ASRock™

P4i45PE

User Manual

Version 3.0
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Contents

Chapter 1   Introduction

Thank you for purchasing ASRock P4i45PE 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 P4i45PE Motherboard (ATX Form Factor: 12.0-in x 7.0-in, 30.5 cm x 17.8 cm)
ASRock P4i45PE Quick Installation Guide
ASRock P4i45PE Support CD
One 80-conductor Ultra ATA 66/100 IDE Ribbon Cable
One Ribbon Cable for a 3.5-in Floppy Drive
One ASRock I/O™ Shield

1.2 Specifications

Platform:	ATX Form Factor (12.0-in x 7.0-in, 30.5 cm x 17.8 cm)
CPU:	Socket 478 for Intel® Pentium® 4/ Celeron® processor
Chipsets:	North Bridge:
	Intel® 845PE chipsets, standard FSB @ 533 / 400MHz,
	Max. 800+ MHz at overclocking mode (see **CAUTION 1**),
	supports Hyper-Threading Technology (see **CAUTION 2**);
	South Bridge:
	Intel® ICH4
Memory:	2 DDR DIMM slots: DDR1 and DDR2
	PC2100 (DDR266) / PC2700 (DDR333), Max. 2GB
	PC3200 (DDR400) at overclocking mode, Max. 1GB
IDE:	IDE1: ATA 100 / Ultra DMA Mode 5;
	IDE2: ATA 100 / Ultra DMA Mode 5;
	Supports up to 4 IDE devices
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 (ASRock U-COP);
	Chassis 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:	5 PCI slots with PCI Specification 2.2
AGP slot:	1 AGP slot, supports 1.5V, 4X AGP card (see **CAUTION 4**)
USB 2.0:	4 default USB 2.0 ports and one extra set of header for two
	additional USB 2.0 ports upgrade (see **CAUTION 5**)
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 6**);
OS:	Microsoft® Windows® 98 SE / ME / 2000 / XP compliant

CAUTION!

1. P4i45PE motherboard may be fine tuned to support higher CPU bus frequencies on certain condition (over-clocking mode). Please refer to the NOTE on page 7 for the details.

2. About the setting of "Hyper Threading Technology", please check page 22.

3. 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.

4. Do NOT plug a 3.3V AGP card in the AGP slot on P4i45PE 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 P4i45PE offers stepless control, it is not recommended to perform over clocking. When the CPU frequency of P4i45PE 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.

NOTE

P4i45PE may be fine tuned to support higher CPU front side bus frequencies on certain condition at over-clocking mode. Please refer to the tables below for the details.

	CPU FSB	Configuration Note
P4i45PE	800 MHz	1. Set the "FSB" jumper to "800" mode (see page 14).
		2. Only support one DDR 400 memory module on DDR1 DIMM. (If it is set to DDR 400 mode, then it does not support CL3 module.)
		3. Update BIOS version to 2.10 or later version.

The Recommended Memory Modules lists for **P4i45PE** motherboard.

FSB 800 MHz / DDR 400 Mode

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
ADATA	256	DDR400	WINBOND	W942508CH-5	SINGLE SIDE
APACER	512	DDR400	PSC	A2S56D30ATP	DOUBLE SIDE
APACER	512	DDR400	SAMSUNG	K4H560838D-TCCC	DOUBLE 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
INFINEON	128	DDR400	INFINEON	HYB250256160BT-5	SINGLE SIDE
KINGMAX	512	DDR400	KINGMAX	KDL3888P4EA-50	DOUBLE SIDE
KINGMAX	256	DDR400	KINGMAX	KDL684T4AA-50	SINGLE SIDE
KINGSTON	256	DDR400	MOSEL	V58C2256804SAT5	SINGLE SIDE
KINGSTON	256	DDR400	HYNIX	HY5DU56822BT-D43	SINGLE SIDE
KINGSTON	256	DDR400	WINBOND	W942508CH-5	SINGLE SIDE
MICRON	128	DDR400	MICRON	46V16M8	SINGLE SIDE
SAMSUNG	512	DDR400	SAMSUNG	K4H560838D-TCCC	DOUBLE SIDE
SAMSUNG	256	DDR400	SAMSUNG	K4H560838E-TCC C	SINGLE SIDE
TWINMOS	512	DDR400	M.tec	TTD7608F8E50B	DOUBLE SIDE
TWINMOS	256	DDR466	TWINMOS	TMD7608F8E43B	SINGLE SIDE
TWINMOS	256	DDR400	TWINMOS	TMD7608F8E50B	SINGLE SIDE
TWINMOS	256	DDR400	M.tec	TTD7608F8E50B	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
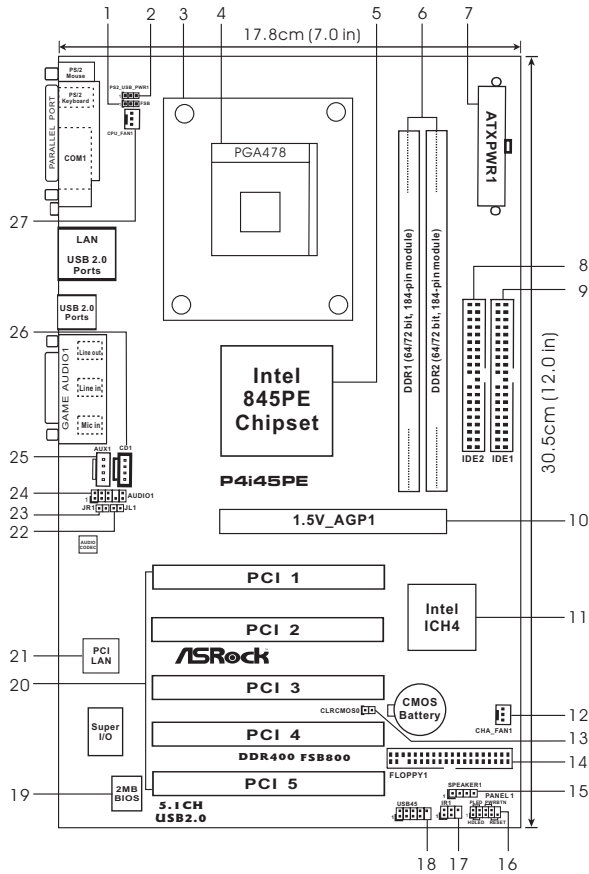
1	FSB Select Jumper (FSB)	15	Chassis Speaker Connector (SPEAKER 1)
2	PS2_USB_PWR1 Jumper	16	System Panel Connector (PANEL1)
3	CPU Heatsink Retention Module	17	Infrared Module Connector (IR1)
4	CPU Socket	18	USB 2.0 Header (USB45, Blue)
5	North Bridge Controller	19	BIOS FWH Chip
6	184-pin DDR DIMM Slots (DDR1- 2)	20	PCI Slots (PCI1- 5)
7	ATX Power Connector (ATXPWR1)	21	PCI LAN
8	Secondary IDE Connector (IDE2, Black)	22	JL1 Jumper
9	Primary IDE Connector (IDE1, Blue)	23	JR1 Jumper
10	AGP Slot (1.5V_AGP1)	24	Front Panel Audio Connector (AUDIO1)
11	South Bridge Controller	25	Internal Audio Connector: AUX1 (White)
12	Chassis Fan Connector (CHA_FAN1)	26	Internal Audio Connector: CD1 (Black)
13	Clear CMOS Jumper (CLRCMOS0)	27	CPU Fan Connector (CPU_FAN1)
14	Floppy Connector (FLOPPY1)		

1.4 ASRock I/O™
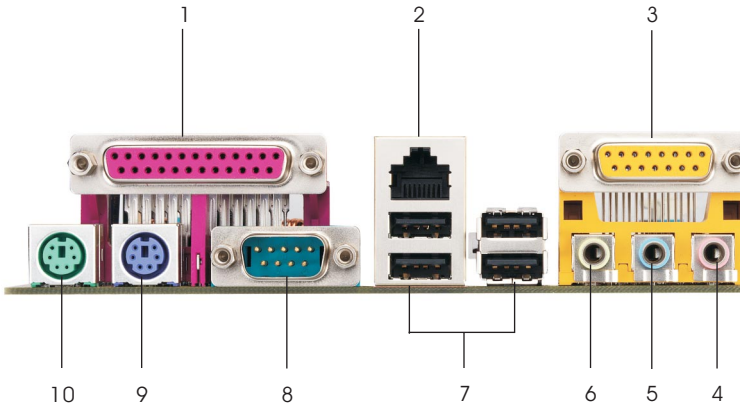
1	Parallel Port	6	Line Out (Lime)
2	RJ-45 Port	7	USB 2.0 Ports
3	Game Port	8	Serial Port (COM1)
4	Microphone (Pink)	9	PS/2 Keyboard Port (Purple)
5	Line In (Light Blue)	10	PS/2 Mouse Port (Green)

Chapter 2 Installation

P4i45PE is an ATX form factor (12.0-in x 7.0-in, 30.5 cm x 17.8 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 anti-static 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.
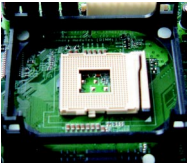
Step 1   Step 2, 3   Step 4

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. Then connect the CPU fan to the CPU_FAN
connector (CPU_FAN1, see page 8, No. 27). For proper installation, please
kindly refer to the instruction manuals of the CPU fan and heatsink vendors.

2.5 Installation of Memory Modules (DIMM)

P4i45PE 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.
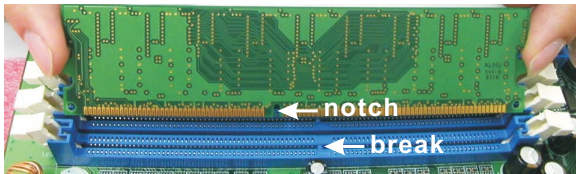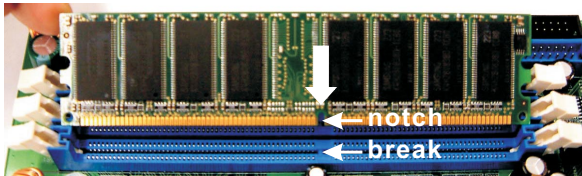
> The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

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 5 PCI slots and 1 AGP slot on P4i45PE 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 P4i45PE 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 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.

Short   Open
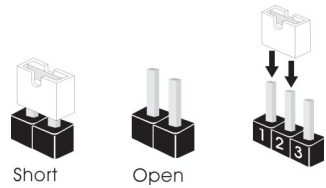
Jumper	Setting		Description
FSB (see p.8 item 1)	1_2 NORMAL	2_3 800	"NORMAL" (short pin1, pin2) is the default setting for the FSB jumper. "800" (short pin2, pin3) is the setting for the over clocking of CPU frequency.
PS2_USB_PWR1 (see p.8 item 2)	1_2 +5V	2_3 +5VSB	Short pin2, pin3 to enable +5VSB (standby) 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.8 item 23)
JL1 (see p.8 item 22)

JR1   JL1

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 13)   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, 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)

Pin1   FLOPPY1

the red-striped side to Pin1

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

Primary IDE connector (Blue)   Secondary IDE connector (Black)
(39-pin IDE1, see p.8 item 9)   (39-pin IDE2, see p.8 item 8)

PIN1   IDE1   PIN1   IDE2

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).

USB 2.0 Header
(9-pin USB45)
(see p.8 item 18)

USB_PWR
P-5
P+5
GND
DUMMY
1
GND
P+4
P-4
USB_PWR
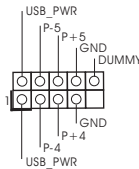
ASRock I/O™ provides you 4 default USB 2.0 ports on the rear panel. If the rear USB ports are not sufficient, this header is available to support 2 additional USB 2.0 ports.

Infrared module connector
(5-pin IR1)
(see p.8 item 17)

IRTX
+5V
DUMMY
1
GND
IRRX
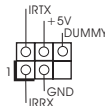
This connector supports an optional wireless transmitting and receiving infrared module.

Internal audio connectors

(4-pin CD1, 4-pin AUX1)

(CD1: see p.8 item 26)

(AUX1: see p.8 item 25)

AUX-L
GND
GND
AUX-R

CD-L
GND
GND
CD-R

AUX1   CD1
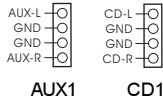
These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

Front panel audio connector

(9-pin AUDIO1)

(see p.8 item 24)

GND
+5VA
BACKOUT-R
BACKOUT-L

AUD-OUT-L
GND
AUD-OUT-R
MIC-POWER
MIC
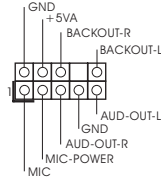
This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

System panel connector

(9-pin PANEL1)

(see p.8 item 16)

PLED+
PLED-
PWRBTN#
GND

DUMMY
RESET#
GND
HDLED-
HDLED+
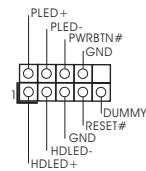
This connector accommodates several system front panel functions.

Chassis speaker connector

(4-pin SPEAKER 1)

(see p.8 item 15)

SPEAKER
DUMMY
DUMMY
+5V
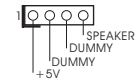
This connector allows you to attach to an external speaker.

Chassis fan connector

(3-pin CHA_FAN1)

(see p.8 item 12)

GND
+12V
CHA_FAN_SPEED
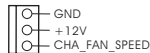
Connect the fan cable to the connector matching the black wire to the ground pin.

CPU fan connector

(3-pin CPU_FAN1)

(see p.8 item 27)

GND
+12V
CPU_FAN_SPEED
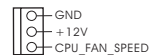
Connect the fan cable to the connector matching the black wire to the ground pin.

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 configure your system using the BIOS Setup Utility. The BIOS FWH chip 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 the default values
<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

                                                    [   Setup Help   ]
      System Date            Oct  07  2003  Tue
      System Time            16:07:40               Month:  Jan - Dec
                                                      Day:   01 - 31
   ▶ Floppy Drives                                   Year: 1980 - 2099
   ▶ IDE Devices

     BIOS Version            P4I45PE  BIOS  P2.10
     Processor Type          Pentium  (R)  4 CPU
     Processor Speed         2400  MHz
     Cache Size              512  KB
     Microcode Update        F24 / 18
     Total Memory            256  MB
       DDR1                  256  MB / 133  MHz (DDR266)
       DDR2                  None



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

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 whcih 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           │ Select how to set the  │
    │    Cylinders                                  │ parameters of drive,   │
    │    Heads                                      │                        │
    │    Write  Precompensation                     │ Or                     │
    │    Sectors                                    │ Select [AUTO] to set   │
    │    Maximum  Capacity                          │ all HDD parameters     │
    │    LBA  Mode                    On            │ automatically.         │
    │    Block  Mode                  On            │                        │
    │    Fast  Programmed  I/O  Modes  Auto         │                        │
    │    32 Bit  Transfer  Mode       On            │                        │
    │    Ultra  DMA  Mode             Auto          │                        │
    │                                               │                        │
    │                                               │                        │
    ├───────────────────────────────────────────────┴───────────────────────┤
    │  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 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 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.

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 may 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

```
                    AMIBIOS SETUP UTILITY - VERSION 3.31a
      Main    Advanced    Security    Power    Boot    Exit

                                                        [  Setup Help  ]
       Spread  Spectrum              Disabled
       CPU  Host  Frequency          Auto           <Enter> to enable or
          Actual  Frequency          133MHz         disable the feature of
       CPU  Ratio  Selection         Locked         spread  spectrum.
       SDRAM  Frequency              Auto
       Hyper Threading Technology    Auto

     ▶ Chipset  Configuration
     ▶ Resource  Configuration
     ▶ Peripheral  Configuration
     ▶ System  Hardware  Monitor



      F1:Help          ↑↓:Select Item      +/-:Change Values      F9:Setup Defaults
      Esc:Exit         ←→:Select Menu      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.

SDRAM Frequency:

　　If set to [Auto], the motherboard will detect the inserted memory module(s) and automatically assign appropriate frequency. For the setting of FSB 533, you may select [133MHz (DDR 266)], [166MHz (DDR 333)] as the operating frequency. For the setting of FSB 400, you may select [100MHz (DDR 200)], [133MHz (DDR 266)] as the operating frequency.

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
    ICH Delayed Transaction         Disabled   size of mapped memory
                                               for graphics data.
    USB  Controller                 Enabled
    USB Device Legacy Support       Disabled

    CPU Thermal  Throttling         Disabled
    DRAM Write Throttling           Disabled
    AGP / PCI  Frequency            Auto

    ******** DRAM Timing ********

    SDRAM  CAS  Latency             Auto
    Configure SDRAM Timing by SPD   Disabled
       SDRAM RAS# Precharge         3 Clocks
       SDRAM RAS# to CAS# Delay     3 Clocks
       SDRAM Precharge Delay        7 Clocks

    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. 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.

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

DRAM Write Throttling: Select [Enabled] will reduce the temperature of North
Bridge and DRAM. However, it will decrease the memory writing
throughput.

AGP/PCI Frequency: The defaul value is [Auto], or you may select among
other four sets of configuration options as the AGP/PCI frequency.
Configuration options: [Auto], [67.2MHz, 33.6MHz], [72.0MHz, 36.0MHz],
[64.0MHz, 32.0MHz], [76.0MHz, 38.4MHz].

SDRAM CAS Latency:

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

Configure SDRAM Timing by SPD: Select [Enabled] will configure the
following 3 items by the contents in the SPD (Serial Presence Detect)
device.

SDRAM RAS# Precharge:
This controls the idle clocks after a precharge command is issued.

SDRAM RAS# to CAS# Delay:
This controls the latency between the SDRAM active command and
the read / write command.

SDRAM Precharge Delay:
This controls the number of DRAM clocks for RAS minimum.

Resource Configuration:

```
                    AMIBIOS SETUP UTILITY - VERSION 3.31a
          Advanced

      Resource Configuration                          [  Setup Help  ]

                                                    <Enter> to select PCI
   PCI Latency Timer (PCI Clocks)      32           clocks. Leave on
   Primary  Graphics  Adapter          PCI          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
```
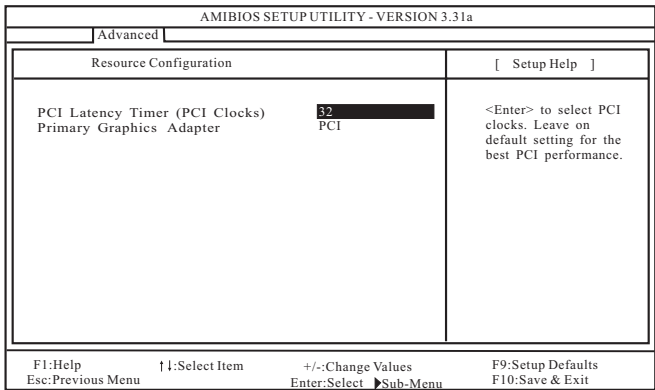
PCI Latency Timer (PCI Clocks): The default is 32. We recommend you to
keep the default value unless your PCI expansion cards' specifications
require other settings.

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

Peripheral Configuration:

```
                          AMIBIOS SETUP UTILITY - VERSION 3.31a
        ┌─────────────┐
        │  Advanced   │
        └─────────────┘
    ┌───────────────────────────────────────────────────────────────────────┐
    │       Peripheral Configuration              │     [   Setup Help   ]    │
    │                                             │                           │
    │                                             │  <Enter> to enable or     │
    │   OnBoard  FDC                  Auto        │  disable the floppy       │
    │   OnBoard  Serial  Port         Auto        │  drive controller.        │
    │   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        │                           │
    │                                             │                           │
    └───────────────────────────────────────────────────────────────────────┘
     F1:Help            ↑↓:Select Item     +/-:Change Values      F9:Setup Defaults
     Esc:Previous Menu                    Enter:Select ▶Sub-Menu  F10:Save & Exit
```

OnBoard FDC: You may select [Auto], [Disabled], or [Enabled] for the on-board
floppy drive controller.

OnBoard Serial Port: Use this to set addresses for the on-board 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] for the on-board infrared port
feature, which will enable this feature if the infrared module is installed.
Or you may disable the feature by selecting [Disabled]

OnBoard Parallel Port: Use this option to select Parallel Port address or
disable the on-board 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 the on-board Midi Port or disable it.
Configuration options: [Disabled], [330], [300], [310], [320].
Midi IRQ Select: Use this to select Midi IRQ.
Configuration options: [3], [4], [5], [7], [10], [11].

OnBoard Game Port: Select address for the on-board Game Port or disable it.
Configuration options: [200H], [208H], [Disabled].

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 on-board LAN feature.

OnBoard AC'97 Audio: Select [Enabled], [Auto] or [Disabled] for the on-board 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      39°C / 102°F   │ │                      │ │
│ │ M/B Temperature      31°C /  87°F   │ │                      │ │
│ │ CPU Fan Speed        4197   RPM     │ │                      │ │
│ │ Chassis Fan Speed       0   RPM     │ │                      │ │
│ │ Vcore                1.504  V       │ │                      │ │
│ │ +  3.30V             3.280  V       │ │                      │ │
│ │ +  5.00V             4.865  V       │ │                      │ │
│ │ +12.00V             12.045  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

                                                    [   Setup Help   ]
      Supervisor Password Is      Clear
      User  Password  Is          Clear            <Enter> to enable or
                                                    disable the quick boot
      Set Supervisor Password     [ Enter ]        mode.
      Set User Password           [ Enter ]

      Password  Check             Setup




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

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

    [Clear]: No password has been set.

    [Set]: Supervisor password has been set.

User Password Is: 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

```
                     AMIBIOS SETUP UTILITY - VERSION 3.31a
    Main    Advanced    Security    Power   Boot    Exit

                                                 [  Setup Help  ]
    Suspend To RAM                  Disabled
    Repost Video on STR Resume      Disabled
    Restore on AC / Power Loss      Power Off     <Enter> to select
    Ring-In Power On                Disabled      auto-detect or disable
    PCI Devices Power On            Disabled      the ACPI STR feature.
    PS / 2 keyboard Power On        Disabled
    RTC Alarm Power On              Disabled
       RTC Alarm Date               15
       RTC Alarm Hour               12
       RTC Alarm Minute             30
       RTC Alarm Second             30




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

Suspend To RAM: This field allows you to select whether to auto-detect or disable the ACPI 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. 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: You may select [Any Key] to enable PS/2 keyboard to turn on the system from the power-soft-off mode. Or you may disable this feature by selecting [Disabled].

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

```
                    AMIBIOS SETUP UTILITY - VERSION 3.31a
     Main    Advanced    Security    Power   | Boot |  Exit

     Quick  Boot  Mode          Enabled              [   Setup Help   ]
     Boot  Up  Num-Lock         On
     Boot  To  OS/2             No                <Enter>  to  enable  or
     Boot  From  Network        Disabled          disable  the  quick  boot
                                                  mode.
   ▶ Boot  Device  Priority




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

Quick Boot Mode: Enable this mode will speed up the boot-up routine by skipping memory retestings.

Boot Up Num-Lock: Select [On] to activate the Numeric Lock function automatically after boot-up.

Boot To OS/2: Select [Yes] to enable 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

```
                    AMIBIOS SETUP UTILITY - VERSION 3.31a
      Main     Advanced     Security     Power     Boot   |Exit|

                                                   [  Setup Help  ]
      Exit Saving Changes        [ Enter ]
      Exit Discarding Changes    [ Enter ]         Exits and saves the
      Load Default Settings      [ Enter ]         changes in CMOS RAM.
      Discard Changes            [ Enter ]




      F1:Help          ↑↓:Select Item      +/-:Change Values        F9:Setup Defaults
      Esc:Exit         ←→:Select Menu     Enter:Select  ▶Sub-Menu   F10:Save & Exit
```
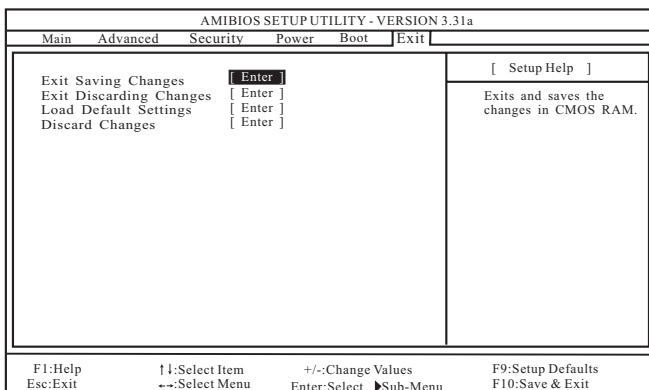
Exit Saving Changes: After you enter the sub-menu, the message "Save current settings and exit" will appear. If you press <ENTER>, it will save the current settings and exit the BIOS SETUP Utility.

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.