
Motherboard

P4i45D+

User Manual

Version 1.0

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- (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>

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Chapter 1 Introduction

Thank you for purchasing ASRock P4i45D+ 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 22 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 P4i45D+ motherboard

(ATX form factor: 12.0" x 7.0", 30.5 x 17.8 cm)

ASRock P4i45D+ Quick Installation Guide

ASRock Intel-Intel Series Support CD

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

1 cable for floppy drive (1 x Ribbon cable)

1 ASRock I/O shield

1.2 Specifications

Platform:	ATX form factor (12.0" x 7.0", 30.5 x 17.8 cm)
CPU:	Socket 478 for Intel® Pentium® 4/ Celeron® (Prescott, Northwood, Willimite) processor
Chipsets:	North Bridge: Intel® 845D chipsets, standard FSB 400MHz, supports FSB 533MHz / 800MHz at over-clocking mode (see CAUTION 1), with Hyper-Threading Technology ready (see CAUTION 2); South Bridge: Intel® ICH2
Memory:	2 DDR DIMM Slots: DDR1 and DDR2 supports PC2100(DDR266), Max. 2GB PC3200(DDR400) at overclocking mode, Max.1GB (see CAUTION 1)
IDE:	IDE1: ATA 100 / Ultra DMA Mode 5; IDE2: ATA 100 / Ultra DMA Mode 5; Can connect up to 4 IDE devices
Floppy Port:	Supports 1 floppy disk drive
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 Vcore to protect CPU life (ASRock U-COP)(see CAUTION 3); Voltage monitoring: +12V, +5V, +3V, Vcore; CPU fan tachometer; Chassis fan tachometer
PCI slots:	4 slots with PCI Specification 2.2
AGP slot:	1 AGP slot, supports 1.5V, 4X AGP card (see CAUTION 4)
USB 2.0:	2 default USB 2.0 ports with legacy support and 1 extra set of header for two additional USB 2.0 ports upgrade (see CAUTION 5)
USB 1.1:	2 default USB 1.1 ports with legacy support
ASRock I/O™:	PS/2: 1 keyboard port / 1 mouse port; 1 RJ 45 port; 2 rear default USB 2.0 ports; 2 rear default USB 1.1 ports 1 serial port: COM 1; 1 parallel port: ECP/EPP support; Audio Jack: Line Out / Line In / Microphone + 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 6**)
- OS:** Microsoft® Windows® 98 SE / ME / 2000 / XP compliant

CAUTION!

1. Please check the table below for the memory support frequency and its corresponding CPU FSB frequency.

CPU FSB Frequency	Memory Support Frequency
800	DDR400*
533	DDR266
400	DDR266

*Please refer to the NOTE on page 7 for the details.

2. About the setting of "Hyper Threading Technology", please check page 22 of "User Manual" in the Support CD.
3. While CPU overheat is detected, the system will automatically shutdown Vcore. 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.
4. Do NOT use a 3.3V AGP card on P4i45D+'s AGP slot!
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.msp>
6. Although P4i45D+ offers stepless control, it is not recommended to perform over clocking. When the CPU frequency of P4i45D+ is set to perform over clocking, it's 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.

NOTE

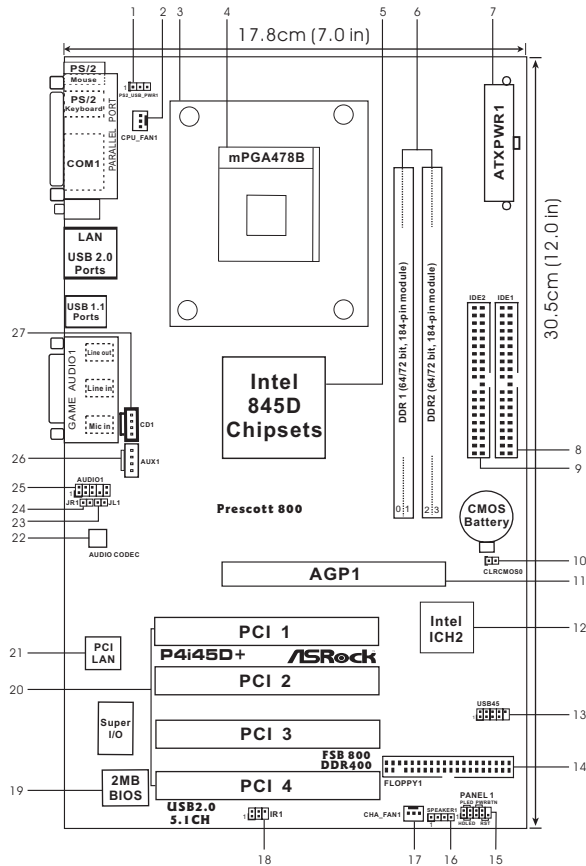
The Recommended Memory Modules lists for **P4i45D+** motherboard.

FSB 800 MHz / DDR 400 Mode (DIMM1)

DRAM VENDOR	SIZE (MB)	TYPE	CELL VENDOR	CELL NO.	SINGLE SIDE / DOUBLE SIDE
ADATA	512	DDR400	ADATA	ADD8608A8A-58	DOUBLE SIDE
ADATA	256	DDR450	ADATA	ADD8608A8A-4.58	SINGLE SIDE
APACER	256	DDR400	INFINEON	HYB25D256800BT-5	SINGLE SIDE
APACER	256	DDR400	SAMSUNG	K4H560838D-TCCC	SINGLE SIDE
INFINEON	256	DDR400	INFINEON	HYB25D256800BT-5	SINGLE SIDE
KINGMAX	256	DDR400	KINGMAX	KDL3888P4EA-50	SINGLE SIDE
SAMSUNG	256	DDR400	SAMSUNG	K4H560838E-TCC C	SINGLE SIDE
TWINMOS	512	DDR400	M.tec	TTD7608F8E50B	DOUBLE SIDE
TWINMOS	256	DDR400	TWINMOS	TMD7608F8E50B	SINGLE SIDE

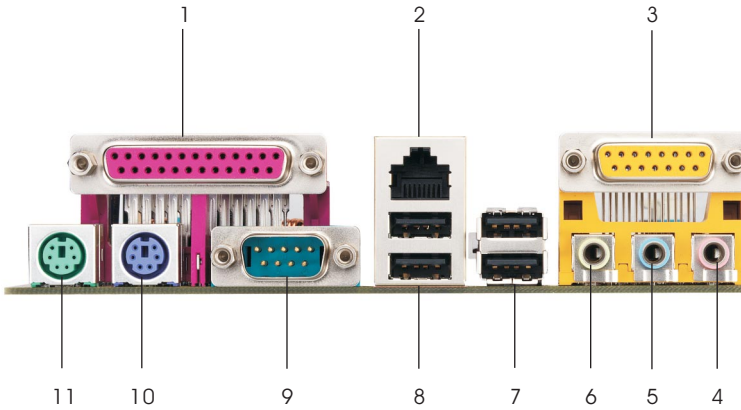
Since the memory types are changing rapidly,
Please visit ASRock website (<http://www.asrock.com/support/index.htm>)
for the latest recommended memory support list.

1.3 Motherboard Layout



- | | | | |
|----|---------------------------------------|----|--|
| 1 | PS2_USB_PWR1 jumper | 2 | CPU fan connector (CPU_FAN1) |
| 3 | CPU heatsink retention module | 4 | CPU socket |
| 5 | North Bridge controller | 6 | 184-pin DDR DIMM slots (DDR 1-2) |
| 7 | ATX power connector (ATXPWR1) | 8 | Primary IDE connector (IDE1, Blue) |
| 9 | Secondary IDE connector (IDE2, Black) | 10 | Clear CMOS (CLRCMOS0, 2-pin jumper) |
| 11 | AGP slot (AGP1) | 12 | South Bridge controller |
| 13 | USB 2.0 header (USB45, Blue) | 14 | Floppy connector (FLOPPY1) |
| 15 | System panel connector (PANEL1) | 16 | External speaker connector (SPEAKER 1) |
| 17 | Chassis fan connector (CHA_FAN1) | 18 | Infrared module connector (IR1) |
| 19 | BIOS FWH chip | 20 | PCI slots (PCI 1-4) |
| 21 | PCI LAN | 22 | AUDIO CODEC |
| 23 | JL1 jumper | 24 | JR1 jumper |
| 25 | Front panel audio connector (AUDIO1) | 26 | Internal audio connector: AUX1 (White) |
| 27 | Internal audio connector: CD1 (Black) | | |

1.4 ASRock I/O™



- | | | | |
|----|-------------------------|----|-----------------------------|
| 1 | Parallel port | 2 | RJ-45 port |
| 3 | Game port | 4 | Microphone (Pink) |
| 5 | Line In (Light Blue) | 6 | Line Out (Lime) |
| 7 | USB 1.1 ports (USB 2,3) | 8 | USB 2.0 ports (USB 0,1) |
| 9 | Serial port (COM1) | 10 | PS/2 keyboard port (Purple) |
| 11 | PS/2 mouse port (Green) | | |

Chapter 2 Installation

P4i45D+ is an ATX form factor (12.0" x 7.0", 30.5 x 17.8 cm) motherboard. Before you install the motherboard, please 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

Please 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, please place it on a grounded antistatic pad or in the bag that comes with the component.

Before you install or remove any component, please 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.

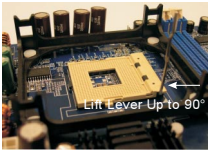
2.3 CPU Installation

- 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.

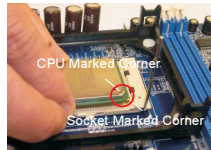


The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

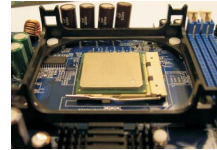
- Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



STEP 1:
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

2.4 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.

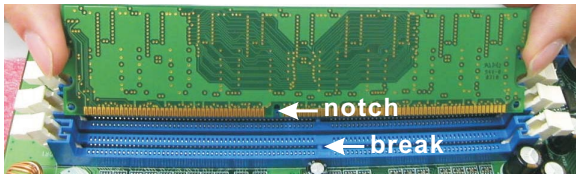
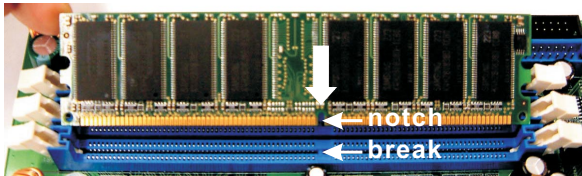
2.5 Installation of Memory Modules (DIMM)

This 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.

2.6 Expansion Slots (PCI and AGP Slots)

There are 4 PCI slots and 1 AGP slot on this 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.



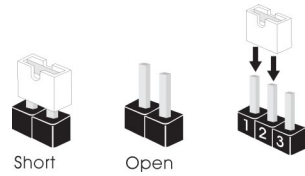
Please do not plug a 3.3V AGP card in the AGP slot on this motherboard! It may cause permanent damage!

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.

2.7 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 the 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							
PS2_USB_PWR1 (see p.8 item 1)	<table border="0"><tr><td>1_2</td><td>2_3</td></tr><tr><td></td><td></td></tr><tr><td>+5V</td><td>+5VSB</td></tr></table>	1_2	2_3			+5V	+5VSB	Short pin2, pin3 to enable +5VSB (standby) for PS/2 or USB wake up events.
1_2	2_3							
+5V	+5VSB							

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

JR1 (see p.8 item 24)

JL1 (see p.8 item 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 item 10)



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, then use a jumper cap to short the pins on CLRCMOS0 for 3 seconds. Please remember to remove the jumper cap 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.8 item 14)		
--	---	---

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

Primary IDE connector (Blue)
(39-pin IDE1, see p.8 item 8)



Secondary IDE connector (Black)
(39-pin IDE2, see p.8 item 9)



connect the blue end
to the motherboard

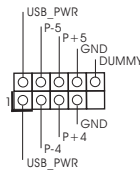


connect the black end
to the IDE devices

80-Pin ATA 100 cable

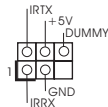
Note: To optimize compatibility and performance, please connect your hard disk drive to the primary IDE connector (IDE1, blue) and CD-ROM to the secondary IDE connector (IDE2, black).

USB 2.0 header
(9-pin USB45)
(see p.8 item 13)



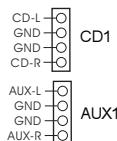
ASRock I/O™ provides you two default USB 2.0 ports on the rear panel. If the USB 2.0 ports on the rear panel are not sufficient, you may use this USB 2.0 header to attach two additional USB 2.0 ports.

Infrared module connector
(5-pin IR1)
(see p.8 item 18)



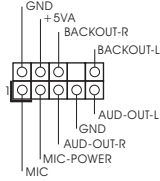
This connector supports an optional wireless transmitting and receiving infrared module.

Internal audio connectors
(4-pin CD1, 4-pin AUX1)
(CD1: see p.8 item 27)
(AUX1: see p.8 item 26)



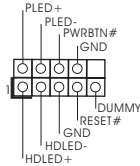
These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

Front panel audio connector
(9-pin AUDIO1)
(see p.8 item 25)



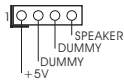
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

System panel connector
(9-pin PANEL1)
(see p.8 item 15)



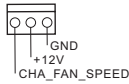
This connector accommodates several system front panel functions.

External speaker connector
(4-pin SPEAKER 1)
(see p.8 item 16)



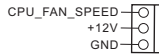
This connector allows you to attach to an external speaker.

Chassis fan connector
(3-pin CHA_FAN1)
(see p.8 item 17)



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

CPU fan connector
(3-pin CPU_FAN1)
(see p.8 item 2)



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

ATX power connector
(20-pin ATXPWR1)
(see p.8 item 7)



Connect an ATX power supply to the connector.

Chapter 3 BIOS Setup

3.1 BIOS Setup Utility

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 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 after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis.

You may also restart the system 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.

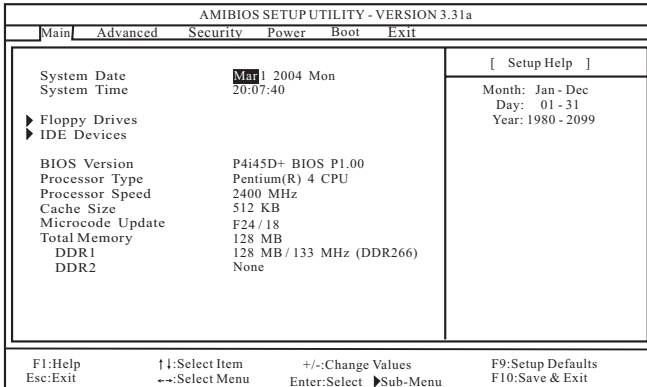
3.1.2 Legend Bar

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.



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. Below are the configuration options.

AMIBIOS SETUP UTILITY - VERSION 3.31a	
Main	
Primary IDE Master	
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
[Setup Help]	
Select how to set the parameters of drive.	
Or	
Select [AUTO] to set all HDD parameters automatically.	
F1:Help ↑:Select Item +/-:Change Values F9:Setup Defaults	
Esc:Previous Menu Enter:Select ▶:Sub-Menu 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 the new IDE hard disk drives. This is necessary so that you can write the data into or read the data from the installed hard disk. Please make sure to set the partition of the Primary IDE hard disk drives to make them 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 22.

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 will 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.

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

AMIBIOS SETUP UTILITY - VERSION 3.31a					
Main	Advanced	Security	Power	Boot	Exit
Spread Spectrum		Disabled		[Setup Help]	
CPU Host Frequency		Auto		<Enter> to enable or	
Actual Frequency		133MHz		disable the feature of	
CPU Ratio Selection		Locked		spread spectrum.	
DRAM Frequency		Auto			
Flexibility Option		Disabled			
Hyper Threading Technology		Auto			
▶ Chipset Configuration					
▶ Resource Configuration					
▶ Peripheral Configuration					
▶ System Hardware Monitor					
F1:Help		↑↓:Select Item		+/-:Change Values	
Esc:Exit		←→:Select Menu		F9:Setup Defaults	
		Enter:Select		▶Sub-Menu	
				F10:Save & Exit	

Spread Spectrum:

This field should always be [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.

Flexibility Option

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

Hyper Threading Technology:

To enable this feature, it requires a computer system with an Intel Pentium®4 processor at 3.06 GHz or higher 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.

Chipset Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a			
Advanced		[Setup Help]	
Chipset Configuration			
AGP Aperture Size	64MB	<Enter> to select the size of mapped memory for graphics data.	
ICH Delayed Transaction	Disabled		
USB Controller	Enabled		
USB Device Legacy Support	Disabled		
SDRAM CAS# Latency	Auto		
CPU Thermal Throttling	Auto		
DRAM Thermal Management	Disabled		
AGP / PCI Frequency	67.2MHz, 33.6MHz		
F1:Help	F4:Select Item		+/-:Change Values
Esc:Previous Menu	Enter:Select		F9:Setup Defaults
		F10:Save & Exit	

AGP Aperture Size: It refers to a section of the PCI memory address range used for graphics memory. We recommend that you leave this field at the default value unless your AGP card requires other sizes.

ICH Delayed Transaction: Select [Enabled] will enable delayed transactions for internal register, FWH, and LPC interface accesses.

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.

SDRAM CAS# Latency:

This parameter controls the latency between the read command and the time the data available.

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

DRAM Thermal Management: Select [Enabled] will reduce the temperature of North Bridge and DRAM.

AGP/PCI Frequency: You may select among four sets of configuration options as the AGP/PCI frequency. The default value is [67.2MHz, 33.6MHz], and other configuration options are: [72.0MHz, 36.0MHz], [64.0MHz, 32.0MHz], [76.0MHz, 38.4MHz].

Resource Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a	
Advanced	
Resource Configuration	[Setup Help]
PCI Latency Timer (PCI Clocks) 32 Primary Graphics Adapter PCI/AGP	<Enter> to select PCI clocks. Leave on default setting for the best PCI performance.
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. We recommend you to keep the default value unless your PCI expansion cards' specifications require other settings.

Primary Graphics Adapter: Select PCI/AGP or AGP/PCI as the primary graphics adapter.

Peripheral Configuration:

AMIBIOS SETUP UTILITY - VERSION 3.31a	
Advanced	
Peripheral Configuration	[Setup Help]
OnBoard FDC Auto 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 200H OnBoard IDE Both OnBoard LAN Enabled OnBoard AC'97 Audio Auto	<Enter> to enable or disable the floppy drive controller.
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 [Auto] 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+EPP]. 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. Configuration options: [5], [10], [11].

OnBoard Game Port: Select address for Game Port or disable Game Port.
Configuration options: [Disabled], [200h], [208h].

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 may 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	1.72 V
+ 3.30V	3.31 V
+ 5.00V	4.97 V
+ 12.00V	12.16 V

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

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 the Supervisor Password. Valid password can be a 1 to 6 alphanumeric characters combination. If you already have a password, you need to enter your current password first in order to create a new password.

Set User Password: Press <Enter> to set the User Password. Valid password can be a 1 to 6 alphanumeric characters combination. If you already have a password, you need to 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

AMIBIOS SETUP UTILITY - VERSION 3.31a		
Main	Advanced	Security Power Boot Exit
Suspend To RAM	Disabled	[Setup Help]
Repost Video on STR Resume	Disabled	
Restore on AC/Power Loss	Power Off	<Enter> to select auto-detect or disable the Suspend-to-RAM feature.
Ring-In Power On	Disabled	
PCI Devices Power On	Disabled	
PS / 2 Keyboard Power On	Disabled	
RTC Alarm Power On	Disabled	
RTC Alarm Date	Every Day	
RTC Alarm Hour	12	
RTC Alarm Minute	30	
RTC Alarm Second	30	
F1:Help Esc:Exit	↑↓:Select Item ←→:Select Menu	+/-:Change Values Enter:Select ▶Sub-Menu F9:Setup Defaults F10:Save & Exit

Repost Video on STR Resume: This feature allows you to repost video on STR resume. It is recommended to enable this feature under Microsoft® Windows® 98 / ME.

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.

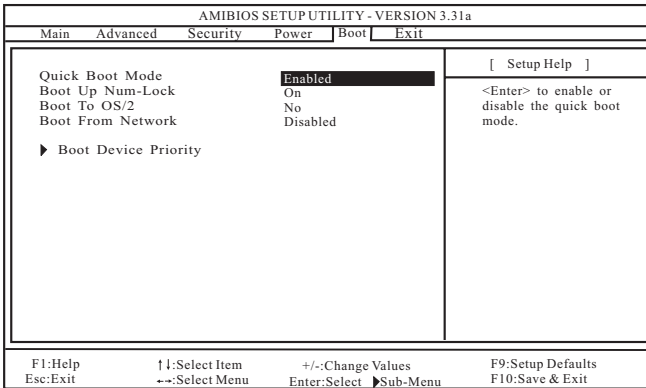
Ring-In Power On: Use this to enable or disable Ring-in signals to turn on the system from the power-soft-off mode.

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 must 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.

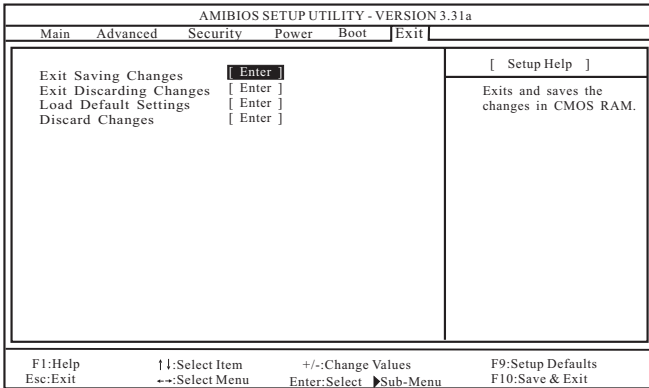
Boot Up Num-Lock: If this is enabled, it will automatically activate the Numeric Lock function after boot-up.

Boot To OS/2: This enables boot-up to OS/2 operating system.

Boot From Network: Use this to enable or disable “boot from network” feature.

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 configuration.

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.