



P4i45G / P4i45GL
P4i45GV / P4i45GE

User Manual

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Contents

1	Introduction	4
1.1	Package Contents	4
1.2	Specifications	5
1.3	Motherboard Layout (P4i45G)	10
1.4	Motherboard Layout (P4i45GL)	11
1.5	Motherboard Layout (P4i45GV)	12
1.6	Motherboard Layout (P4i45GE)	13
1.7	ASRock I/O™ (P4i45G / P4i45GL / P4i45GV / P4i45GE)	14
2	Installation	15
2.1	Screw Holes	15
2.2	Pre-installation Precautions	15
2.3	CPU Installation	15
2.4	Installation of Heatsink and CPU fan	16
2.5	Installation of Memory Modules (DIMM)	16
2.6	Expansion Slots	17
2.7	Jumpers Setup	18
2.8	Connectors	19
3	BIOS Setup	21
3.1	BIOS Setup Utility	21
3.1.1	BIOS Menu Bar	21
3.1.2	Legend Bar	21
3.2	Main Menu	22
3.3	Advanced, Security, Power, Boot, and Exit Menus	24
4	Software Support	25
4.1	Installing Operating System	25
4.2	Support CD Information	25
4.2.1	Running Support CD	25
4.2.2	Drivers Menu	25
4.2.3	Utilities Menu	25
4.2.4	ASRock "PC-DIY Live Demo" Program	25
4.2.5	Contact Information	25
	Appendix: Advanced BIOS Setup	26
1	Advanced Menu	26
2	Security Menu	29
3	Power Menu	30
4	Boot Menu	31
5	Exit Menu	32

Chapter 1 Introduction

Thank you for purchasing ASRock P4i45G / P4i45GL / P4i45GV / P4i45GE 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 26 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.

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

1.1 Package Contents

ASRock P4i45G or P4i45GL or P4i45GV or P4i45GE motherboard

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

ASRock P4i45G / P4i45GL / P4i45GV / P4i45GE Quick Installation Guide

ASRock Intel-Intel 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 COM port bracket

1.2 Specifications

Platform:	Micro ATX form factor (9.6" x 9.6", 24.4 x 24.4 cm)
CPU:	Socket 478 for Intel® Pentium® 4 / Celeron® processor
Chipsets:	North Bridge on P4i45G motherboard: Intel® 845G chipsets, standard FSB 533 MHz, Max. 800 MHz (see CAUTION 1), supports Hyper-Threading Technology (see CAUTION 2); North Bridge on P4i45GL motherboard: Intel® 845GL chipsets, standard FSB 400 MHz (see CAUTION 3), Max. 533 MHz (see CAUTION 1); North Bridge on P4i45GV motherboard: Intel® 845GV chipsets, standard FSB 533 MHz, supports Hyper-Threading Technology (see CAUTION 2); North Bridge on P4i45GE motherboard: Intel® 845GE chipsets, standard FSB 533 MHz, Max. 800 MHz (see CAUTION 1), supports Hyper-Threading Technology (see CAUTION 2); South Bridge: Intel® ICH4
Clock Generator:	100 MHz - 248MHz
Memory:	For P4i45G / P4i45GL / P4i45GV: 2 DDR DIMM slots, DIMM1 and DIMM2 (PC1600/ PC2100), Max. 2GB; 2 SDR DIMM slots: DIMM3 and DIMM4 (PC133), Max. 2GB; For P4i45GE: 2 DDR DIMM slots, DIMM1 and DIMM2 (PC2100 / PC2700), Max. 2GB; No SDR DIMM Slots provided on P4i45GE motherboard
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 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); CPU overheat shutdown to protect CPU life (ASRock U-COP) (see CAUTION 4); Chassis temperature sensing; Voltage monitoring: +12V, +5V, +3V, Vcore; CPU fan tachometer; Chassis fan tachometer
PCI slots:	3 slots with PCI Specification 2.2
AGP slot:	1 AGP slot, supports 1.5V, 4X AGP card (see CAUTION 5) (AGP Slot only available on P4i45G/P4i45GE Motherboard)

AMR slot:	1 slot, supports ASRock MR card (optional)
USB 2.0:	4 default USB 2.0 ports and 1 extra set of header for 2 additional USB 2.0 ports upgrade (see CAUTION 6)
ASRock I/O™:	PS/2: 1 keyboard port / 1 mouse port; 1 RJ 45 port; 4 rear default USB 2.0 ports; 1 VGA port; 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 7)
OS:	Microsoft® Windows® 98SE / ME / 2000 / XP compliant

CAUTION!

1. P4i45G/P4i45GL/P4i45GE motherboard may be fine tuned to support higher CPU bus frequencies on certain condition. Please refer to the tables on pages 7-9 for the details.
2. About the setting of “Hyper Threading Technology”, please check page 26.
3. If the installed CPU runs with the front side bus frequency at 533 MHz on P4i45GL motherboard, it will only support DDR 266.
4. 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.
5. Do NOT plug a 3.3V AGP card in the AGP slot on P4i45G/P4i45GE motherboard! It may cause permanent damage!
6. 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/HWDEV/BUS/usb/USB2support.asp>
7. Although P4i45G / P4i45GL / P4i45GV / P4i45GE offers stepless control, it is not recommended to perform over clocking. When the CPU frequency of P4i45G / P4i45GL / P4i45GV / P4i45GE is set to perform over clocking, other clocks, such as PCI clock, AGP clock, and Memory clock will also be overlocked proportionally. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU and the motherboard.

NOTE

P4i45G, P4i45GL, and P4i45GE may be fine tuned to support higher CPU front side bus frequencies on certain condition. Please refer to the table below for the details.

	CPU FSB	Configuration Note
P4i45G	800 MHz	1. Set the "FSB" jumper to "TEST" mode (see page 18).
		2. Only support one DDR 333 memory module.
P4i45GL	533 MHz	Only support DDR 266 memory module.
P4i45GE	800 MHz	1. Set the "FSB" jumper to "TEST" mode (see page 18).
		2. Only support one DDR 400 memory module. (If it is set to DDR 400 mode, then it does not support CL3 module.)

The Recommended Memory Modules list for **P4i45G** motherboard.

FSB 800 MHz / DDR 300 Mode

DRAM VENDOR	SIZE (MB)	TYPE	CELL VENDOR	CELL NO.	SINGLE SIDE / DOUBLE SIDE	VGA (Add on)	VGA (On-board)
TWINMOS	512	DDR400	TWINMOS	TMD7608F8E508	DOUBLE SIDE	OK	
TWINMOS	512	DDR333	WINBOND	W9425084H-6	DOUBLE SIDE	OK	OK
TWINMOS	256	DDR333	TWINMOS	TMD7608F8E60B	SINGLE SIDE	OK	OK
KINGMAX	256	DDR333	KINGMAX	KDL684T4AA-60	DOUBLE SIDE	OK	
KINGMAX	128	DDR333	KINGMAX	KDL684T4AA-60	SINGLE SIDE	OK	
KINGMAX	256	DDR400	KINGMAX	KDL684T4AA-50	DOUBLE SIDE	OK	
KINGSTON	256	DDR333	MOSEL	V58C2256804SAT6	SINGLE SIDE	OK	OK
KINGSTON	512	DDR333	NANYA	NT5DS32M8AT-6	DOUBLE SIDE		OK
KINGSTON	512	DDR333	INFINEON	HYB25D256800BT-6	DOUBLE SIDE	OK	
HYNIX	256	DDR333	HYNIX	HY5DU28822BT-J	DOUBLE SIDE	OK	
HYNIX	128	DDR333	HYNIX	HY5DU28822BT-J	SINGLE SIDE	OK	
TRANSCEND	512	DDR333	SAMSUNG	K4H560838D-TCB3	DOUBLE SIDE	OK	
TRANSCEND	256	DDR333	SAMSUNG	K4H560838D-TCB3	SINGLE SIDE	OK	OK
INFINEON	256	DDR333	INFINEON	HYB250256800BT-6	DOUBLE SIDE	OK	OK
MICRON	256	DDR400	MICRON	MT46V16M8	DOUBLE SIDE	OK	OK
MICRON	512	DDR333	MICRON	MT46V32M8	DOUBLE SIDE	OK	OK
APACER	256	DDR400	SAMSUNG	K4H560838D-TCC4	SINGLE SIDE	OK	OK
NANYA	512	DDR333	NANYA	NT5DS32M8AT-6	DOUBLE SIDE	OK	OK

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.

The Recommended Memory Modules list for **P4i45GL** motherboard.

FSB 533 MHz / DDR 266 Mode

DRAM VENDOR	SIZE (MB)	TYPE	CELL VENDOR	CELL NO.	SINGLE SIDE / DOUBLE SIDE
TWINMOS	256	DDR266	M.TEC	TTD7608F8E75B	SINGLE SIDE
TWINMOS	256	DDR266	HYNIX	HY5DU28822AT-H	SINGLE SIDE
TWINMOS	128	DDR266	M.TEC	TTD7608F8E75B	SINGLE SIDE
TWINMOS	256	DDR266	M.TEC	TTD7608F8E76D	SINGLE SIDE
TWINMOS	512	DDR333	WINBOND	W942508AB-6	DOUBLE SIDE
KINGMAX	128	DDR266	KINGMAX	KDL684T4A2C-07A	SINGLE SIDE
KINGMAX	256	DDR266	KINGMAX	KDL684T4AA-75	DOUBLE SIDE
KINGSTON	256	DDR266	KINGSTON	D328DM-75	SINGLE SIDE
KINGSTON	128	DDR266	MOSEL	V58C2128804SAT7	SINGLE SIDE
KINGSTON	256	DDR333	MOSEL	V58C225680SAT6	SINGLE SIDE
HYNIX	256	DDR333	HYNIX	HY5DU28822BT-J	DOUBLE SIDE
TRANSCEND	128	DDR266	SAMSUNG	K4H280838C-TCB0	SINGLE SIDE
TRANSCEND	256	DDR266	MITSUBISHI	24099A38-75	SINGLE SIDE
INFINEON	256	DDR333	INFINEON	HYB250256800BT-6	SINGLE SIDE
ELIXIR	256	DDR266	ELIXIR	N2DS12880AT-75B	DOUBLE SIDE
APACER	128	DDR266	NANYA	NT5DS16M8AT-7K	SINGLE SIDE
SAMSUNG	256	DDR266	SAMSUNG	K4H280838C-TCB0	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.

The Recommended Memory Modules list for **P4i45GE** motherboard.

FSB 800 MHz / DDR 400 Mode

(only support one DDR 400 memory module)

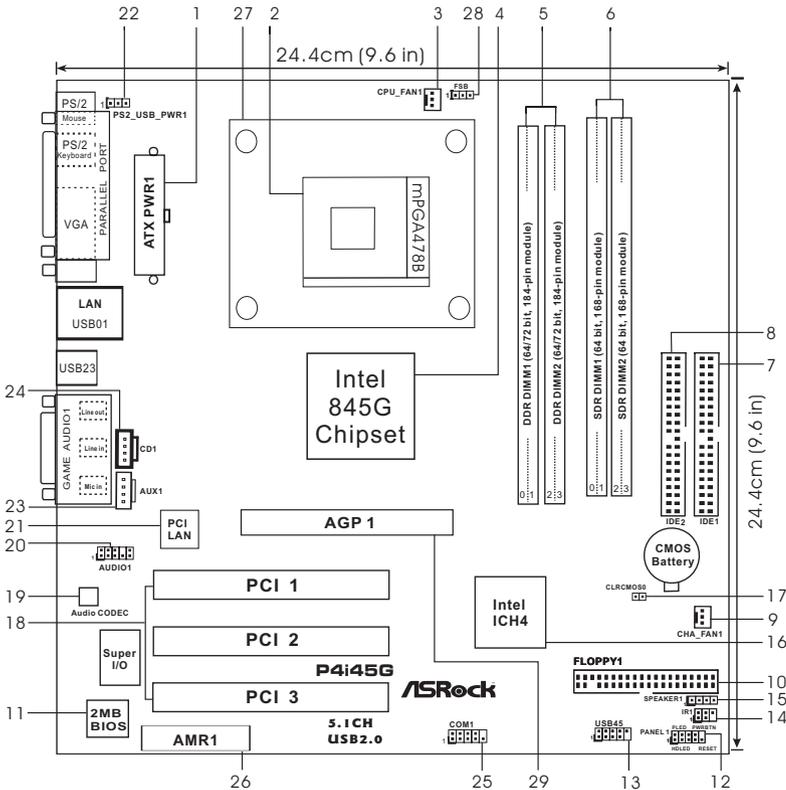
DRAM VENDOR	SIZE (MB)	TYPE	CELL VENDOR	CELL NO.	SINGLE SIDE / DOUBLE SIDE
TWINMOS	512	DDR400	TWINMOS	TMD7608F8E508	DOUBLE SIDE
KINGMAX	256	DDR400	KINGMAX	KDL684T4AA-50	DOUBLE SIDE
KINGSTON	256	DDR400	WINBOND	W942508BH-5	SINGLE SIDE
APACER	256	DDR400	SAMSUNG	K4H560838D-TCC4	SINGLE SIDE

FSB 533MHz / DDR 333 Mode

DRAM VENDOR	SIZE (MB)	TYPE	CELL VENDOR	CELL NO.	SINGLE SIDE / DOUBLE SIDE
KINGSTON	512	DDR333	INFINEON	HYB25D256800BT-6	DOUBLE SIDE
KINGSTON	256	DDR333	MOSEL	V58C2256804SAT6	SINGLE SIDE
KINGMAX	256	DDR333	KINGMAX	KDL684T4AA-60	DOUBLE SIDE
TWINMOS	256	DDR333	TWINMOS	TMD7608F8E60B	SINGLE SIDE
HYNIX	256	DDR333	HYNIX	HY5DU28822BT-J	DOUBLE SIDE
HYNIX	128	DDR333	HYNIX	HY5DU28822BT-J	SINGLE SIDE
TRANSCEND	512	DDR333	SAMSUNG	K4H560838D-TCB3	DOUBLE SIDE
TRANSCEND	256	DDR333	SAMSUNG	K4H560838D-TCB3	SINGLE SIDE
INFINEON	256	DDR333	INFINEON	HYB250256800BT-6	DOUBLE SIDE
MICRON	256	DDR400	MICRON	MT46V16M8	DOUBLE SIDE
MICRON	512	DDR333	MICRON	MT46V32M8	DOUBLE SIDE
NANYA	512	DDR333	NANYA	NT5DS32M8AT-6	DOUBLE SIDE

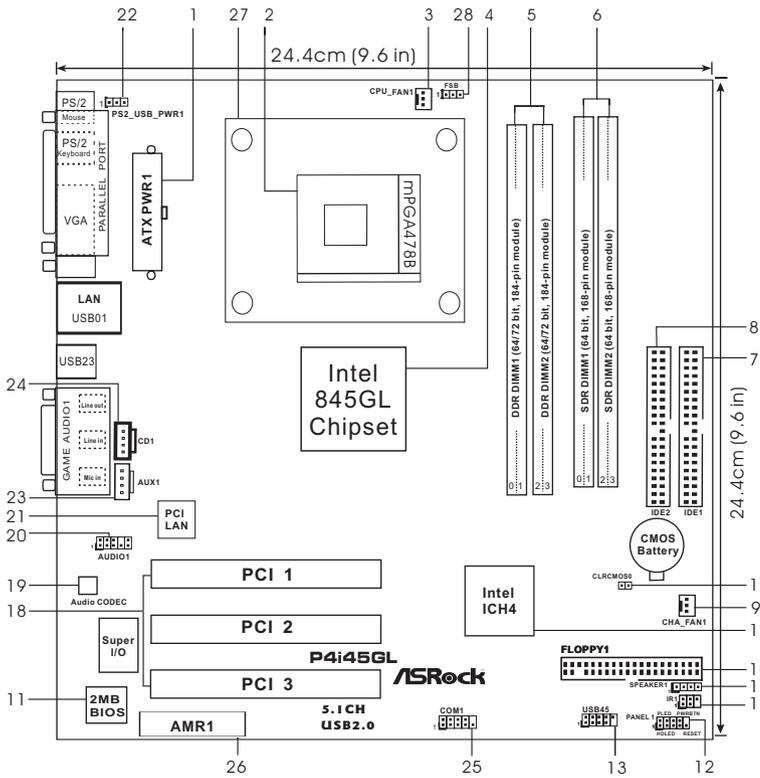
Since the memory types are changing rapidly, please visit ASRock website (<http://www.asrock.com/support/index.htm>) for the latest recommended memory support list.

1.3 Motherboard Layout (P4i45G)



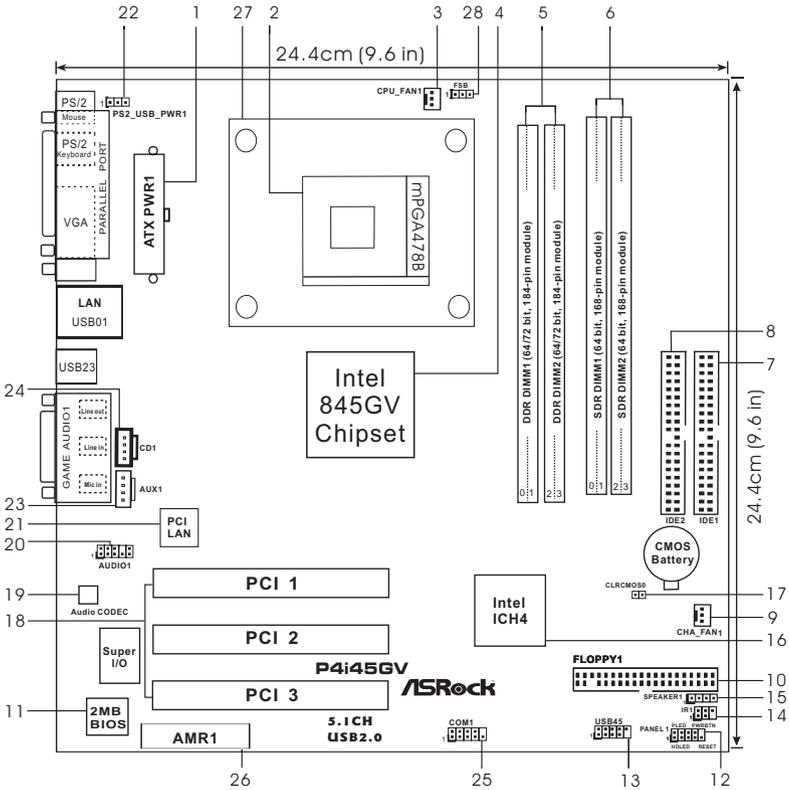
- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 15 | External speaker connector (SPEAKER1) |
| 2 | CPU socket | 16 | South Bridge controller |
| 3 | CPU fan connector (CPU_FAN1) | 17 | Clear CMOS (CLRCMOS0, 2-pin jumper) |
| 4 | North Bridge controller | 18 | PCI slots (PCI 1-3) |
| 5 | 184-pin DDR DIMM slots (Blue) | 19 | AUDIO CODEC |
| 6 | 168-pin SDRAM DIMM slots (Black) | 20 | Front panel audio connector (AUDIO1) |
| 7 | Primary IDE connector (IDE1, Blue) | 21 | PCI LAN |
| 8 | Secondary IDE connector (IDE2, Black) | 22 | PS2_USB_PWR1 jumper |
| 9 | Chassis fan connector (CHA_FAN1) | 23 | Internal audio connector: AUX1 (white) |
| 10 | Floppy connector (FLOPPY1) | 24 | Internal audio connector: CD1 (black) |
| 11 | BIOS FWH chip | 25 | Serial port connector (COM1) |
| 12 | System panel connector (PANEL1) | 26 | AMR slot (AMR1) |
| 13 | USB 2.0 header (USB45) | 27 | CPU heatsink retention module |
| 14 | Infrared module connector (IR1) | 28 | FSB jumper (FSB) |
| | | 29 | AGP slot (AGP1) |

1.4 Motherboard Layout (P4i45GL)



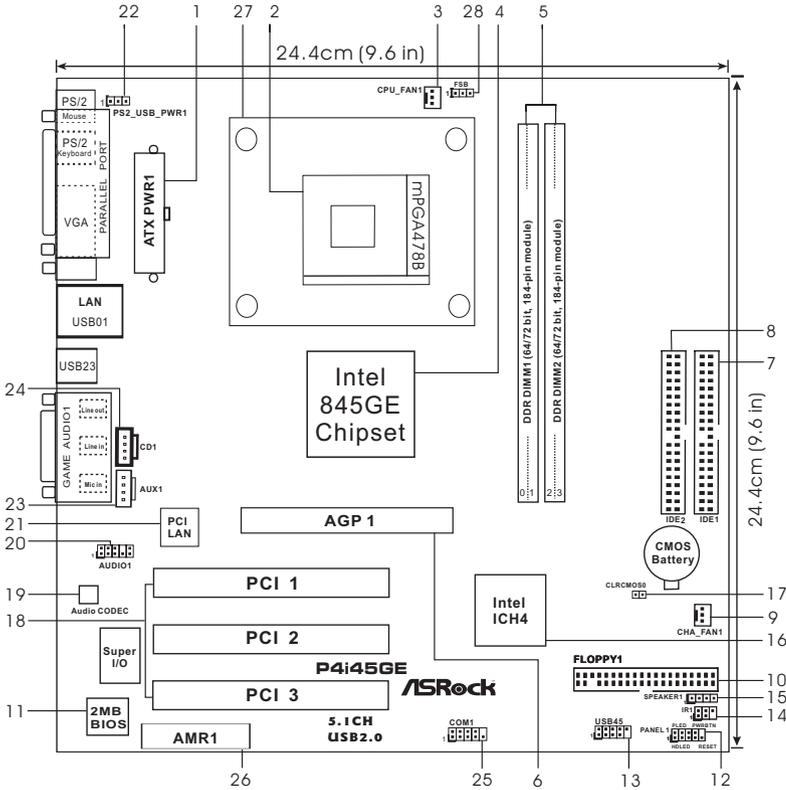
- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 15 | External speaker connector (SPEAKER1) |
| 2 | CPU socket | 16 | South Bridge controller |
| 3 | CPU fan connector (CPU_FAN1) | 17 | Clear CMOS (CLR_CMOS0, 2-pin jumper) |
| 4 | North Bridge controller | 18 | PCI slots (PCI 1-3) |
| 5 | 184-pin DDR DIMM slots (Blue) | 19 | AUDIO CODEC |
| 6 | 168-pin SDRAM DIMM slots (Black) | 20 | Front panel audio connector (AUDIO1) |
| 7 | Primary IDE connector (IDE1, Blue) | 21 | PCI LAN |
| 8 | Secondary IDE connector (IDE2, Black) | 22 | PS2_USB_PWR1 jumper |
| 9 | Chassis fan connector (CHA_FAN1) | 23 | Internal audio connector: AUX1 (white) |
| 10 | Floppy connector (FLOPPY1) | 24 | Internal audio connector: CD1 (black) |
| 11 | BIOS FWH chip | 25 | Serial port connector (COM1) |
| 12 | System panel connector (PANEL1) | 26 | AMR slot (AMR1) |
| 13 | USB 2.0 header (USB45) | 27 | CPU heatsink retention module |
| 14 | Infrared module connector (IR1) | 28 | FSB jumper (FSB) |

1.5 Motherboard Layout (P4i45GV)



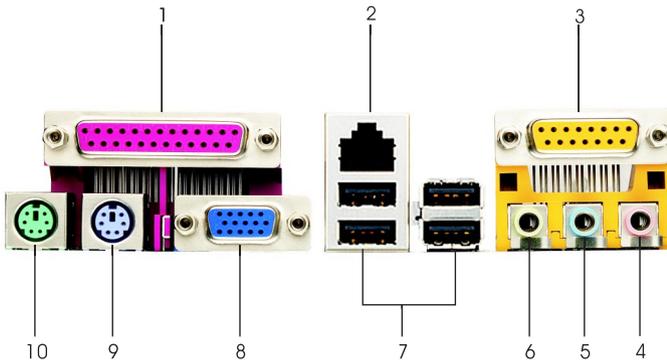
- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 15 | External speaker connector (SPEAKER1) |
| 2 | CPU socket | 16 | South Bridge controller |
| 3 | CPU fan connector (CPU_FAN1) | 17 | Clear CMOS (CLR_CMOS0, 2-pin jumper) |
| 4 | North Bridge controller | 18 | PCI slots (PCI 1-3) |
| 5 | 184-pin DDR DIMM slots (Blue) | 19 | AUDIO CODEC |
| 6 | 168-pin SDRAM DIMM slots (Black) | 20 | Front panel audio connector (AUDIO1) |
| 7 | Primary IDE connector (IDE1, Blue) | 21 | PCI LAN |
| 8 | Secondary IDE connector (IDE2, Black) | 22 | PS2_USB_PWR1 jumper |
| 9 | Chassis fan connector (CHA_FAN1) | 23 | Internal audio connector: AUX1 (white) |
| 10 | Floppy connector (FLOPPY1) | 24 | Internal audio connector: CD1 (black) |
| 11 | BIOS FWH chip | 25 | Serial port connector (COM1) |
| 12 | System panel connector (PANEL1) | 26 | AMR slot (AMR1) |
| 13 | USB 2.0 header (USB45) | 27 | CPU heatsink retention module |
| 14 | Infrared module connector (IR1) | 28 | FSB jumper (FSB) |

1.6 Motherboard Layout (P4i45GE)



- | | | | |
|----|---------------------------------------|----|--|
| 1 | ATX power connector (ATXPWR1) | 15 | External speaker connector (SPEAKER1) |
| 2 | CPU socket | 16 | South Bridge controller |
| 3 | CPU fan connector (CPU_FAN1) | 17 | Clear CMOS (CLR_CMOS0, 2-pin jumper) |
| 4 | North Bridge controller | 18 | PCI slots (PCI 1-3) |
| 5 | 184-pin DDR DIMM slots | 19 | AUDIO CODEC |
| 6 | AGP slot (AGP1) | 20 | Front panel audio connector (AUDIO1) |
| 7 | Primary IDE connector (IDE1, Blue) | 21 | PCI LAN |
| 8 | Secondary IDE connector (IDE2, Black) | 22 | PS2_USB_PWR1 jumper |
| 9 | Chassis fan connector (CHA_FAN1) | 23 | Internal audio connector: AUX1 (white) |
| 10 | Floppy connector (FLOPPY1) | 24 | Internal audio connector: CD1 (black) |
| 11 | BIOS FWH chip | 25 | Serial port connector (COM1) |
| 12 | System panel connector (PANEL1) | 26 | AMR slot (AMR1) |
| 13 | USB 2.0 header (USB45) | 27 | CPU heatsink retention module |
| 14 | Infrared module connector (IR1) | 28 | FSB jumper (FSB) |

1.7 ASRock I/O™ (P4i45G / P4i45GL / P4i45GV / P4i45GE)



- | | | | |
|---|----------------------|----|-----------------------------|
| 1 | Parallel Port | 6 | Line Out (Lime) |
| 2 | RJ-45 Port | 7 | USB 2.0 Ports |
| 3 | Game Port | 8 | VGA Port |
| 4 | Microphone (Pink) | 9 | PS/2 Keyboard Port (Purple) |
| 5 | Line In (Light Blue) | 10 | PS/2 Mouse Port (Green) |

Chapter 2 Installation

P4i45G / P4i45GL / P4i45GV / P4i45GE is a Micro ATX form factor (9.6" x 9.6", 24.4 x 24.4 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)

SDRAM (Synchronous DRAM) DIMM (Dual In-line Memory Module) has 168 pins and DDR (Double Data Rate) SDRAM DIMM has 184 pins. There are two SDRAM DIMM slots (black) and two DDR DIMM slots (blue) provided on P4i45G, P4i45GL, and P4i45GV motherboards. On P4i45GE motherboard, only 2 DDR DIMM slots and **NO SDRAM DIMM SLOTS** are provided.



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



168-pin RAM



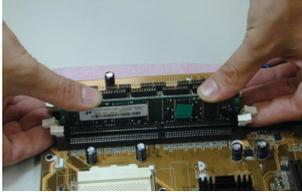
184-pin RAM

The 168-pin SDRAM DIMM slot (black) and 184-pin DDR DIMM slot (blue) can be easily distinguished by the fool-proof design.



Please do not use both 168-pin SDRAM DIMM and 184-pin DDR DIMM at the same time. To optimize the compatibility, it is not recommended to use two different models of the DIMMs at the same time.

-
- 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, AMR, and AGP Slots)

There are 3 PCI slots and 1 AMR slot on P4i45G, P4i45GL, P4i45GV, and P4i45GE motherboards. Additionally, there is 1 AGP slot on P4i45G and P4i45GE.

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

AMR slot: AMR slot is used to insert ASRock MR card with v.92 Modem functionality.

AGP slot (only available on P4i45G/P4i45GE Motherboard):

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.



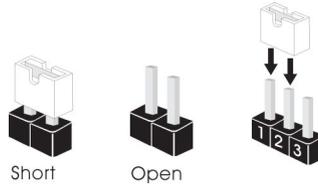
Please do NOT plug a 3.3V AGP card in the AGP slot on P4i45G/P4i45GE motherboard! It may cause permanent damage!

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 screw 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
FSB (see p.10 / p.13 item 28) (for P4I45G / P4I45GE motherboard only)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1_2</p> <p>NORMAL</p> </div> <div style="text-align: center;"> <p>2_3</p> <p>TEST</p> </div> </div>	“NORMAL” (short pin1, pin2) is the default setting for the FSB jumper. “TEST” (short pin2, pin3) is the setting for the over clocking of CPU frequency.
PS2_USB_PWR1 (see p.10-p.13 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.

Clear CMOS

CLRCMOS0
 (see p.10-p.13 item 17)



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.10-p.13 item 10)		

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

Primary IDE connector (Blue)
(39-pin IDE1, see p.10-p.13 item 7)

Secondary IDE connector (Black)
(39-pin IDE2, see p.10-p.13 item 8)



Connect this BLUE end to the motherboard

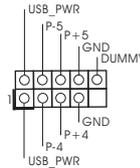


Connect this BLACK end to the IDE devices

80-Pin ATA 100 cable

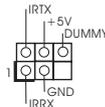
Note: To optimize compatibility and performance, please connect your hard disk drive to the primary IDE connector (IDE1, blue) and CD-ROM to the secondary IDE connector (IDE2, black).

USB header
(9-pin USB45)
(see p.10-p.13 item 13)



ASRock I/O™ already provided 4 default USB ports. If the 4-USB ports on the rear panel are not sufficient, an USB header is available for 2 additional USB ports.

Infrared module connector
(5-pin IR1)
(see p.10-p.13 item 14)



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

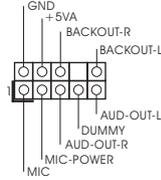
Internal audio connectors
(4-pin CD1, 4-pin AUX1)
(CD1: see p.10-p.13 item 24)
(AUX1: see p.10-p.13 item 23)



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)**

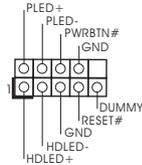
(see p.10-p.13 item 20)



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

**System panel connector
(9-pin PANEL1)**

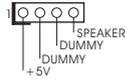
(see p.10-p.13 item 15)



This connector accommodates several system front panel functions.

**External speaker connector
(4-pin SPEAKER 1)**

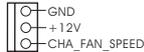
(see p.10-p.13 item 9)



This connector allows you to attach to an external speaker.

**Chassis fan connector
(3-pin CHA_FAN1)**

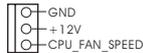
(see p.10-p.13 item 9)



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

**CPU fan connector
(3-pin CPU_FAN1)**

(see p.10-p.13 item 3)



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

**ATX power connector
(20-pin ATXPWR1)**

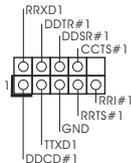
(see p.10-p.13 item 1)



Connect an ATX power supply to the connector.

**Serial port connector
(9-pin COM1)**

(see p.10-p.13 item 25)



This COM1 header supports a serial port module.

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 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		Jan 08 2003 Wed	[Setup Help]
System Time		20:07:40	Month: Jan - Dec
▶ Floppy Drives			Day: 01 - 31
▶ IDE Devices			Year: 1980 - 2099
BIOS Version	P4I45G BIOS P1.00		
Processor Type	Pentium (R) 4 Family CPU		
Processor Speed	2100 MHz		
Cache Size	512 KB		
Microcode Update	F23 / 08		
Total Memory	127 MB + 1 MB Share Memory		
DDR1	128 MB / 133 MHz (DDR 266)		
DDR2	None		
SDR1	None		
SDR2	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	Off
Block Mode	Off
Fast Programmed I/O Modes	Auto
32 Bit Transfer Mode	Off
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 26.

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.

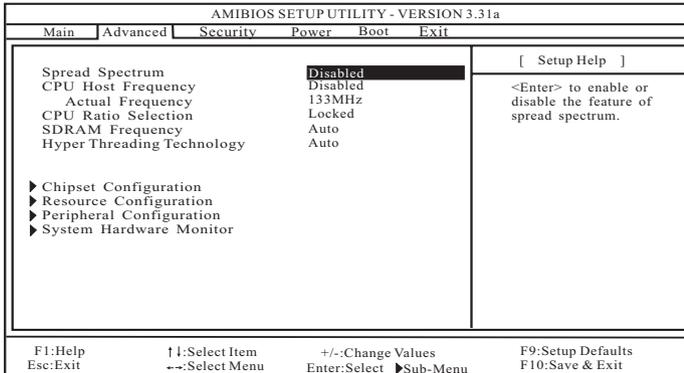
4.2.5 Contact Information

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website: <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 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 [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: [200MHz], [266MHz], [333MHz].

Hyper-Threading Technology (for P4i45G / P4i45GV / P4i45GE only):

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. 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.
ICH Delayed Transaction	Disabled	
USB Controller	Enabled	
USB Device Legacy Support	Disabled	
DRAM CAS Latency	Auto	
F1:Help F4: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.

DRAM CAS Latency:

This is used to adjust the means of memory accessing.

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	PCI/AGP	
F1:Help F4: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: This allows you to select [Internal VGA], or [AGP], or [PCI] as the primary graphics adapter.

Peripheral Configuration:

AMBIOS 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
OnBoard MC'97 Modem	Auto

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

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: This allows you to enable or disable the onboard infrared port feature. Select [Auto] will enable this feature if the infrared module is installed.

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.

OnBoard Midi Port: Select address for Midi Port or disable Midi Port. Configuration options: [Disabled], [330], [300], [310], [320].

Midi IRQ Select: Use this to select Midi IRQ.

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

OnBoard IDE: To enable either the primary IDE channel or the secondary IDE channel, set to [Disabled] will disable the both.

Configuration options: [Disabled], [Primary], [Secondary], [Both].

OnBoard LAN: Enable or Disable the onboard LAN feature.

OnBoard AC'97 Audio: Select whether to enable or disable the onboard AC'97 Audio feature.

OnBoard MC'97 Modem: Select [Auto] or [Disabled] for the onboard MC'97 Modem 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 ↑↓: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	
Set Supervisor Password		[Enter]	<Enter> to set the supervisor password.
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: 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.

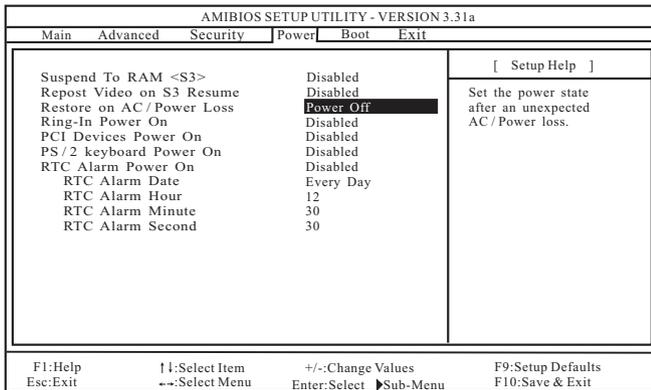
[Set]: User password has been set.

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



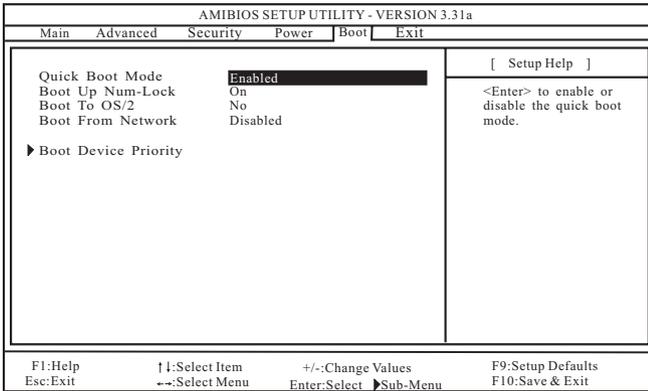
Suspend To RAM (S3): This field allows you to select whether to auto-detect or disable the ACPI Suspend-to-RAM feature. Select [Auto] will enable this feature if the system supports it.

Repost Video on S3 Resume: This feature allows you to repost video on S3 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.

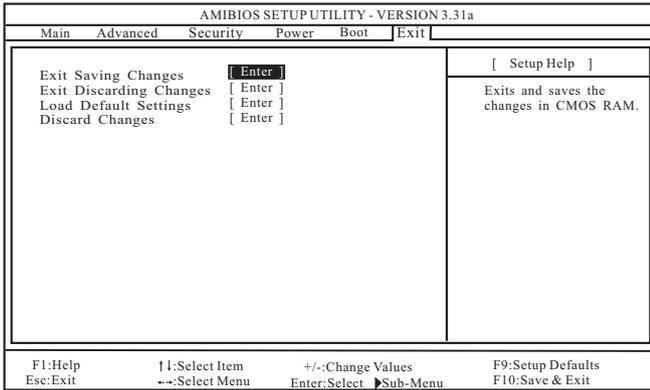
- Ring-In Power On:** Use this to enable or disable Ring-in signals to turn on the system from the power-soft-off mode.
- PCI Devices Power On:** Use this to enable or disable PCI devices to turn on the system from the power-soft-off mode.
- PS/2 Keyboard Power On:** Use this to enable or disable PS/2 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. All changes are discarded.