you select this option, it will pop-out the following message, “Save configuration changes and exit setup?” Select [OK] to save the changes and exit the BIOS SETUP UTILITY.

Discard Changes and Exit

When you select this option, it will pop-out the following message, “Discard changes and exit setup?” Select [OK] to exit the BIOS SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, it will pop-out the following message, “Discard changes?” Select [OK] to discard all changes.

Load Optimal Defaults

When you select this option, it will pop-out the following message, “Load optimal defaults?” Select [OK] to load the default values for all the setup configurations.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 98 SE / ME / 2000 / XP. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASSETUP.EXE" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available devices drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 ASRock "PC-DIY Live Demo" Program

ASRock presents you a multimedia PC-DIY live demo, which shows you how to install your own PC system step by step. You can find the file through the following path:

`..\ MPEGA \ AVSEQ01.DAT`

To see this demo program, you can run Microsoft® Media Player® to play the file.

4.2.5 "LGA 775 CPU Installation Live Demo" Program

This motherboard is equipped with Intel LGA 775 socket, which is a new CPU socket interface that Intel has released. Since it has several tiny pins, which are easily to be damaged by improper handling, ASRock sincerely presents you a clear installation guide through this "LGA 775 CPU Installation Live Demo". We hope you may check this live demo program before you start the installation of LGA 775 CPU in order to reduce the risks of CPU and motherboard damages caused by any improper handling. To see this Live Demo, you can run Microsoft® Media Player® to play the file. You may find this Live Demo in the motherboard's Support CD through the following path:

`..\ MPEGA \ LGA775INST.DAT`

4.2.6 Contact Information

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.