



P4AL-8X
P4AL-8XM

User Manual

Version 1.0

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Chapter 1 Introduction

Thank you for purchasing ASRock P4AL-8X / P4AL-8XM 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.

Chapter 1 and 2 of this manual contain introduction of the motherboard and step-by-step installation guide for new DIY system builders. Chapter 3 and 4 contain basic BIOS setup and Support CD information. For advanced users' reference, the Appendix appearing on page 21 offers more advanced BIOS setup information.



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 P4AL-8X motherboard

(ATX form factor: 12.0" x 7.8", 30.5 x 19.8 cm)

or ASRock P4AL-8XM motherboard

(Micro ATX form factor: 9.6" x 7.8", 24.4 x 19.8 cm)

ASRock P4AL-8X / P4AL-8XM Quick Installation Guide

ASRock Intel-ALi Support CD

1 cable for IDE devices (1 x ATA 66 / 100 / 133)

1 cable for floppy drive (1 x ribbon cable)

1 ASRock I/O shield

1.2 Specifications

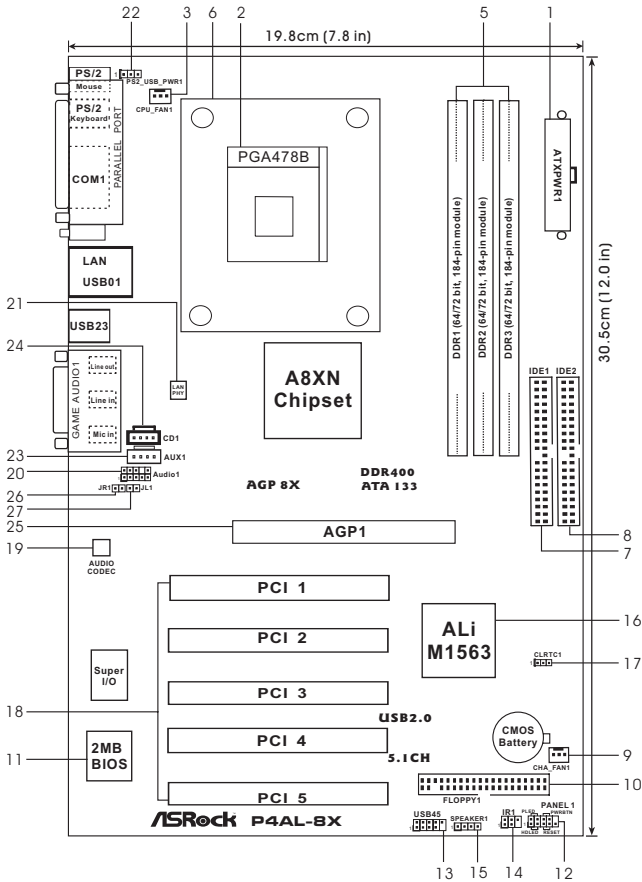
Platform:	P4AL-8X: ATX form factor (12.0" x 7.8", 30.5 x 19.8 cm) P4AL-8XM: Micro ATX form factor (9.6" x 7.8", 24.4 x 19.8 cm)
CPU:	Socket 478 for Intel® Pentium® 4/ Celeron® processor
Chipsets:	North Bridge: A8XN chipset, FSB @ 533 MHz, supports Hyper-Threading Technology (see CAUTION 1); South Bridge: supports USB 2.0, ATA 133
Memory:	3 DDR DIMM slots: DDR DIMM1, DDR DIMM2 and DDR DIMM3 PC2100 / PC2700 for three DDR DIMM slots, Max. 3GB; PC3200 for only one DDR DIMM at DDR1, Max. 1GB
IDE:	IDE1: ATA 133 / Ultra DMA Mode 6; IDE2: ATA 133 / Ultra DMA Mode 6; Can connect up to 4 IDE devices
Floppy Port:	Supports 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 (ASRock U-COP); Chassis temperature sensing; CPU overheat shutdown to protect CPU life (ASRock U-COP)(see CAUTION 2); Voltage monitoring: +12V, +5V, +3V, Vcore; CPU fan tachometer; Chassis fan tachometer
PCI slots:	P4AL-8X: 5 slots with PCI Specification 2.2 P4AL-8XM: 2 slots with PCI Specification 2.2
AGP slot:	1 AGP slot, supports 1.5V, 8X / 4X AGP card (see CAUTION 3)
USB 2.0:	4 default USB 2.0 ports and one extra set of USB 2.0 header to support two additional USB 2.0 ports upgrade (see CAUTION 4)
ASRock I/O™:	PS/2: 1 keyboard port / 1 mouse port; 1 RJ 45 port; 4 rear default USB 2.0 ports; 1 serial port: COM1; 1 parallel port: ECP/EPP support; Audio Jack: Line Out/ Line In/ Microphone + 1 Game port

-
- BIOS:** AMI legal BIOS; Supports “Plug and Play”;
ACPI 1.1 compliance wake up events;
Supports jumperfree; SMBIOS 2.3.1 support;
CPU frequency stepless control
(only for advanced users’ reference, see **CAUTION 5**)
- OS:** Microsoft® Windows® 98SE / ME / 2000 / XP compliant

CAUTION!

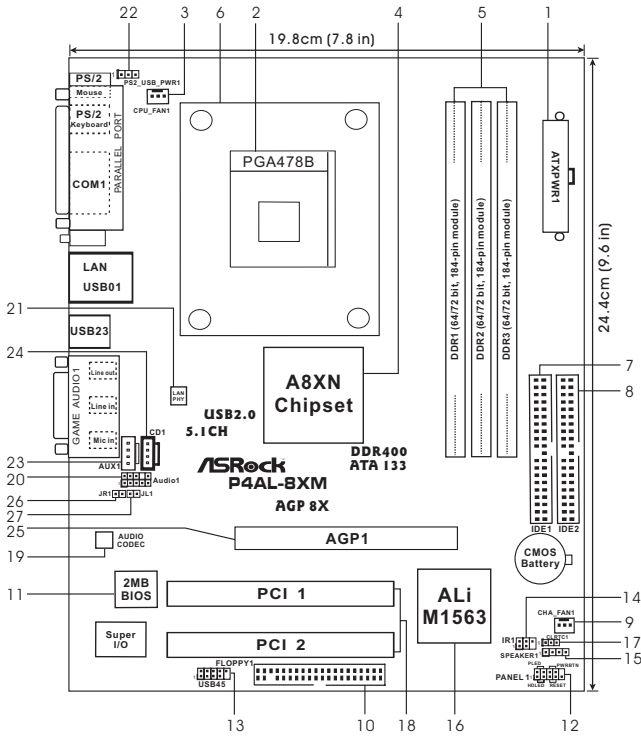
1. About the setting of “Hyper Threading Technology”, please check page 21.
2. While CPU overheat is detected, the system will automatically shutdown. Please check if the CPU fan on the motherboard functions properly before you resume the system. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
3. Do NOT plug a 3.3V AGP card in the AGP slot on P4AL-8X / P4AL-8XM motherboard! It may cause permanent damage!
4. Power Management for USB 2.0 works fine under Microsoft® Windows®XP. It may not work properly under Microsoft® Windows® 98/ME/2000. Please refer to Microsoft® official document at <http://www.microsoft.com/whdc/hwdev/bus/USB/USB2support.msp>
5. Although P4AL-8X / P4AL-8XM offers stepless control, it is not recommended to perform over clocking. When the CPU frequency of P4AL-8X / P4AL-8XM is set to perform over clocking, other clocks, such as PCI clock, AGP clock, and Memory clock will also be overclocked proportionally. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU and the motherboard.

1.3 Motherboard Layout (P4AL-8X)



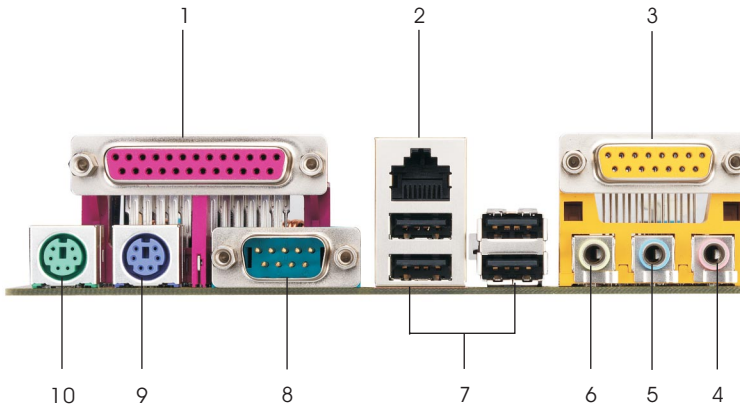
- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 14 | Infrared module connector (IR1) |
| 2 | CPU socket | 15 | External speaker connector (SPEAKER1) |
| 3 | CPU fan connector (CPU_FAN1) | 16 | South Bridge controller |
| 4 | North Bridge controller | 17 | Clear CMOS (CLRRTC1, 3-pin jumper) |
| 5 | 184-pin DDR DIMM slots | 18 | PCI slots (PCI 1-5) |
| 6 | CPU heatsink retention module | 19 | AUDIO CODEC |
| 7 | Primary IDE connector (IDE1, Blue) | 20 | Front panel audio connector (AUDIO1) |
| 8 | Secondary IDE connector (IDE2, Black) | 21 | LAN PHY |
| 9 | Chassis fan connector (CHA_FAN1) | 22 | PS2_USB_PWR1 jumper |
| 10 | Floppy connector (FLOPPY1) | 23 | Internal audio connector: AUX1 (White) |
| 11 | Flash Memory | 24 | Internal audio connector: CD1 (Black) |
| 12 | System panel connector (PANEL1) | 25 | AGP slot (AGP1) |
| 13 | USB 2.0 header (USB45, Blue) | 26 | JR1 jumper |
| | | 27 | JL1 jumper |

1.4 Motherboard Layout (P4AL-8XM)



- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 14 | Infrared module connector (IR1) |
| 2 | CPU socket | 15 | External speaker connector (SPEAKER1) |
| 3 | CPU fan connector (CPU_FAN1) | 16 | South Bridge controller |
| 4 | North Bridge controller | 17 | Clear CMOS (CLRRTC1, 3-pin jumper) |
| 5 | 184-pin DDR DIMM slots | 18 | PCI slots (PCI 1-5) |
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| 8 | Secondary IDE connector (IDE2, Black) | 21 | LAN PHY |
| 9 | Chassis fan connector (CHA_FAN1) | 22 | PS2_USB_PWR1 jumper |
| 10 | Floppy connector (FLOPPY1) | 23 | Internal audio connector: AUX1 (White) |
| 11 | Flash Memory | 24 | Internal audio connector: CD1 (Black) |
| 12 | System panel connector (PANEL1) | 25 | AGP slot (AGP1) |
| 13 | USB 2.0 header (USB45, Blue) | 26 | JR1 jumper |
| | | 27 | JL1 jumper |

1.5 ASRock I/O™ (P4AL-8X / P4AL-8XM)



- | | | | |
|---|----------------------|----|-----------------------------|
| 1 | Parallel port | 6 | Line Out (Lime) |
| 2 | RJ-45 port | 7 | USB 2.0 ports |
| 3 | Game port | 8 | Serial port (COM1) |
| 4 | Microphone (Pink) | 9 | PS/2 keyboard port (Purple) |
| 5 | Line In (Light Blue) | 10 | PS/2 mouse port (Green) |

Chapter 2 Installation

P4AL-8X is an ATX form factor (12.0" x 7.8", 30.5 x 19.8 cm) motherboard;
P4AL-8XM is a Micro ATX form factor (9.6" x 7.8", 24.4 x 19.8 cm) motherboard.
Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.



Do not over-tighten the screws! Doing so may damage the motherboard.

2.2 Pre-installation Precautions

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

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 antistatic pad or in the bag that comes with the component.

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.

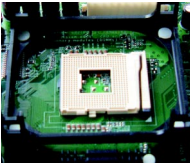
2.3 CPU Installation

- 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



Step 2, 3



Step 4

2.4 Installation of CPU Fan and Heatsink

Intel® Pentium®4 CPU requires larger heatsink and cooling fan. Thermal grease between the CPU and the heatsink is also needed to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other. For proper installation, please kindly refer to the instruction manuals of the CPU fan and heatsink vendors.

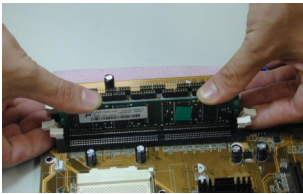
2.5 Installation of Memory Modules (DIMM)

P4AL-8X / P4AL-8XM motherboard provides three 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.
- Step 3. Firmly insert the DIMM into the slot until the retaining clip snap back in place and the DIMM is properly seated.



2.6 Expansion Slots (PCI and AGP Slots)

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.



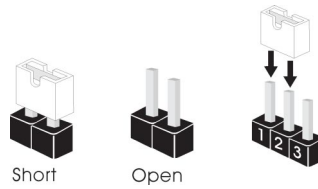
Please do NOT plug a 3.3V AGP card in the AGP slot on P4AL-8X / P4AL-8XM motherboard! It may cause permanent damage!



Installing an expansion card

- Step 1. Before installing the expansion card, read the documentation of the expansion card and make necessary hardware settings for the card.
- 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.



2.7 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.7/p.8 item 22)	<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(see p.7/p.8 item 26)		
JL1(see p.7/p.8 item 27)	JR1 JL1	JR1 JL1
	fig. 1	fig. 2

Note: When you connect speakers in back panel and front panel at the same time,

1. If the jumpers JL1 and JR1 are short (see fig. 1), both front panel and rear panel audio connectors can work.
2. If both jumper caps on JL1 and JR1 are removed (see fig. 2), only front panel audio works.

However, it requires your front panel to support the function.

Clear CMOS

CLRTC1 (see p.7/p.8 item 17)	<div style="text-align: center;"> <p>1_2</p>  <p>Default</p> </div>	<div style="text-align: center;"> <p>2_3</p>  <p>Clear CMOS</p> </div>
---------------------------------	--	---

Note: CLRTC1 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, then use a jumper cap to short pin2 and pin3 on CLRTC1 for 3 seconds. Please remember to put the jumper cap back to the default setting (short pin1 and pin2) after clearing the CMOS.

2.8 Connectors



Connectors are NOT jumpers. DO NOT place jumper caps over these connectors.

Connector	Figure	Description
-----------	--------	-------------

FDD connector

(33-pin FLOPPY1)

(see p.7/p.8 item 10)



Note: Match the red marking on the floppy ribbon cable with Pin1.

Primary IDE connector (Blue)

(39-pin IDE1, see p.7/p.8 item 7)



Secondary IDE connector (Black)

(39-pin IDE2, see p.7/p.8 item 8)



Connect this BLUE end to the motherboard

Connect this BLACK end to the IDE devices

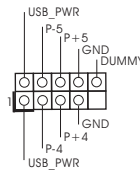
80-Pin ATA 100/133 cable

Note: 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).

USB 2.0 header

(9-pin USB45)

(see p.7/p.8 item 13)

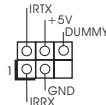


ASRock I/O™ provides you 4 default USB 2.0 ports on the rear panel. If the rear USB ports are not sufficient, this USB 2.0 header is available for 2 additional USB 2.0 ports.

Infrared module connector

(5-pin IR1)

(see p.7/p.8 item 14)



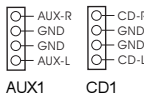
This connector supports an optional wireless transmitting and receiving infrared module.

Internal audio connectors

(4-pin CD1, 4-pin AUX1)

(CD1: see p.7/p.8 item 24)

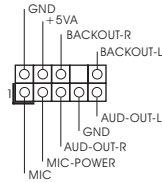
(AUX1: see p.7/p.8 item 23)



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 connector
(9-pin AUDIO1)

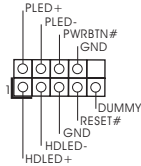
(see p.7/p.8 item 20)



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

System panel connector
(9-pin PANEL1)

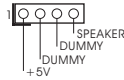
(see p.7/p.8 item 12)



This connector accommodates several system front panel functions.

External speaker connector
(4-pin SPEAKER 1)

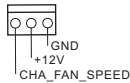
(see p.7/p.8 item 15)



This connector allows you to attach to an external speaker.

Chassis fan connector
(3-pin CHA_FAN1)

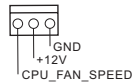
(see p.7/p.8 item 9)



Connect the fan cable to the connector matching the black wire to the ground pin.

CPU fan connector
(3-pin CPU_FAN1)

(see p.7/p.8 item 3)



Connect the fan cable to the connector matching the black wire to the ground pin.

ATX power connector
(20-pin ATXPWR1)

(see p.7/p.8 item 1)



Connect an ATX power supply to the connector.

Chapter 3 BIOS Setup

3.1 BIOS Setup Utility

This section explains how to configure your system using the BIOS Setup Utility. The Flash Memory on the motherboard stores the BIOS Setup Utility. When you start up the computer, there is a chance for you to run the BIOS Setup. Press <F2> during the Power-On-Self-Test (POST) to enter the BIOS Setup Utility, otherwise, POST continues with its test routines.

If you wish to enter the BIOS Setup after POST, restart the system by pressing <Ctl> + <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.

The BIOS Setup Utility is designed to be user-friendly. It is a menu-driven program, which allows you to scroll through its various sub-menus and select among the predetermined choices.



Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purpose only, and 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	Sets up the basic system configuration
ADVANCED	Sets up the advanced features
SECURITY	Sets up the security features
POWER	Configures Power Management features
BOOT	Configures the default system device that is used to locate and load the Operating System
EXIT	Exits the current menu or the BIOS Setup

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

3.1.2 Legend Bar

At the bottom of the Setup Screen is a legend bar. The following table lists the keys in the legend bar with their corresponding functions.

Navigation Key(s)	Function Description
<F1>	Displays the General Help Screen
<ESC>	Jumps to the Exit menu or returns to the upper menu from the current menu
↑ / ↓	Moves cursor up or down between fields
← / →	Selects menu to the left or right
+ / -	Increases or decreases values
<Enter>	Brings up a selected menu for a highlighted field
<F9>	Loads all the setup items to default value
<F10>	Saves changes and exits Setup

3.2 Main Menu

When you enter the BIOS Setup Utility, the following screen appears.

AMIBIOS SETUP UTILITY - VERSION 3.31a			
Main	Advanced	Security	Power Boot Exit
System Date		Jul 09 2003 Wed	[Setup Help]
System Time		10:07:40	Month: Jan - Dec
▶ Floppy Drives			Day: 01 - 31
▶ IDE Devices			Year: 1980 - 2099
BIOS Version	P4AL-8X BIOS P1.00		
Processor Type	Pentium (R) 4 CPU		
Processor Speed	2100 MHz		
Cache Size	512 KB		
Microcode Update	F23 / 08		
Total Memory	128 MB		
DDR1	128 MB / 133 MHz (DDR 266)		
DDR2	None		
DDR3	None		
F1:Help	↑:Select Item	+/-:Change Values	F9:Setup Defaults
Esc:Exit	→:Select Menu	Enter:Select	F10:Save & Exit
			▶Sub-Menu

System Date [Month/Day/Year]

Set the system date that you specify. Valid values for month, day, and year are Month: (Jan to Dec), Day: (1 to 31), Year: (up to 2099). Use ↑ ↓ keys to move between the Month, Day and Year fields.

System Time [Hour:Minute:Second]

Set the system to the time that you specify. Use ↑ ↓ keys to move between the Hour, Minute and Second fields.

Floppy Drives

Use this to set the type of floppy drives installed.

IDE Devices

Use this to configure IDE devices.

TYPE

To set the type of the IDE device, first, please select “IDE Devices” on Main menu and press <Enter> to get into the sub-menu. Then, select among “Primary IDE Master”, “Primary IDE Slave”, “Secondary IDE Master”, and “Secondary IDE Slave” to make configuration of its type. After making your selections on this sub-menu, press <ESC> key to return to the upper menu, in which the hard disk drive field will display the size of the hard disk drive that you configured. Below are the configuration options.

AMIBIOS SETUP UTILITY - VERSION 3.31a	
Main	
Primary IDE Master: [Setup Help]	
Type	Auto
Cylinders	
Heads	
Write Precompensation	
Sectors	
Maximum Capacity	
LBA Mode	On
Block Mode	On
Fast Programmed I/O Modes	Auto
32 Bit Transfer Mode	On
Ultra DMA Mode	Auto
Select how to set the parameters of drive. Or Select [AUTO] to set all HDD parameters automatically.	
F1:Help	F11:Select Item
Esc:Previous Menu	+/-:Change Values
	Enter:Select
	Sub-Menu
	F9:Setup Defaults
	F10:Save & Exit

[USER]: It allows user to manually enter the number of cylinders, heads, and sectors per track for the drive.



Before attempting to configure a hard disk drive, make sure you have the correct configuration information supplied by the drive manufacturer. Incorrect settings may cause the system to fail to recognize the installed hard disk.

[Auto]: Select [Auto] to automatically detect hard disk drive. If auto-detection is successful, the BIOS Setup automatically fills in the correct values for the remaining fields on this sub-menu. If the auto-detection fails, it may be due to that the hard disk is too old or too new. If the hard disk was already formatted on an older system, the BIOS Setup may detect incorrect parameters. In these cases, select [User] to manually enter the IDE hard disk drive parameters.



After entering the hard disk information into BIOS, use a disk utility, such as FDISK, to partition and format 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.

Cylinders

This is used to configure the number of cylinders. Refer to the drive documentation to determine the correct value.

Heads

This is used to configure the number of read/write heads. Refer to the drive documentation to determine the correct values.

Write Pre-compensation

Enter Write Pre-compensation sector. Refer to the drive documentation to determine the correct value.

Sectors

This is used to configure the number of sectors per track. Refer to the drive documentation to determine the correct value.

Maximum Capacity

This field shows the drive's maximum capacity as calculated by the BIOS based on the drive information you entered.

LBA Mode

This allows user to select the LBA mode for a hard disk > 512 MB under DOS and Windows; for Netware and UNIX user, select [Off] to disable the LBA mode.

Block Mode

Set the block mode to [On] will enhance hard disk performance by reading or writing more data during each transfer.

Fast Programmed I/O Modes

This allows user to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

32 Bit Transfer Mode

It allows user to enable 32-bit access to maximize the IDE hard disk data transfer rate.

Ultra DMA Mode

Ultra DMA capability allows improved transfer speeds and data integrity for compatible IDE devices. Set to [Disabled] to suppress Ultra DMA capability.

3.3 Advanced, Security, Power, Boot, and Exit Menus

Detailed descriptions of these menus are listed in the Appendix. See page 21.

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. 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:

..\MPEGAV\AVSEQ01.DAT

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

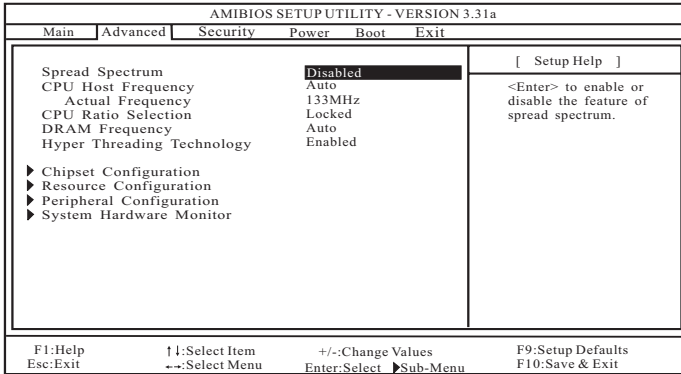
4.2.5 Contact Information

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.

Appendix: Advanced BIOS Setup

This section will introduce you the following BIOS Setup menus: “Advanced,” “Security,” “Power,” “Boot,” and “Exit.”

1. Advanced BIOS Setup Menu



Spread Spectrum: This field should always set to [Disabled] for better system stability.

CPU Host Frequency: This shows current CPU host frequency of the installed motherboard.

CPU Ratio Selection: CPU Ratio is the multiple that times the frontside bus frequency will equal the core speed of the installed processor. Whether the option is open or locked is determined by the installed processor.

DRAM Frequency: If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. You can also select other value as operating frequency: [100MHz <DDR200>], [133MHz <DDR266>], [166MHz <DDR333>], [200MHz <DDR400>].

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 current CPU does not support Hyper-Threading technology.

Chipset Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a		
Advanced		
Chipset Configuration		[Setup Help]
AGP Aperture Size	64MB	<Enter> to select the size of mapped memory for graphics data.
AGP Data Rate	Auto	
AGP Fast Write	Disabled	
USB Controller	Enabled	
USB Device Legacy Support	Disabled	
DRAM CAS Latency	Auto	
CPU Thermal Throttling	Auto	

F1: Help	↑: Select Item	+/-: Change Values	F9: Setup Defaults
Esc: Previous Menu	Enter: Select	→: Sub-Menu	F10: Save & Exit

AGP 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 inserted AGP card requires other sizes.

AGP Data Rate: The default setting is [Auto]. You may select between [8X] or [4X] for an AGP 3.0 card, or select among [4X], [2X], [1X] for an AGP 2.0 card.

AGP Fast Write: This allows you to enable or disable the feature of AGP fast write protocol support.

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

USB Device Legacy Support: Use this to enable or disable support to emulate legacy I/O devices such as mouse, keyboard,... etc.

DRAM CAS Latency: This is used to adjust the means of memory accessing. Configuration options: [Auto], [2T], [2.5T], [3T]. Please note that not all the DDR DIMMs can support CAS latency=3T.

CPU Thermal Throttling: Select [Enabled] will enable P4 thermal control circuit to keep CPU from overheated.

Resource Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a			
Advanced			
Resource Configuration		[Setup Help]	
PCI Latency Timer (PCI Clocks)	32	<Enter> to select PCI clocks. Leave on default setting for the best PCI performance.	
Primary Graphics Adapter	AGP		
F1:Help	↑:Select Item	+/-:Change Values	F9:Setup Defaults
Esc:Previous Menu		Enter:Select ▶Sub-Menu	F10:Save & Exit

PCI Latency Timer (PCI Clocks): The default is 32. It is recommended to keep the default value unless the inserted PCI expansion cards' specifications require other settings.

Primary Graphics Adapter: This allows you to select [AGP] or [PCI] as the primary graphics adapter.

Peripheral Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a			
Advanced			
Peripheral Configuration		[Setup Help]	
OnBoard FDC	Auto	<Enter> to enable or disable the floppy drive controller.	
OnBoard Serial Port	Auto		
OnBoard Infrared Port	Disabled		
OnBoard Parallel Port	Auto		
Parallel Port Mode	ECP + EPP		
EPP Version	1.9		
Parallel Port IRQ	Auto		
Parallel Port DMA Channel	Auto		
OnBoard Midi Port	Disabled		
Midi IRQ Select	5		
OnBoard Game Port	200		
OnBoard IDE	Both		
OnBoard LAN	Enabled		
OnBoard AC'97 Audio	Auto		
F1:Help	↑:Select Item	+/-:Change Values	F9:Setup Defaults
Esc:Previous Menu		Enter:Select ▶Sub-Menu	F10:Save & Exit

- OnBoard FDC:** Use this to enable or disable floppy drive controller.
- OnBoard Serial Port:** Use this to set addresses for the onboard serial ports or disable serial ports. Configuration options: [Auto], [Disabled], [3F8 / IRQ4 / COM1], [2F8 / IRQ3 / COM2], [3E8 / IRQ4 / COM3], [2E8 / IRQ3 / COM4].
- OnBoard Infrared Port:** You may select [Enable] or [Disabled] for this onboard infrared port feature.
- OnBoard Parallel Port:** Select Parallel Port address or disable Parallel Port. Configuration options: [Auto], [Disabled], [378], [278].
- Parallel Port Mode:** Set the operation mode of the parallel port. The default value is [ECP+CPP]. If this option is set to [ECP+EPP], it will show the EPP version in the following item, "EPP Version".
- OnBoard Midi Port:** Select address for Midi Port or disable Midi Port. Configuration options: [Disabled], [330], [300], [290], [292].
- Midi IRQ Select:** Use this to select Midi IRQ.
- OnBoard Game Port:** Select address for Game Port or disable Game Port. Configuration options: [Disabled], [200], [208].
- OnBoard IDE:** 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].
- OnBoard LAN:** This allows you to enable or disable the onboard LAN feature.
- OnBoard AC'97 Audio:** Select [Disabled], [Auto] or [Enabled] for the onboard AC'97 Audio feature.

System Hardware Monitor: You can check the status of the hardware on your system. It allows you to monitor the parameters for CPU temperature, Motherboard temperature, CPU fan speed, and critical voltage.

AMIBIOS SETUP UTILITY - VERSION 3.31a	
Advanced	
System Hardware Monitor	[Setup Help]
CPU Temperature	35°C / 95°F
M/B Temperature	27°C / 82°F
CPU Fan Speed	3110 RPM
Chassis Fan Speed	0 RPM
Vcore	1.728 V
+ 3.30V	3.312 V
+ 5.00V	4.975 V
+ 12.00V	12.167 V

F1:Help	F11:Select Item	+/-:Change Values	F9:Setup Defaults
Esc:Previous Menu		Enter:Select	F10:Save & Exit
		▶:Sub-Menu	

2. Security Setup Menu

AMIBIOS SETUP UTILITY - VERSION 3.31a			
Main	Advanced	Security	Power Boot Exit
Supervisor Password	Clear		[Setup Help]
User Password	Clear		<Enter> to set the supervisor password.
Set Supervisor Password	[Enter]		
Set User Password	[Enter]		
Password Check	Setup		
F1:Help Esc:Exit	↑↓:Select Item ←→:Select Menu	+/-:Change Values Enter:Select	F9:Setup Defaults F10:Save & Exit

Supervisor Password: This field shows the status of the Supervisor Password.

[Clear]: No password has been set.

[Set]: Supervisor password has been set.

User Password: This field shows the status of the User Password.

[Clear]: No password has been set.

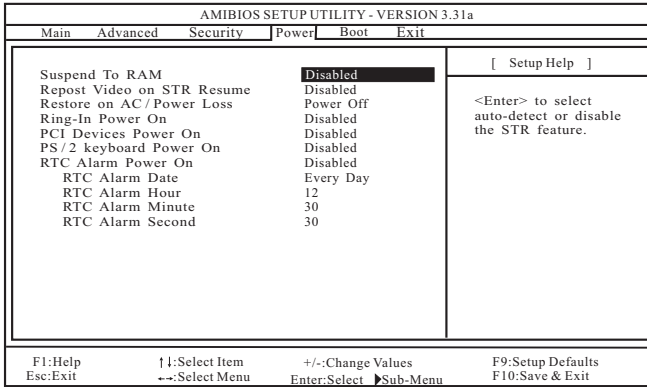
[Set]: User password has been set.

Set Supervisor Password: Press <Enter> to set Supervisor Password. Valid password can be a 1 to 6 alphanumeric characters combination. If you already have a password, you must enter your current password first in order to create a new password.

Set User Password: Press <Enter> to set User Password. Valid password can be a 1 to 6 alphanumeric characters combination. If you already have a password, you must enter your current password first in order to create a new password.

Password Check: Select the check point for "Password Check". Configuration options: [Setup], [Always]. If [Setup] option is selected, the "Password Check" is performed before BIOS setup. If [Always] option is selected, the "Password Check" is performed before both boot-up and BIOS setup.

3. Power Setup Menu



Suspend to RAM: This field allows you to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the system supports it.

Repost Video on STR Resume: This feature allows you to repost video on STR resume.

Restore on AC/Power Loss: This allows you 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.

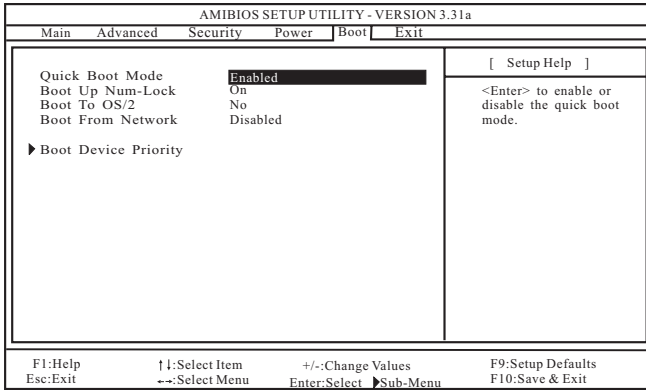
Ring-In Power On: Use this to enable or disable Ring-in signals to turn on the system from the power-soft-off mode.

PCI Devices Power On: Use this to enable or disable PCI devices to turn on the system from the power-soft-off mode.

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

RTC Alarm Power On: Use this to enable or disable RTC (Real Time Clock) to power on the system. If [Enable] is selected, you will need to fill the RTC Alarm Date / Hour / Minute / Second sub-fields with the actual wake up time you desire.

4. Boot Setup Menu



Quick Boot Mode: Enable this mode will speed up the boot-up routine by skipping memory retestings. The default value is [Enabled].

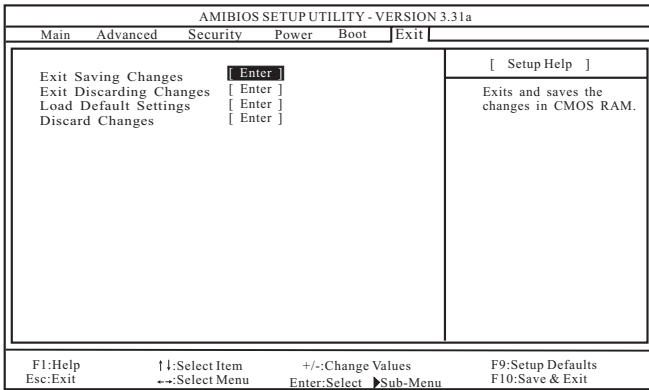
Boot Up Num-Lock: If this is enabled, it will automatically activate the Numeric Lock function after boot-up. The default value is [On].

Boot To OS/2: This enables boot-up to OS/2 operating system.
The default value is [No].

Boot From Network: Use this to enable or disable “boot from network” feature.
The default value is [Disabled].

Boot Device Priority: This allows you to set the boot device priority.

5. Exit Menu



Exit Saving Changes: After you enter the sub-menu, the message “Save current settings and exit” will appear. If you press <ENTER>, it will save the current settings and exit the BIOS SETUP Utility.

Exit Discarding Changes: After you enter the submenu, the message “Quit without saving changes” will appear. If you press <ENTER>, you will exit the BIOS Setup Utility without making any changes to the settings.

Load Default Settings: After you enter the submenu, the message “Load default settings” will appear. If you press <Enter>, it will load the default values for all the setup configurations.

Discard Changes: After you enter the sub-menu, the message “Load setup original values” will appear. If you press <ENTER>, original values will be restored and all changes are discarded.