

VIA Mainboard User's Manual

**VIA P4XB-S &
VIA P4XB-R**

Version 1.3 - November 13, 2001

Copyright

Copyright by VIA Technologies Inc. (“VIA”). No part of this manual may be reproduced or transmitted in any form without express written authorization from VIA.

Trademarks

All trademarks are the property of their respective holders.

Data protection

All data should be backed-up prior to the installation of any drive unit or storage peripheral. VIA will not be responsible for any loss of data resulting from the use, disuse or misuse of this or any other VIA product.

No Warranty

VIA has made every effort to ensure the accuracy of the content of this manual. However, it is possible that it may contain technical inaccuracies or typographical or other errors. VIA will assume no liability for any inaccuracy found in this publication, nor for damages, direct, indirect, incidental, consequential or otherwise, that may result from such an inaccuracy, including without limitation loss of data or profits.

VIA provides this manual “as is”, and does not issue a warranty of any kind, express or implied, including without limitation implied warranties of merchantability or fitness for a particular purpose.

The information provided in this manual is subject to change without notice. VIA reserves the right to alter product designs, layouts or drivers without notification.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

TRADEMARKS

All trademarks used in this manual are the property of their respective owners. Intel and Pentium are registered trademarks of Intel Corporation. PS/2 and OS/2 are registered trademarks of IBM Corporation. Windows 95/98/2000 and Windows NT are registered trademarks of Microsoft. Netware is a registered trademark of Novell. Award is a registered trademark of Award Software Inc.

NOTE

1. Always read the safety instructions carefully.
2. Keep this User's Manual for future reference.
3. Keep this equipment away from humidity.
4. Lay this equipment on a reliable flat surface before setting it up.
5. The openings on the enclosure are for air convection and protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
7. Place the power cord such a way that people cannot step on it. Do not place anything over the power cord.
8. Always Unplug the Power Cord before inserting any add-on card or module.
9. All cautions and warnings on the equipment should be noted.
10. Never pour any liquid into the opening. Doing so could cause damage or electrical shock.
11. If any of the following situations arises, get the equipment checked by a service personnel:
 - The power cord or plug is damaged
 - Liquid has penetrated into the equipment
 - The equipment has been exposed to moisture
 - The equipment does not work well or does not work according to the User's Manual.
 - The equipment has dropped or damaged
The equipment has been visibly damaged
12. **DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60°C (140°F), IT MAY DAMAGE THE EQUIPMENT.**

Box Contents

- 1 x VIA Mainboard
- 1 x User's manual
- 1 x Floppy ribbon cable
- 1 x ATA-66/100 Hard drive ribbon cable (2 are included with the VIA P4XB-R)
- 1 x 2 Port USB Module
- 1 x Driver Utilities CD
- 1 x User's Manual for Promise FastTrak 100-Lite RAID Controller (with VIA P4XB-R only)

Contents

Chapter 1. Specifications 1-1

Specifications 1-2

Layout 1-4

Components Guide 1-5

Chapter 2. Installation 2-7

CPU Installation 2-8

CPU Installation 2-8

CPU Core Speed 2-9

CPU Fan Installation 2-9

Memory Installation 2-11

DDR Module Installation 2-13

Power Supply 2-13

ATX 20-Pin Power Connector: JWR1 2-13

ATX 12V Power Connector: JPW1 2-13

Back Panel 2-14

Mouse Connector: JKBMS1 2-15

Keyboard Connector: JKBMS1 2-15

USB Connectors 2-15

Parallel Port Connector: LPT1 2-15

Serial Port Connectors: COM A & COM B 2-17

Joystick (MIDI) Connector 2-17

Audio Port Connectors 2-17

Connectors 2-17

Floppy Disk Drive Connector: FDD1 2-17

IrDA Infrared Module Connector: IR1 2-17

Hard Disk Connectors: IDE1 & IDE2 2-19

CD-In Connector: J3 2-19

Aux Line-In Connector: J4 2-19

Modem-In Connector: J5	2-19
Fan Power Connectors: CFAN2/SFAN1	2-20
Case Connectors: JFP1/JFP2	2-21
Front Panel Audio Connector: JAUD	2-22
Wake On Ring Connector: JMDM1	2-23
Power Saving Switch Connector: JGS1	2-23
USB Front Connector: USB3/USB4	2-24
<i>Jumpers</i>	2-25
Clear CMOS Jumper: J7	2-25
Onboard Audio Codec Jumper: JP1	2-26
<i>Slots</i>	2-27
AGP (Accelerated Graphics Port) Slot	2-27
PCI Slots	2-27
CNR (Communication Network Riser)	2-27
PCI Interrupt Request Routing	2-28

***Chapter 3. BIOS Setup* 3-29**

<i>Entering Setup</i>	3-30
<i>Control Keys</i>	3-30
<i>Getting Help</i>	3-31
<i>The Main Menu</i>	3-32
<i>Standard CMOS Features</i>	3-34
<i>Advanced BIOS Features</i>	3-36
<i>Advanced Chipset Features</i>	3-39
<i>Integrated Peripherals</i>	3-44
<i>Power Management Setup</i>	3-50
<i>PNP/PCI Configurations</i>	3-54
<i>PC Health Status</i>	3-56
<i>Frequency/Voltage Control</i>	3-57
<i>Load High Performance Defaults</i>	3-59

Load Optimized Defaults 3-60
Set Supervisor/User Password..... 3-61
Save & Exit Setup 3-63
Exit Without Saving 3-64

Chapter 4. Driver Setup 4-65

VIA Apollo P4X266 Chipset Drivers 4-66
C-Media CMI8738 Audio Driver (P4XB-R only) 4-71
Realtek ALC201A Audio Driver (P4XB-S only) 4-73

1

Specifications

The VIA P4XB-R and P4XB-S mainboards are based around the VIA Apollo P4X266 chipset, which brings support for high-performance DDR266 SDRAM to the Intel® Pentium® 4 platform. VIA's advanced V-Link controller brings optimal system efficiency by effectively doubling bandwidth between the chipset's north and south bridges. Designed for the latest 478-pin Pentium® 4 processors, these ATX sized mainboards are the perfect choice for Pentium 4 based high-performance PCs, servers and workstations.

This chapter includes the following sections:

Mainboard Specifications	1-2
Mainboard Layout	1-4
Components Guide	1-5

Specifications

CPU

- Supports Intel® Pentium® 4 processors in the 478 pin package.
- Supports 1.5GHz, 1.6GHz, 1.7GHz, 1.8GHz, 1.9GHz, 2GHz and upwards.

Chipset

- VIA Apollo P4X266 chipset (VT8753 & VT8233)
 - Supports Intel® Pentium® 4 processors with 400MHz (100MHz QDR) CPU Front Side Bus (FSB).
 - AGP v2.0 compliant with 8x transfer mode.
 - High Bandwidth V-Link Client controller.
 - Integrated Faster Ethernet LPC.
 - Integrated Hardware Sound Blaster/Direct Sound AC'97 audio.
 - Ultra DMA 33/66/100 master mode PCI EIDE controller.
 - ACPI 1.0B and PCI Bus Power Management 1.1 compliant.

Main Memory

- 3 x 184-pin DDR DIMM slots.
- Supports up to 3GB of DDR266 SDRAM (PC2100/PC1600).
- Supports 2.5v DDR266 SDRAM.

Slots

- 1 x AGP (Accelerated Graphics Port) 4X slot.
- 5 x PCI 2.2 32-bit PCI bus slots (supports 3.3v/5v PCI bus interface).
- 1 x CNR (Communication Network Riser) slot.

Onboard IDE

- Integrated IDE controller provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA 33/66/100 operation modes.
- Can connect up to four IDE devices.
- IDE RAID 0, 1 supported by Promise PDC20265R controller (VIA P4XB-R only).

Onboard Peripherals

- 1 floppy port supports 2 x FDDs with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
- 2 x serial ports (COM A + COM B).
- 1 x parallel port supports SPP/EPP/ECP mode.
- 2 x USB 1.1 ports (plus 2 pin-headers for up to 4 additional connections).
- 1 x IrDA connector for SIR/CIR/ASKIR/HPSIR.
- 1 x Game (MIDI) port

Audio

- H/W C-Media CMI8738 / PCI-6ch supports 2/4/6 channel speaker (VIA P4XB-R only).
- S/W Realtek ALC201A AC'97 Codec.

BIOS

- Award Plug & Play BIOS.
- Desktop Management Interface (DMI) function which records your mainboard specifications.

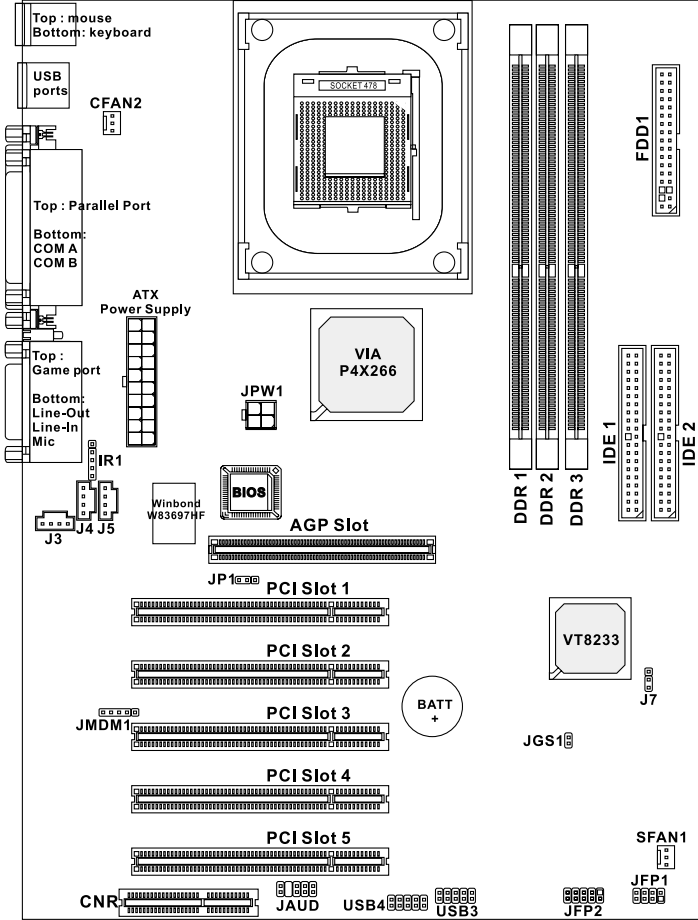
Dimension

- ATX Form Factor.
- 30.5cmx22.5cm.

Mounting

- 6 mounting holes.

Layout



VIA P4XB-R & VIA P4XB-S Mainboards

Components Guide

Component	Function	Reference
JWR1	ATX 20-pin power connector	See p. 2-13
JPW1	ATX 12V power connector	See p. 2-13
JKBMS1	Mouse connector	See p. 2-14
JKBMS1	Keyboard connector	See p. 2-14
USB Connectors	Connecting to USB devices	See p. 2-15
COM A & COM B	Serial port connector	See p. 2-16
LPT1	Parallel port connector	See p. 2-15
FDD1	Floppy disk drive connector	See p. 2-17
IR1	IrDA infrared module connector	See p. 2-17
IDE1~ IDE2	Hard disk connectors	See p. 2-18
J3	CD-in connector	See p. 2-19
J4	Aux line-in connector	See p. 2-19
J5	Modem-in connector	See p. 2-19
CFAN2/SFAN1	Fan power connectors	See p. 2-20
JFP1/JFP2	Case connector	See p. 2-21
JAUD	Front panel audio connector	See p. 2-22
JMDM1	Wake on ring connector	See p. 2-23
JGS1	Power saving switch connector	See p. 2-23
USB3/USB4	Connecting to USB devices	See p. 2-24
J7	Clear CMOS jumper	See p. 2-25
JP1	Onboard audio codec jumper	See p. 2-26
AGP Slot	Connecting to AGP cards	See p. 2-27
PCI Slots	Connecting to expansion cards	See p. 2-27
CNR Slot	Connecting to expansion cards	See p. 2-27

Chapter 2

2

Installation

This chapter provides you with information about hardware setup procedures. While installing the mainboard, carefully hold the components and closely follow the installation procedures. Some components may be damaged if they are installed incorrectly.

It is recommended to use a grounded wrist strap before handling computer components. Static electricity can damage some components.

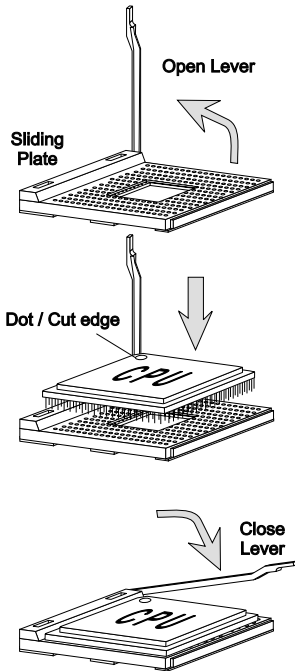
This chapter contains the following sections:

CPU Installation	2-8
Memory Installation	2-11
Power Supply	2-13
Back Panel	2-14
Connectors	2-17
Jumpers	2-25
Slots	2-27

CPU Installation

The VIA P4XB series mainboards support the Intel® Pentium® 4 processor in the 478 pin package (PGA478). When installing the CPU, **ensure the CPU has a large-size heatsink and a cooling fan attached on the top to prevent overheating**. If the heatsink and cooling fan are not included with the CPU, contact your dealer to purchase and install them before turning on the computer.

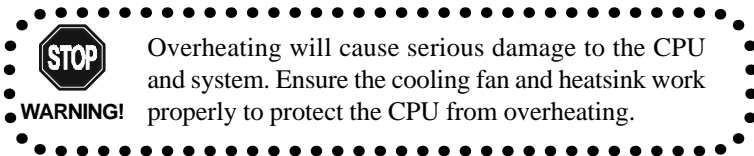
CPU Installation



1. Pull the lever sideways away from the socket. Then raise the lever up to a 90-degree angle.


2. Look for the dot/cut edge. The dot/cut edge should point towards the lever pivot. The CPU will only fit in the correct orientation.

3. Hold the CPU down firmly, then close the lever shut to complete the installation.



CPU Core Speed

$$\begin{aligned} \text{If } \text{CPU Clock} &= 100\text{MHz} \\ \text{Core/Bus ratio} &= 14 \\ \text{then CPU core speed} &= \text{Host Clock} \times \text{Core/Bus ratio} \\ &= 100\text{MHz} \times 14 \\ &= 1.4\text{GHz} \end{aligned}$$

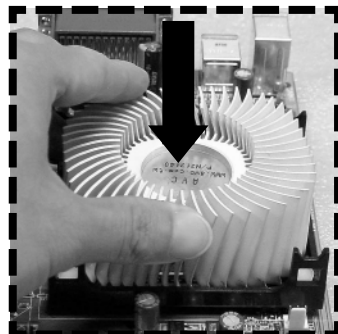
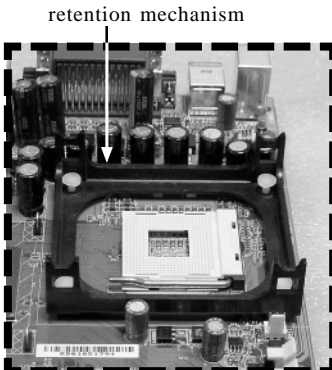
 **Overclocking**

WARNING! This mainboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal settings, before overclocking. Any attempt to operate beyond product specifications is not recommended. We do not guarantee the damages or risks caused by inadequate operation or operation beyond product specifications.

CPU Fan Installation

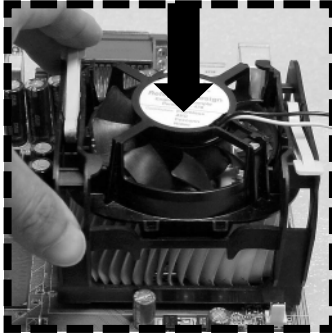
As processor technology pushes to faster speeds and higher performance, thermal management becomes increasingly important. To dissipate heat, you **MUST** attach the CPU cooling fan and heatsink on top of the CPU. Follow the instructions below to install the Heatsink/Fan:

1. Locate the CPU and its retention mechanism on the mainboard.
2. Position the heatsink onto the retention mechanism.

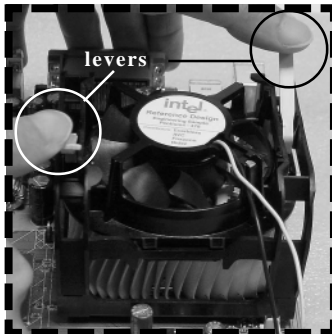


Chapter 2

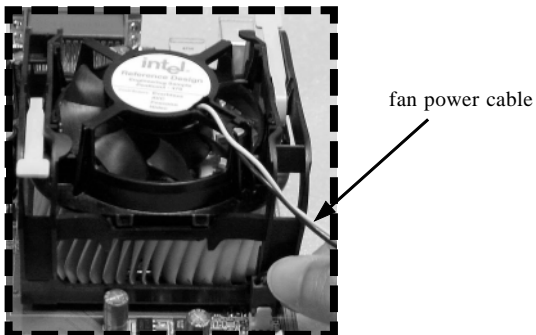
3. Mount the fan on top of the heatsink. Press down the fan firmly until its four clips become wedged in the holes of the retention mechanism.



4. Press the two levers down to secure the fan. Each lever can be pressed down in only ONE direction.



5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the mainboard.

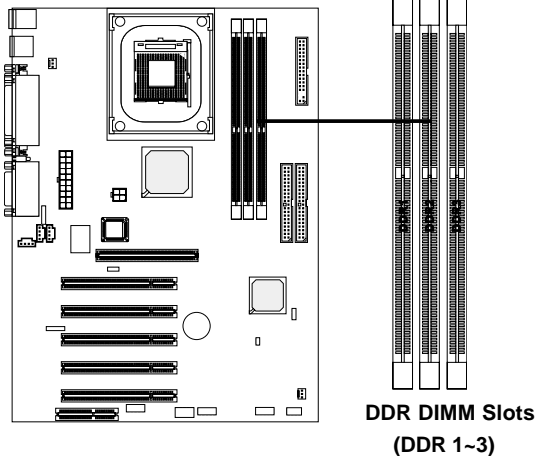


Memory Installation

The VIA P4XB series mainboards provide 3 sockets for 184-pin, 2.5V DDR DIMM with 6 memory banks. To operate properly, at least one DIMM module must be installed.

You can install PC1600/PC2100 DDR SDRAM modules on the DDR DIMM slots (DDR 1~3).

DDR266 (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate of transfer by transferring data twice per cycle. This is achieved by transferring data on both the rising and falling edges of the clock. Conventional SDRAM only uses the rising edge of the clock to transfer data. Therefore, conventional SDRAM is called SDR (Single Data Rate) SDRAM. DDR SDRAM uses 2.5 volts as opposed to 3.3 volts used in SDR SDRAM, and requires



184-pin DIMM modules rather than 168-pin DIMM modules used by SDR SDRAM. DDR266 SDRAM is also known as SDRAM-II, DDR DRAM and DSDRAM (Double-Speed DRAM). Two types of DDR are available currently: PC1600 & PC2100. PC1600 DDR SDRAM running at 100MHz will produce about 1.6GB/s memory bandwidth. PC2100 running at 133MHz will produce 2.1GB/s memory bandwidth. High memory bandwidth makes DDR an ideal solution for high performance PC, workstations and servers.

Chapter 2

DDR Module Installation

You can install either single sided or double sided 184-pin DDR DIMM modules into DDR DIMM, depending on your requirements. Differing from SDR DIMM, DDR DIMMs have only one notch on the center of the module. The number of pins on either side of the breaks are also different. The memory modules will only fit if placed in the correct orientation.

You can install DDR266 SDRAM modules in any of the following combinations:

Slot	Memory Module	Total Memory
Slot 1 (Bank 0 & Bank 1)	64 MB, 128 MB, 256 MB, 512 MB, 1 GB	64 MB ~ 1 GB
Slot 2 (Bank 2 & Bank 3)	64 MB, 128 MB, 256 MB, 512 MB, 1 GB	64 MB ~ 1 GB
Slot 3 (Bank 4 & Bank 5)	64 MB, 128 MB, 256 MB, 512 MB, 1 GB	64 MB ~ 1 GB
Maximum System Memory Supported		64 MB ~ 3 GB

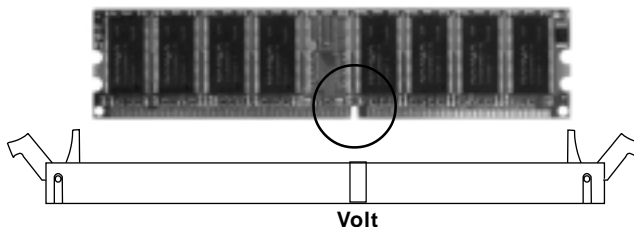
1. The DDR DIMM module has only one notch on the center.



Front View

Rear View

2. Insert the DDR module vertically into the DDR DIMM slot. Make sure the notch is correctly aligned.



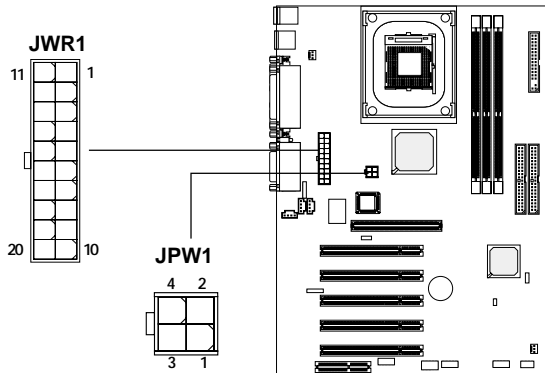
3. The plastic clips at sides of the DIMM slot will automatically close shut.

Power Supply

The VIA P4XB-R and VIA P4XB-S mainboards require an ATX power supply for powering the system. Before inserting the power supply connector, always make sure that all components are installed properly to ensure that no damage will be caused.

ATX 20-Pin Power Connector: JWR1

This connector is for the ATX power supply. To connect to the ATX power supply, make sure the plugs of the power supply are inserted in the correct orientation and the pins are properly aligned. Then, push down the power supply firmly into the connector. The power connector supports an **instant power on** function, which means that system will boot up immediately when the power supply connector is inserted on the mainboard.



ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

JWR1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V

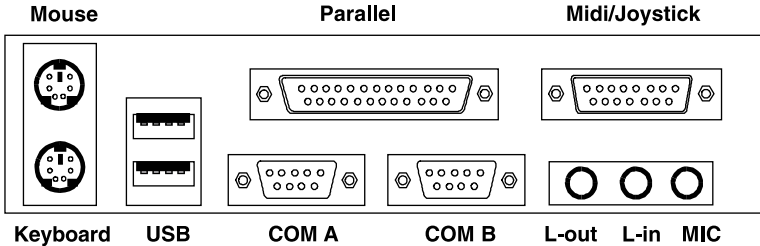
JPW1 Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

Chapter 2

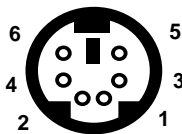
Back Panel

The Back Panel provides the following connectors:



Mouse Connector: JKBMS1

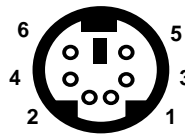
The VIA P4XB series mainboards provide a standard PS/2 mouse connector for attaching a PS/2 mouse. You can plug a PS/2 mouse directly into this connector. The connector location and pin assignments are as follows:



PS/2 Mouse (6-pin Female)

Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2 keyboard connector for attaching a PS/2 keyboard. You can plug a PS/2 keyboard directly into this connector.



PS/2 Keyboard (6-pin Female)

Pin Definition

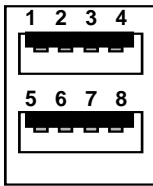
PIN	SIGNAL	DESCRIPTION
1	Mouse DATA	Mouse DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Mouse Clock	Mouse clock
6	NC	No connection

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	Keyboard DATA	Keyboard DATA
2	NC	No connection
3	GND	Ground
4	VCC	+5V
5	Keyboard Clock	Keyboard clock
6	NC	No connection

USB Connectors

The VIA P4XB-R and P4XB-S mainboards provide 2 USB ports (plus 2 pin-headers for up to 4 additional USB connections; see 2-18). USB-compatible devices can be plugged directly into these ports.



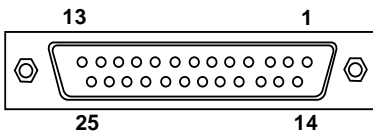
USB Ports

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data0	Positive Data Channel 0
4	GND	Ground
5	VCC	+5V
6	-Data 1	Negative Data Channel 1
7	+Data 1	Positive Data Channel 1
8	GND	Ground

Parallel Port Connector: LPT1

The mainboard provides a 25-pin female connector for LPT (parallel port). A parallel port is a standard printer port that supports Enhanced Parallel Port (EPP) and Extended Capabilities Parallel Port (ECP) modes.



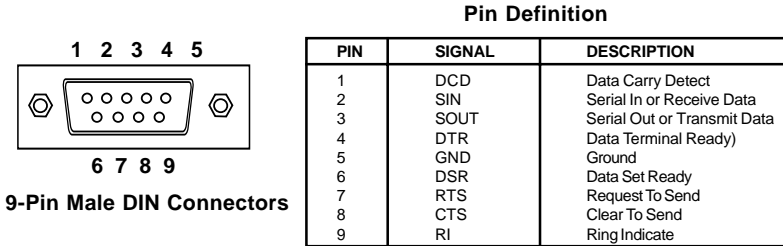
Pin Definition

PIN	SIGNAL	DESCRIPTION
1	STROBE	Strobe
2	DATA0	Data0
3	DATA1	Data1
4	DATA2	Data2
5	DATA3	Data3
6	DATA4	Data4
7	DATA5	Data5
8	DATA6	Data6
9	DATA7	Data7
10	ACK#	Acknowledge
11	BUSY	Busy
12	PE	Paper End
13	SELECT	Select
14	AUTO FEED#	Automatic Feed
15	ERR#	Error
16	INIT#	Initialize Printer
17	SLIN#	Select In
18	GND	Ground
19	GND	Ground
20	GND	Ground
21	GND	Ground
22	GND	Ground
23	GND	Ground
24	GND	Ground
25	GND	Ground

Chapter 2

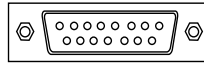
Serial Port Connectors: COM A & COM B

The mainboard offers two 9-pin male Serial Port connectors (COM A and COM B). You can attach a serial mouse or other serial devices directly to these ports.



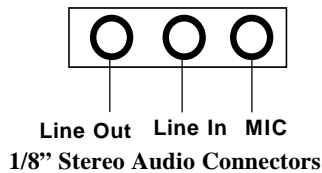
Joystick (MIDI) Connector

You can connect a joystick or game pad to this connector.



Audio Port Connectors

Line-Out is a connector for speakers or headphones. The **Line-In** connector can be used for an external CD player, tape player, or other audio devices. The **Mic-in** connector is for connecting microphones.



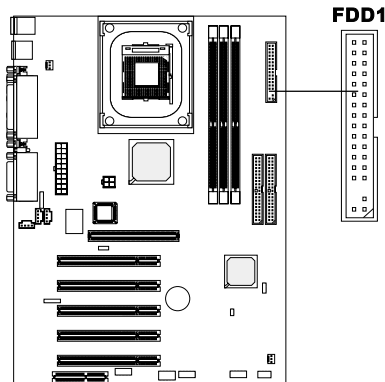
Note: Details on the application of onboard 6-channel audio (VIA P4XB-R only) can be acquired by installing the CMI8738 Audio Driver on the CD-ROM (enclosed in the product package).

Connectors

The VIA P4XB series mainboards provide pin-header connectors for FDD, IDE HDD, case, modem, LAN, USB Ports, IR module and the CPU/System FAN.

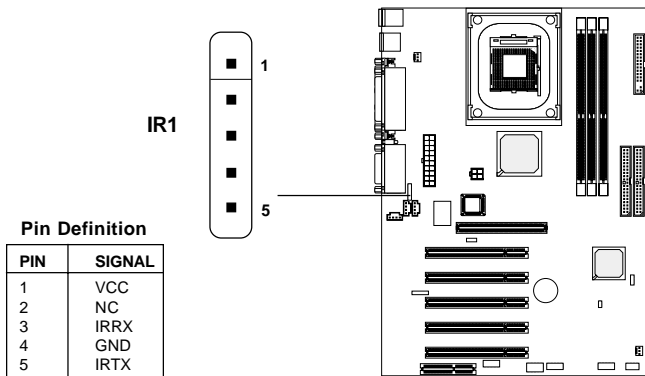
Floppy Disk Drive Connector: FDD1

The standard floppy disk drive connector supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types.



IrDA Infrared Module Connector: IR1

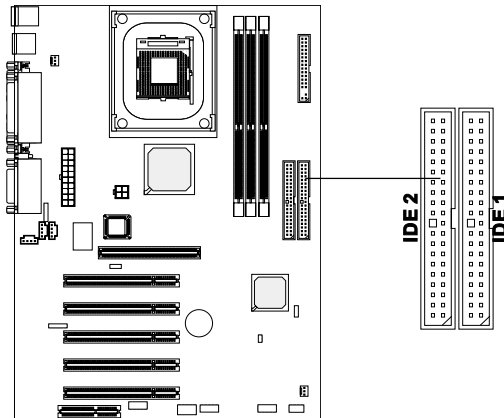
This connector allows you to connect an IrDA Infrared module. You must configure the setting through the BIOS setup to activate the IR function.



Chapter 2

Hard Disk Connectors: IDE1 & IDE2

The VIA P4XB series mainboards have a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33/66/100 functions. You can connect up to four hard disk drive, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices. These connectors utilize the provided IDE hard disk cable.

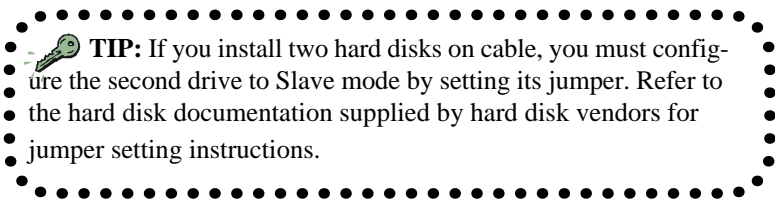


IDE1 (Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure the second hard drive to Slave mode by setting the jumper accordingly.

IDE2 (Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.



TIP: If you install two hard disks on cable, you must configure the second drive to Slave mode by setting its jumper. Refer to the hard disk documentation supplied by hard disk vendors for jumper setting instructions.

CD-In Connector: J3

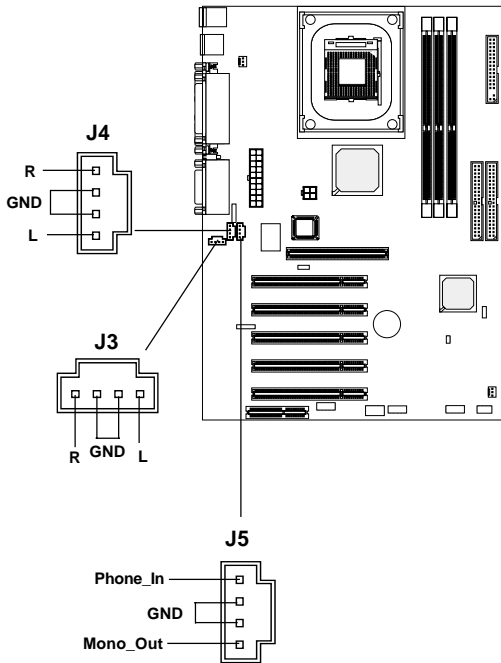
This connector is for the CD-ROM audio connector.

Aux Line-In Connector: J4

This connector is for a DVD add-on card with Line-in connector.

Modem-In Connector: J5

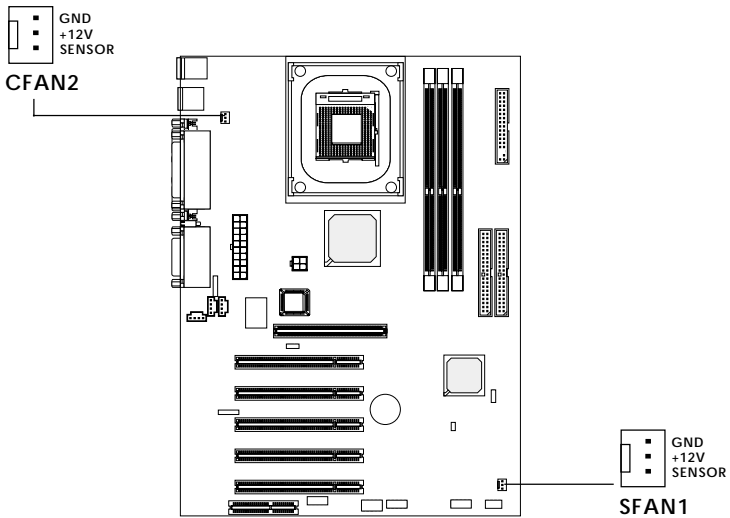
This connector is for a modem with internal audio connector.



Chapter 2

Fan Power Connectors: CFAN2/SFAN1

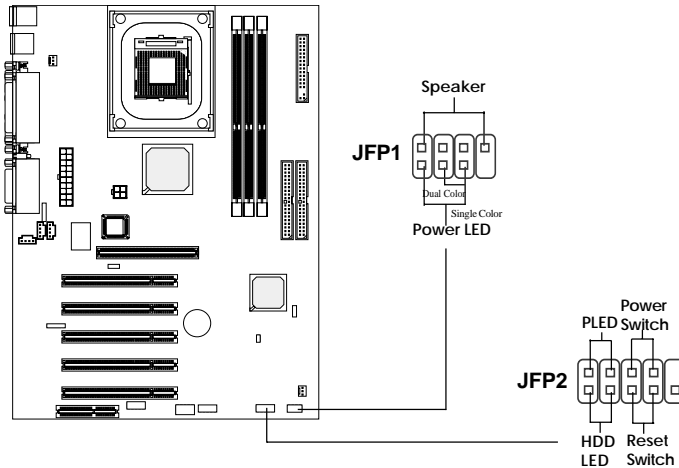
The CFAN2 (CPU fan) and SFAN1 (system fan) run on +12V and maintain system cooling. When connecting the wire to the connectors, always be aware that the red wire is the **Positive** and should be connected to the +12V. The black wire is **Ground** and should be connected to GND.



Note: Always consult the vendor for proper CPU cooling fan.

Case Connectors: JFP1/JFP2

The case connector blocks JFP1 & JFP2 allow you to connect to the Power Switch, Reset Switch, Speaker, Power LED, and HDD LED on the case.



Power Switch

Connect to a 2-pin push button switch. Pressing this button will turn the system power on or off.

Reset Switch

The Reset Switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD is working. You can connect the Reset Switch from the system case to this pin.

PowerLED

The Power LED is lit while the system power is on.

Speaker

The speaker from the system case is connected to this pin.

If on-board Buzzer is available: Short pin 14-15: On-board Buzzer Enabled.
Open pin 14-15: On-board Buzzer Disabled.

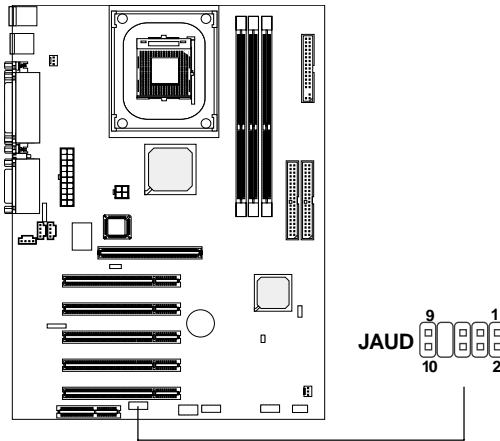
HDDLED

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD LED is lit. You can connect the HDD LED from the system case to this pin.

Chapter 2

Front Panel Audio Connector: JAUD

This connector allows you to connect the front panel audio.

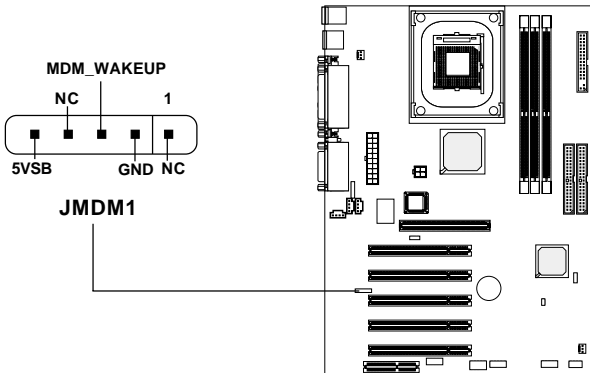


Pin Definition

PIN	SIGNAL	DESCRIPTION
1	AUD_MIC	Front panel microphone input signal
2	AUD_GND	Ground used by analog audio circuits
3	AUD_MIC_BIAS	Microphone power
4	AUD_VCC	Filtered +5V used by analog audio circuits
5	AUD_FPOUT_R	Right channel audio signal to front panel
6	AUD_RET_R	Right channel audio signal return from front panel
7	HP_ON	Reserved for future use to control headphone amplifier
8	KEY	No pin
9	AUD_FPOUT_L	Left channel audio signal to front panel
10	AUD_RET_L	Left channel audio signal return from front panel

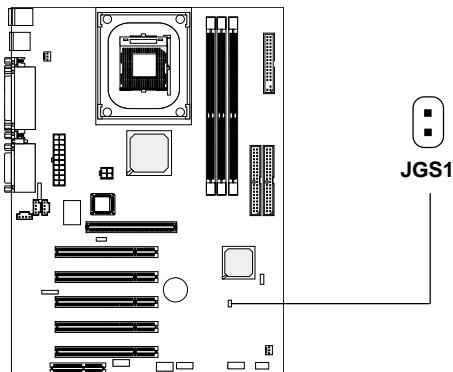
Wake On Ring Connector: JMDM1

This connector allows you to connect a modem card with the Wake On Ring function. The connector will power up the system when a signal is received through the modem card.



Power Saving Switch Connector: JGS1

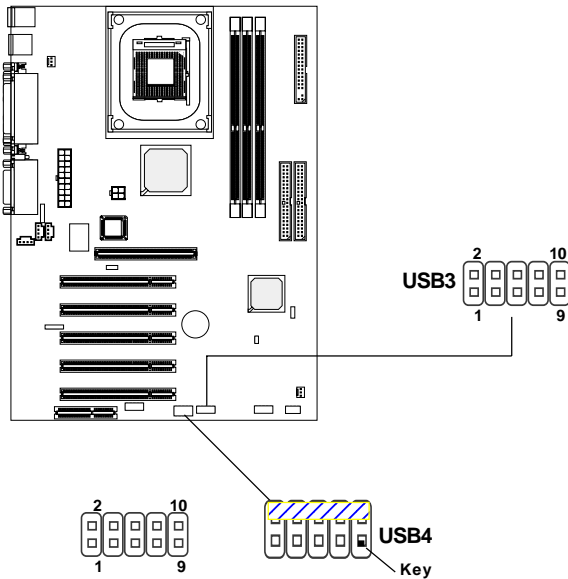
Attach a power saving switch to this connector. Pressing the switch once will enter the system into the sleep/suspend state. Pressing any key will wake up the system.



Chapter 2

USB Front Connector: USB3/USB4

The mainboard provides 2 front USB pin-header connectors, allowing up to four USB connections in addition to the 2 standard USB ports.



USB3 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	GND
3	USB0-	4	GND
5	USB0+	6	USB1+
7	GND	8	USB1-
9	GND	10	VCC

USB4 Pin Definition

Pin	Description	Pin	Description
1	VCC	2	VCC
3	USB0-	4	USB1-
5	USB0+	6	USB1+
7	GND	8	GND
9	NC (Key)	10	GND

NOTE: The bundled 9-pin cable is for use with USB4 **only**. Incorrect use will cause damage.

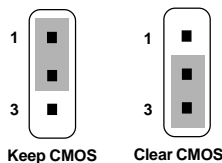
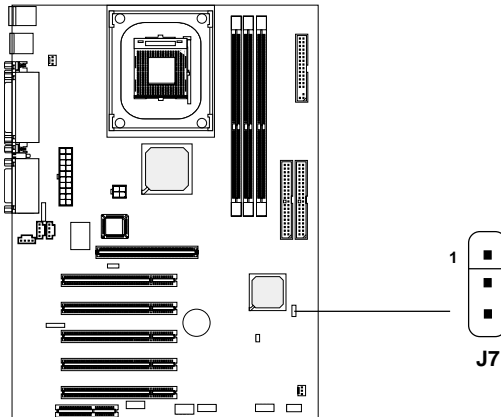
If installing additional USB cables other than those bundled, please be sure to follow the pin definitions above for USB3 (10-pin) and USB4 (9-pin).

Jumpers

The VIA P4XB series mainboards provide jumpers for setting the mainboard's functions. This section will explain how to change settings for your mainboard's functions through the use of the jumpers.

Clear CMOS Jumper: J7

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. Using the CMOS RAM, the system knows to automatically boot the OS when it is turned on. The long-life battery has a lifetime of at least 5 years. If you want to clear the system configuration data from the CMOS RAM, use the J7 (Clear CMOS Jumper). Follow the instructions below to clear the data:

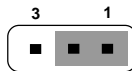
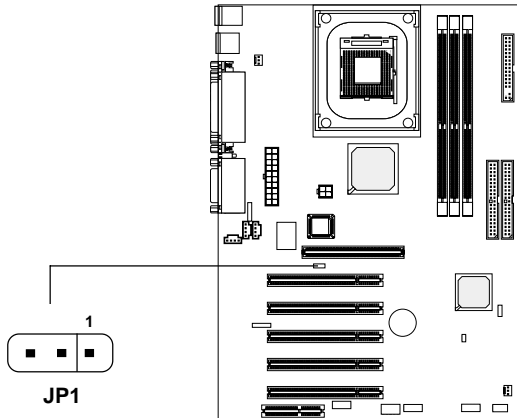


STOP
WARNING! You can clear the CMOS by shorting 2-3 pin while the system is off. Then return it to the 1-2 pin position. Avoid clearing the CMOS while the system is on; this will damage the mainboard.

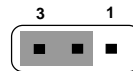
Chapter 2

Onboard Audio Codec Jumper: JP1

This jumper can enable or disable the onboard software audio codec. When enabling the onboard audio codec, the system will use the onboard codec as the PRIMARY audio adapter and the installed CNR card as the SECONDARY one. However, some types of CNR cards cannot be set to secondary mode. In this case, the onboard audio codec must be disabled to resolve the system conflict.



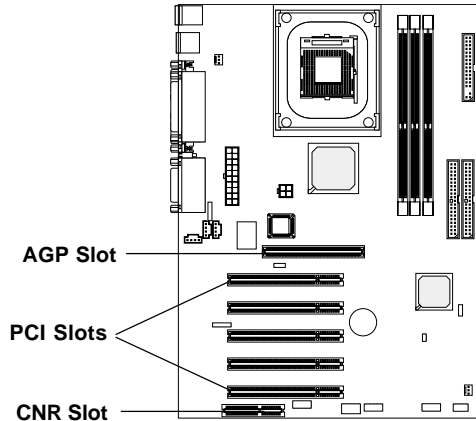
Enable onboard audio codec



Disable onboard audio codec

Slots

The mainboard provides five 32-bit Master PCI bus slots, one AGP4X slot and one CNR slot.



AGP (Accelerated Graphics Port) Slot

The AGP4X slot allows you to insert the AGP graphics card. AGP is an interface specification designed for the throughput demands of 3D graphics. It introduces a 66MHz, 32-bit channel for the graphics controller to directly access main memory and provides three levels of throughputs: 1x (266Mbps), 2x (533Mbps) and 4x (1.07Gbps).

PCI Slots

The five PCI slots allow you to insert expansion cards to meet your needs. When adding or removing PCI expansion cards, ensure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to make any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

CNR (Communication Network Riser)

The CNR slot allows you to insert a CNR expansion card. CNR is a specially designed network, audio, or modem riser card for ATX family mainboards. Its main processing is done through software and controlled by the mainboard's chipset.

Chapter 2

PCI Interrupt Request Routing

IRQ allows devices to send interrupt signals to the microprocessor. The PCI IRQ pins are typically connected to the PCI bus INT A# ~ INT D# pins as follows:

	Order 1	Order 2	Order 3	Order 4
PCI Slot 1	INT A#	INT B#	INT C#	INT D#
PCI Slot 2	INT B#	INT C#	INT D#	INT A#
PCI Slot 3	INT D#	INT A#	INT B#	INT C#
PCI Slot 4	INT D#	INT A#	INT B#	INT C#
PCI Slot 5	INT A#	INT B#	INT C#	INT D#

3

BIOS Setup

Entering Setup	3-30
Control Keys	3-30
Getting Help	3-31
The Main Menu	3-32
Standard CMOS Features	3-34
Advanced BIOS Features	3-36
Advanced Chipset Features	3-39
Integrated Peripherals	3-44
Power Management Setup	3-50
PNP/PCI Configurations	3-54
PC Health Status	3-56
Frequency/Voltage Control	3-57
Load High Performance Defaults	3-59
Load Optimized Defaults	3-60
Set Supervisor/User Password	3-61
Save & Exit Setup	3-63
Exit Without Saving	3-64

Chapter 3

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press key to enter Setup.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a sub
<+ /PU>	Increase the numeric value or make changes
<- /PD>	Decrease the numeric value or make changes
<F1>	General help, only for Status Page Setup Menu and Option Pa Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help

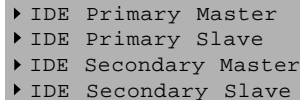
After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the control keys (**i h**) to select the item. The on-line description of the high-lighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu containing additional options can be launched from this field. You can use control keys (**i h**) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press <Esc>.



```
▶ IDE Primary Master
▶ IDE Primary Slave
▶ IDE Secondary Master
▶ IDE Secondary Slave
```

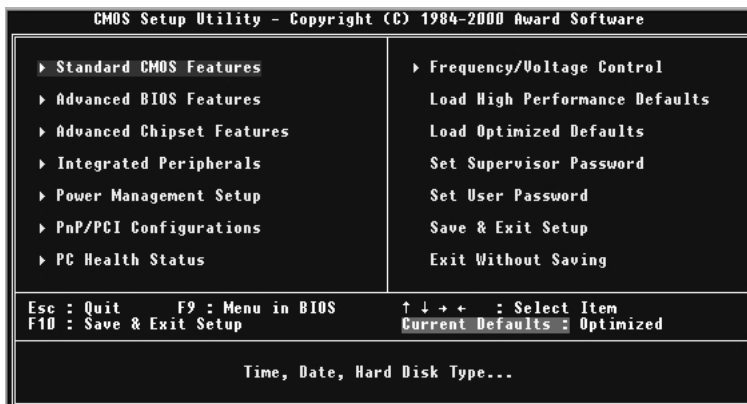
General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

Chapter 3

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from twelve setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



Standard CMOS Features

Use this Menu for basic system configurations.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management Setup

Use this menu to specify your settings for power management.

PnP/PCI Configurations

This entry appears if your system supports PnP/PCI.

PC Health Status

This entry shows your PC health status.

Frequency/Voltage Control

Use this menu to specify your settings for frequency/voltage control.

Load High Performance Defaults

Use this menu to load the BIOS values for the best system performance, but the system stability may be affected.

Load Optimized Defaults

Use this menu to load factory default settings into the BIOS for optimal and stable system operations.

Supervisor/User Password

Use this menu to set User and Supervisor Passwords.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Features

The Standard CMOS Features Menu is divided into 10 categories. Each category includes one or more setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Date

The date format is <day><month> <date> <year>.

day Day of the week, from Sun to Sat, determined by BIOS. Read-only.

month The month from Jan. through Dec.

date The date from 1 to 31 can be keyed by numeric function keys.

year The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

IDE Primary/Secondary Master/Slave

Press PgUp/<+> or PgDn/<-> to select Manual, None, Auto type. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Manual to define your own drive type manually.

If you select Manual, related information is asked to be entered to the follow-

ing items. Enter the information directly from the keyboard. This information should be provided in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is SCSI, the selection shall be “None”.

If the controller of HDD interface is CD-ROM, the selection shall be “None”.

Access Mode	The settings are CHS, LBA, Large, Auto.
Capacity	The formatted size of the storage device.
Cylinder	Number of cylinders.
Head	Number of heads.
Precomp	Write precompensation.
Landing Zone	Cylinder location of the landing zone.
Sector	Number of sectors.

Drive A/B

This item allows you to set the type of floppy drives installed. Available options are *None*, *360K, 5.25 in.*, *1.2M, 5.25 in.*, *720K, 3.5 in.*, *1.44M, 3.5 in.*, *2.88M, 3.5 in.*

Video

The setting controls the type of video adapter used for the primary monitor of the system. Available options are *EGA/VGA* , *CGA 40*, *CGA 80* and *Mono*.

Halt On

The setting determines whether the system will stop if an error is detected at boot. Available options are:

<i>All Errors</i>	The system stops when any error is detected.
<i>No Errors</i>	The system doesn't stop for any detected error.
<i>All, But Keyboard</i>	The system doesn't stop for a keyboard error.
<i>All, But Diskette</i>	The system doesn't stop for a disk error.
<i>All, But Disk/Key</i>	The system doesn't stop for either a disk or a keyboard error.

Advanced BIOS Features



Anti-Virus Protection

The item is to set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled and any attempt to write data into this area is made, BIOS will display a warning message on screen and beep. Settings: *Disabled* and *Enabled*.

CPU L1 & L2 Cache

The item allows you to turn on or off CPU's internal (L1) and external (L2) cache. Settings: *Enabled* and *Disabled*.

CPU L2 Cache ECC Checking

This setting allows you to enable or disable the ECC (Error-Correcting Code) feature for error detection and correction when data passes through L2 cache memory. Setting options: *Enabled* and *Disabled*.

Quick Power On Self Test

The option speeds up Power On Self Test (POST) after you power on the computer. When setting the item to *Enabled*, BIOS will shorten or skip some check items during POST. Settings: *Enabled* and *Disabled*.

First/Second/Third Boot Device

The items allow you to set the sequence of boot devices where BIOS attempts

to load the disk operating system. The settings are:

<i>Floppy</i>	The system will boot from floppy drive.
<i>LS120</i>	The system will boot from LS-120 drive.
<i>HDD-0</i>	The system will boot from the first HDD.
<i>SCSI</i>	The system will boot from the SCSI.
<i>CDROM</i>	The system will boot from the CD-ROM.
<i>HDD-1</i>	The system will boot from the second HDD.
<i>HDD-2</i>	The system will boot from the third HDD.
<i>HDD-3</i>	The system will boot from the fourth HDD.
<i>ZIP100</i>	The system will boot from ATAPI ZIP drive.
<i>LAN</i>	The system will boot from the Network drive.
<i>Disabled</i>	Disable this sequence.

Boot Other Device

Setting the option to *Enabled* allows the system to try to boot from other device if the system fails to boot from the First/Second/Third boot device.

RAID & SCSI Boot Order

This setting determines the boot order of the onboard IDE RAID device and the external SCSI device. If no SCSI device is connected, the system will automatically boot the onboard IDE RAID device. Setting options: RAID, SCSI & SCSI, RAID.

Swap Floppy Drive

Setting to *Enabled* will swap floppy drives A: and B:.

Boot Up Floppy Seek

Setting to *Enabled* will make BIOS seek floppy drive A: before booting the system. Settings: *Disabled* and *Enabled*.

Boot Up NumLock Status

This item is to set the NumLock status when the system is powered on. Setting to *On* will turn on the Num Lock key when the system is powered on. Setting to *Off* will allow end users to use the arrow keys on the numeric keypad. Settings: *On* and *Off*.

Gate A20 Option

This item is to set the Gate A20 status. A20 refers to the first 64KB of extended memory. When the default value *Fast* is selected, the Gate A20 is controlled by

Chapter 3

Port92 or chipset specific method resulting in faster system performance. When *Normal* is selected, A20 is controlled by a keyboard controller or chipset hardware.

Typematic Rate Setting

This item is used to enable or disable the typematic rate setting including Typematic Rate & Typematic Delay.

Typematic Rate (Chars/Sec)

After *Typematic Rate Setting* is enabled, this item allows you to set the rate (characters/second) at which the keys are accelerated. Settings: *6, 8, 10, 12, 15, 20, 24* and *30*.

Typematic Delay (Msec)

This item allows you to select the delay between when the key was first pressed and when the acceleration begins. Settings: *250, 500, 750* and *1000*.

Security Option

This specifies the type of BIOS password protection that is implemented. Settings are described below:

Option	Description
<i>Setup</i>	The password prompt appears only when end users try to run Setup.
<i>System</i>	A password prompt appears every time when the computer is powered on or when end users try to run Setup.

OS Select For DRAM > 64MB

This allows you to run the OS/2® operating system with DRAM greater than 64MB. Setting options: *Non-OS2, OS2*.

Full Screen LOGO Show

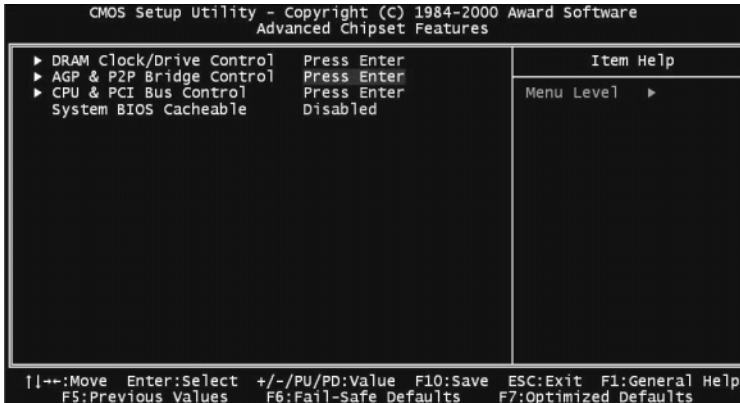
This setting enables/disables the Full Screen LOGO Show capability.

Video BIOS Cacheable

Selecting *Enabled* allows caching of the video BIOS ROM at C0000h to C7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result. Settings: *Enabled* and *Disabled*.

Advanced Chipset Features

The Advanced Chipset Features setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.



Note: Change these settings only if you are familiar with the chipset.

DRAM Clock/Drive Control

Press <Enter> to enter the sub-menu and the following screen appears:



DRAM Timing by SPD

This setting determines whether DRAM timing is configured by reading

Chapter 3

the contents of the SPD (Serial Presence Detect) EPROM on the DRAM module. Selecting *Yes* makes SDRAM Cycle Length and Bank Interleave automatically determined by BIOS according to the configurations on the SPD. Setting options: *Yes, No*.

DRAM Frequency (MHz)

The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency. Available settings are:

- Auto*: DRAM clock frequency is automatically determined.
- Host CLK*: The DRAM clock will be equal to the Host clock.
- HCLK+33*: The DRAM clock will be equal to the Host clock plus 33MHz. For example, if the Host clock is 100MHz, the DRAM clock will 133MHz.

SDRAM CAS Latency

The field controls the CAS latency, which determines the timing delay before SDRAM starts a read command after receiving it. Setting options: 2, 2.5 (clock cycles), *Auto*. 2 increases system performance while 3 provides more stable system performance.

Bank Interleave

This setting determines the bank interleave for the installed SDRAM. Setting options: *Disabled, Auto*.

Row Precharge

This setting allows you to select the number of DRAM clocks allocated for the Row Address Strobe (RAS#) signal to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost. The lower the timing numbers, the faster the memory performance. Setting options: *3T, 2T, Auto*.

RAS Pulse

This setting allows you to select the number of DRAM clock cycles allotted for the RAS pulse width, according to DRAM specifications. The lower the timing numbers, the faster the memory performance. Setting options: *6T, 5T, Auto*.

RAS to CAS

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe). The lower the timing numbers, the faster the memory performance. Setting options: *3T, 2T, Auto*.

Burst Length

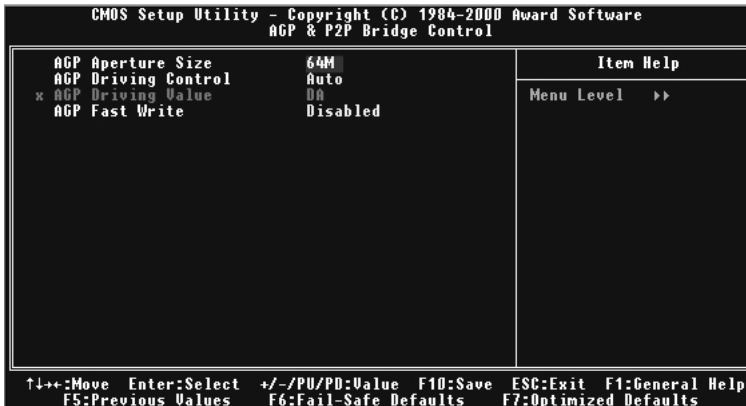
This setting allows you to set the size for Burst-Length for DRAM. The bigger the sizes, the faster the system addresses memory. Setting options: *4, 8, Auto*.

DRAMCommandRate

This setting controls the DRAM command rate. Selecting *1T* allows DRAM signal controller to run at 1T (T=clock cycles) rate. Selecting *2T* makes DRAM signal controller run at 2T rate. *1T* is faster than *2T*. Setting options: *2T, 1T*.

AGP & P2P Bridge Control

Press <Enter> to enter the sub-menu and the following screen appears:



AGP Aperture Size

This setting controls just how much system RAM can be allocated to AGP for video purposes. The aperture is a portion of the PCI memory

Chapter 3

address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. Setting options: *4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256MB*.

AGP Driving Control

The setting is used to adjust AGP driving force. Selecting *Manual* allows you to type a AGP driving force in AGP Driving Value. It is strongly suggested to select *Auto* to avoid causing any system error. Setting options: *Auto, Manual*.

AGP Fast Write

This setting enables/disables the AGP Fast Write feature. The Fast Write technology allows CPU to write directly into the graphics card without passing anything through system memory and improves 4X speed accordingly. Select *Enabled* only when your AGP card supports the feature. Setting options: *Enabled, Disabled*.

CPU & PCI Bus Control

Press <Enter> to enter the sub-menu and the following screen appears:



CPU to PCI Write Buffer

When *Enabled*, CPU can write up to four words of data to the PCI write buffer before CPU must wait for PCI bus cycle to finish. If *Disabled*, CPU must wait after each write cycle until PCI bus signals that it is ready to

receive more data. Setting options: *Enabled, Disabled.*

PCI Master 0 WS Write

When *Enabled*, writes to the PCI bus are executed with zero wait state. Setting options: *Enabled, Disabled.*

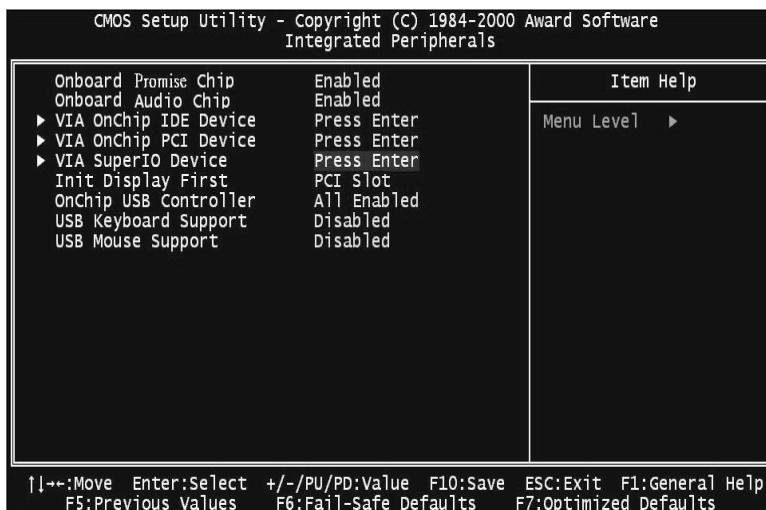
PCI Delay Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transaction cycles. Select *Enabled* to support compliance with PCI specification version 2.1. Setting options: *Enabled, Disabled.*

System BIOS Cacheable

When enabled, this setting sets BIOS write-through at DRAM segment F000 and makes the BIOS execution speed faster. Setting options: Enabled, Disabled.

Integrated Peripherals



Onboard Promise Chip (optional)

This setting enables/disables the onboard IDE RAID controller. Setting options: Enabled, Disabled.

Onboard Audio Chip (optional)

This setting enables/disables the onboard C-Media audio chip. Setting options: Enabled, Disabled.

VIA OnChip IDE Device

Press <Enter> to enter the sub-menu and the following screen appears:



OnChip IDE Channel 0/1

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Choose *Enabled* to activate each channel separately. Setting options: *Disabled, Enabled*.

Primary/Secondary Master/Slave PIO

The four fields allow you to set a PIO (Programmed Input/Output) mode for each of the four IDE devices that the onboard IDE interface supports. *Modes 0-4* provide increased performance. In *Auto* mode, BIOS automatically determines the best mode for each IDE device.

Primary/Secondary Master/Slave UDMA

Ultra DMA implementation is possible only if your IDE device supports it and your operating environment contains a DMA driver. If both your hard drive and software support Ultra DMA 33, select *Auto* to enable BIOS support. Setting options: *Auto, Disabled*.

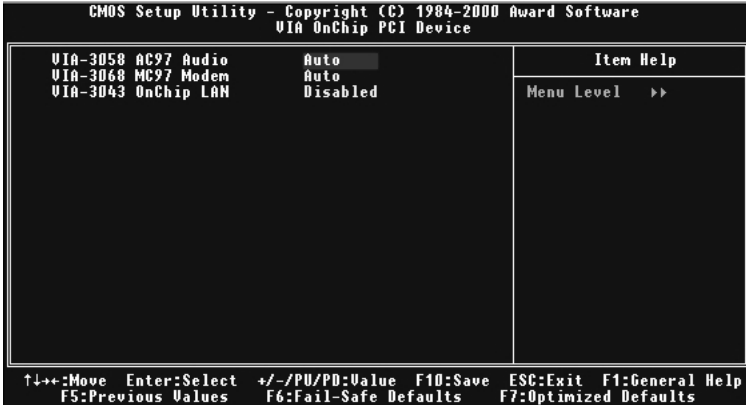
IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from the hard disk drive. Block mode is also called block transfer, multiple commands or multiple sector read/write. *Enabled* enables IDE controller to use block mode; *Disabled* allows the controller to use standard mode.

Chapter 3

VIA OnChip PCI Device

Press <Enter> to enter the sub-menu and the following screen appears:



VIA-3058 AC97 Audio

Auto allows the mainboard to detect whether an audio device is used. If the device is detected, the onboard VIA AC'97 (Audio Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect an audio device. Setting options: *Auto, Disabled*.

VIA-3068 MC97 Modem

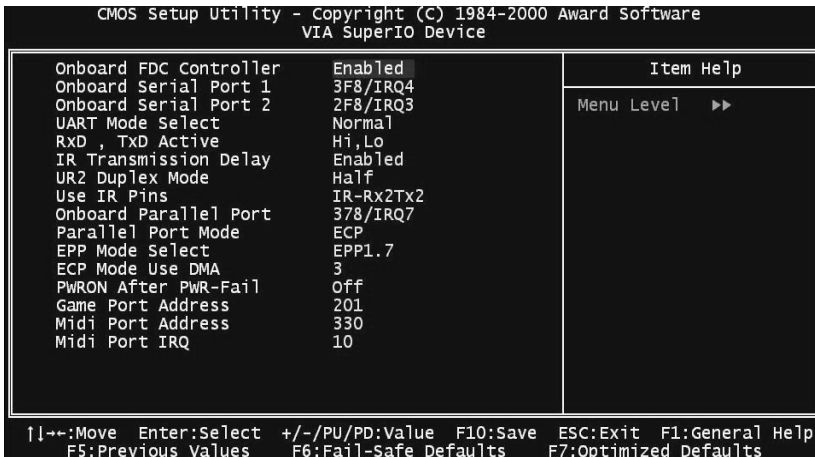
Auto allows the mainboard to detect whether a modem is used. If a modem is used, the onboard VIA MC'97 (Modem Codec'97) controller will be enabled; if not, it is disabled. Disable the controller if you want to use other controller cards to connect to a modem. Setting options: *Auto, Disabled*.

VIA-3043 OnChip LAN

This setting disables/enables the VIA onchip LAN controller. Setting options: *Enabled, Disabled*.

VIA Super IO Device

Press <Enter> to enter the sub-menu and the following screen appears:



Onboard FDC Controller

The setting enables or disables the onboard Floppy controller. Select *Enabled* when you have installed a floppy disk drive and want to use it.

Onboard Serial Port 1/2

The settings specify the base I/O port address and IRQ for the onboard Serial Port A/Serial Port B. Selecting *Auto* allows BIOS to automatically determine the correct base I/O port address. Settings: *Disabled*, *3F8/IRQ4*, *2F8/IRQ3*, *3E8/IRQ4*, *2E8/IRQ3* and *Auto*.

UART Mode Select

The field allows you to specify the operation mode for serial port “COM B”. Settings are:

Normal: RS-232C Serial Port

IrDA: IrDA-compliant Serial Infrared Port

ASKIR: Amplitude Shift Keyed Infrared Port

Chapter 3

RxD, TxD Active

This setting controls the receiving and transmitting speed of the IR peripheral in use. Setting options: *Hi/Hi, Hi/Lo, Lo/Hi, Lo/Lo*.

IR Transmission Delay

This setting determines whether the IR transmission rate will be delayed while converting to receiving mode. Setting options: *Disabled, Enabled*.

UR2 Duplex Mode

This setting controls the operating mode of IR transmission/reception. Setting options: *Full, Half*. Under Full Duplex mode, synchronous, bi-directional transmission/reception is allowed. Under Half Duplex mode, only asynchronous, bi-directional transmission/reception is allowed.

Use IR Pins

Please consult your IR peripheral documentation to select the correct setting of the TxD and RxD signals. Setting options: *RxD2/TxD2, IR-Rx2Tx2*.

Onboard Parallel Port

This specifies the I/O port address and IRQ of the onboard parallel port. Settings: *378/IRQ7, 278/IRQ5, 3BC/IRQ7* and *Disabled*.

Parallel Port Mode

SPP : Standard Parallel Port

EPP : Enhanced Parallel Port

ECP : Extended Capability Port

ECP + EPP: Extended Capability Port + Enhanced Parallel Port

SPP/EPP/ECP/ECP+EPP

To operate the onboard parallel port as Standard Parallel Port only, choose “SPP.” To operate the onboard parallel port in the EPP mode simultaneously, choose “EPP.” By choosing “ECP”, the onboard parallel port will operate in ECP mode only. Choosing “ECP + EPP” will allow the onboard parallel port to support both the ECP and EPP modes simultaneously.

EPP Mode Select

The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec or EPP 1.9 spec can be chosen.

ECP Mode Use DMA

The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA." At this time, the user can choose between DMA channel 3 or 1.

PWRON After PWR-Fail

This setting specifies whether your system will reboot after a power failure or interrupts occurs. Available settings are:

- Off* Leaves the computer in the power off state.
- On* Reboots the computer.
- Former-Sts* Restores the system to the status before power failure or interrupt occurs.

Game Port Address/Midi Port Address

This setting disables or assigns an address for the onboard game/midi port.

Midi Port IRQ

This setting specifies an IRQ for the onboard midi port.

Init Display First

This setting specifies which VGA card is your primary graphics adapter. Setting options: *PCI Slot* and *AGP*.

OnChip USB Controller

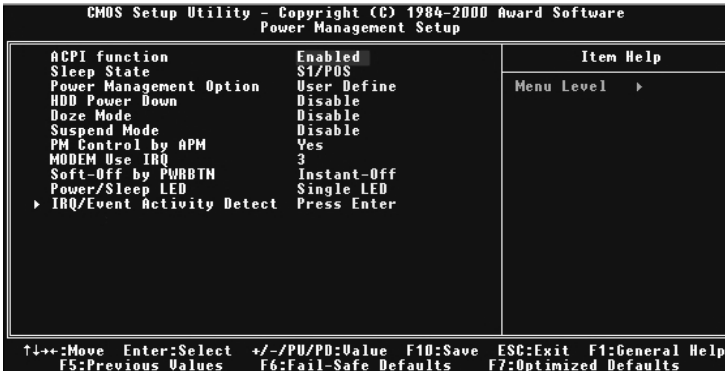
This setting allows you to activate the onchip USB controller. Setting options: *All Disabled*, *All Enabled*, *1&2 USB Port*, *2&3 USB Port*, *1&3 USB Port*, *1 USB Port*, *2 USB Port*, *3 USB Port*.

USB Keyboard/Mouse Support

Set to *Enabled* if you need to use a USB keyboard/mouse in the operating system that does not support or have any USB driver installed, such as DOS and SCO Unix. Setting options: *Disabled*, *Enabled*.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy while operating in a manner consistent with your own style of computer use.



ACPI Function

This item is to activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware, such as Windows 98SE/2000/ME, select *Enabled*. Settings: *Enabled* and *Disabled*.

Sleep State

This item specifies the power saving modes for ACPI function. Options are:

- S1/POS* The S1 sleep mode is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context.
- S3/STR* The S3 sleep mode is a power-down state in which power is supplied only to essential components such as main memory and wake-capable devices and all system context is saved to main memory. The information stored in memory will be used to restore the PC to the previous state when an “wake up” event occurs.
- S1 & S3* If the OS supports the S1 function, this function will be S1. If the OS supports S1 and S3 functions, the function will be S3.

Power Management Option

This item is used to select the degree (or type) of power saving and is related to these modes: Suspend Mode and HDD Power Down. There are three options for power management:

- Min Saving* Minimum Power Management. Suspend Mode = 1 Hour, and HDD Power Down = 15 Min.
- Max Saving* Maximum Power Management. Suspend Mode = 1 Min, and HDD Power Down = 1 Min.
- User Define* Allows end users to configure each mode separately.

HDD Power Down

If HDD activity is not detected for the length of time specified in this field, the hard disk drive will be powered down while all other devices remain active. Settings are *Disable* and *1* through *15 Min*.

Doze Mode

After the selected period of system inactivity, the CPU clock runs at slower speed while all other devices still operate at full speed. Settings are *Disable*, *1 Min*, *2 Min*, *4 Min*, *6 Min*, *8 Min*, *10 Min*, *20 Min*, *30 Min*, *40 Min* and *1 Hour*.

Suspend Mode

After the selected period of system inactivity, all devices except the CPU shut off. Settings are *Disabled*, *1 Min*, *2 Min*, *4 Min*, *8 Min*, *12 Min*, *20 Min*, *30 Min*, *40 Min* and *1 Hour*.

PM Control by APM

Setting to *Yes* will activate an Advanced Power Management (APM) device to enhance Max Saving mode and stop CPU internal clock. Setting options: *Yes*, *No*.

MODEM Use IRQ

Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. Settings are *3*, *4*, *5*, *7*, *9*, *10*, *11* and *NA*.

Soft-Off by PWRBTN

This feature allows users to configure the power button function. Settings are:

Chapter 3

- Instant-Off* The power button functions as a normal power-on/off button.
- Delay 4 Sec.* When you press the power button, the computer enters the suspend/sleep mode, but if the button is pressed for more than four seconds, the computer is turned off.

Power/Sleep LED

This item sets how the system uses Power LED on the case to indicate the sleep state. Settings are:

- Single LED* The Power LED blinks to indicate the sleep state.
- Dual LED* The Power LED changes its color to indicate the sleep state.

IRQ/Event Activity Detect

Press <Enter> to enter the sub-menu and the following screen appears:

```
CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
IRQ/Event Activity Detect

PS2KB Wakeup Select      Hot key
PS2KB Wakeup from S3/S4/S5  Disable
PS2MS Wakeup from S3/S4/S5  Disabled
USB Resume from S3        Disabled
VGA                       OFF
LPT & COM                  LPT/COM
HDD & FDD                  ON
PCI Master                 OFF
PowerOn by PCI Card       Disabled
Wake Up On LAN/Ring       Disabled
RTC Alarm Resume          Disabled
* Date (of Month)         0
* Resume Time (hh:mm:ss)  0 0 0
> IRQs Activity Monitoring Press Enter

Item Help
Menu Level  >>
When Select Password,
Please press ENTER key
to change Password
Max 8 numbers.
```

↑↓←→:Move Enter:Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5:Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

PS2KB Wakeup Select, PS2KB Wakeup from S3/S4/S5, PS2MS Wakeup from S3/S4/S5, USB Resume from S3, VGA, LPT & COM, HDD & FDD, PCI Master, PowerOn by PCI Card, Wake Up On LAN/Ring

These fields specify whether the system will be awakened from power saving modes when activity or input signal of the specified hardware peripheral or component is detected.



Note: To use the function of “Wake Up On LAN/Ring”, you need to

install a modem/LAN card supporting power on function.

RTC Alarm Resume

The field is used to enable or disable the feature of booting up the system on a scheduled time/date.

Date (of Month)

The field specifies the date for *RTC Alarm Resume*. Settings: 0~31.

Resume Time (hh:mm:ss)

The field specifies the time for *RTC Alarm Resume*. Format is <hour><minute><second>.

IRQs Activity Monitoring

Press <Enter> to enter the sub-menu and the following screen appears:



Primary INTR

Selecting *ON* will cause the system to wake up from power saving modes if activity is detected from any enabled IRQ channels.

IRQ3~IRQ15

Enables or disables the monitoring of the specified IRQ line. If set to *Enabled*, the activity of the specified IRQ line will prevent the system from entering power saving modes or awaken it from power saving modes.



Note: *IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the IO device.*

PNP/PCI Configurations

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.



PNP OS Installed

When set to *Yes*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows® 95 or 98. When set to *No*, BIOS will initialize all the PnP cards. So, select *Yes* if the operating system is Plug & Play aware.

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot. The settings are: *Enabled* and *Disabled*.

Resource Controlled By

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating

system such as Windows®95/98. If you set this field to “manual” choose specific resources by going into each of the sub menu that follows this field (a sub menu is preceded by a “Ø”). The settings are: *Auto (ESCD)*, *Manual*.

IRQ Resources

The items are adjustable only when *Resources Controlled By* is set to *Manual*. Press <Enter> and you will enter the sub-menu of the items. IRQ Resources list IRQ 3/4/5/7/9/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings are:

- PCI Device* For Plug & Play compatible devices designed for PCI bus architecture.
- Reserved* The IRQ will be reserved for further request.

PCI/VGA Palette Snoop

When set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and one ISA) and the:

VGA Palette Snoop Bit Setting	Action
<i>Disabled</i>	Data read or written by the CPU is only directed to the PCI VGA device’s palette registers.
<i>Enabled</i>	Data read or written by the CPU is directed to both the PCI VGA device’s palette registers and the ISA VGA device’s palette registers, permitting the palette registers of both VGA devices to be identical.

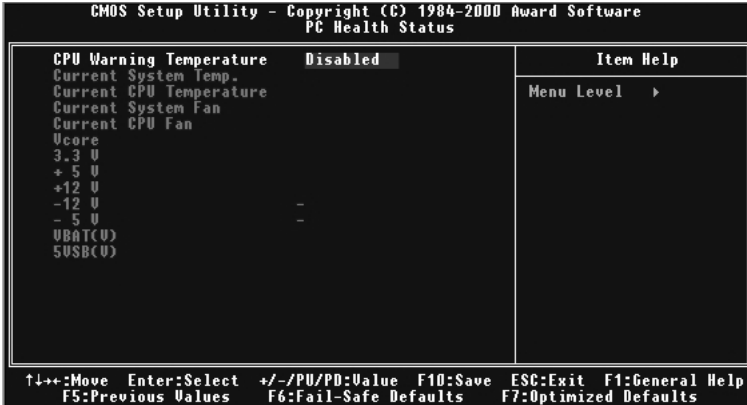
The setting must be set to *Enabled* if any ISA bus adapter in the system requires VGA palette snooping.

Assign IRQ For VGA/USB/ACPI, INT Pin 1/2/3/4 Assignment

The settings specify IRQ for each of the hardware components. *Auto* allows BIOS to determine the IRQ automatically.

PC Health Status

This section shows the status of your CPU, fan, warning for overall system status.



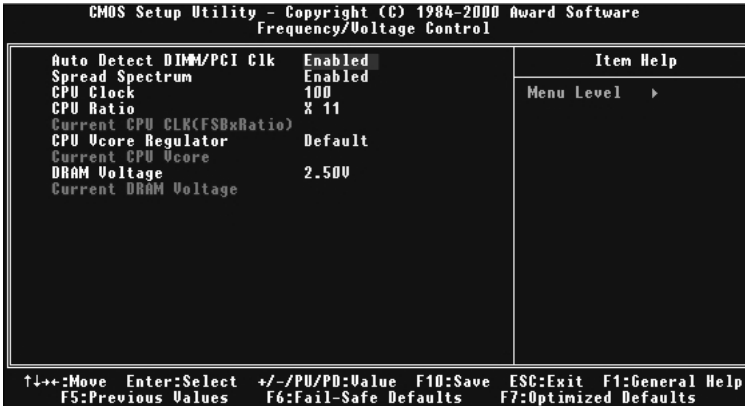
CPU Warning Temperature

If the CPU temperature reaches the upper limit preset in this setting, the warning mechanism will be activated. This helps you to prevent the CPU overheat problem.

Current System, CPU Temperature/Current System, CPU Fan/Vcore/3.3V/+5V/+12V/-12V/-5V/VBAT(V)/5VSB(V)

These items display the current status of all of the monitored hardware devices/components such as CPU voltages, temperatures and all fans' speeds.

Frequency/Voltage Control



Auto Detect DIMM/PCI Clk

To reduce the occurrence of electromagnetic interference (EMI), the BIOS detects the presence or absence of components in DIMM and PCI slots and turns off system clock generator pulses to empty slots. The settings are: *Enabled*, *Disabled*.

Spread Spectrum

When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problem, leave the setting at *Disabled* for optimal system stability and performance. But if you are plagued by EMI, setting to *Enabled* for EMI reduction. Remember to disable Spread Spectrum if you are overclocking because even a 0.25% jitter can introduce a temporary boost in clockspeed of 25MHz (with a 1GHz CPU) which may just cause your overclocked processor to lock up.

CPU Clock

This setting specifies the clock frequency of CPU host bus (FSB) and provides a method for end-users to overclock the processor accordingly.

Chapter 3

CPU Ratio

This setting controls the multiplier that is used to determine the internal clock speed of the processor relative to the external or motherboard clock speed.

CPU Vcore Regulator

This setting allows you to adjust the CPU core voltage from +0.025V to +0.100V at 0.025 increment. Please note that it may be dangerous to adjust the Vcore over 10%.

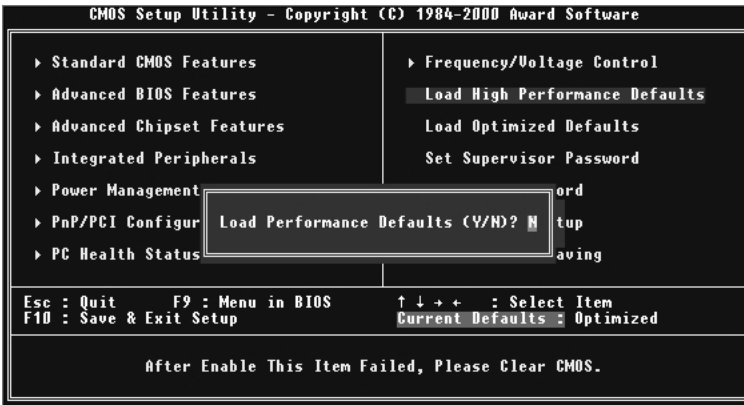
DRAM Voltage

This setting allows you to set the appropriate DRAM voltage. Setting options: 2.50V, 2.56V, 2.60V, 2.65V.


Load High Performance Defaults

This option on the main menu allows users to restore all the BIOS settings to the default High Performance values. The High Performance Defaults are the default values set by the mainboard manufacturer specifically for maximal system performance but will probably cause a stability issue.

When you select Load High Performance Defaults, a message as below appears:



Pressing 'Y' loads the default BIOS values that enable the best system performance (better than the Optimized Defaults) but may result in the instability of the system.

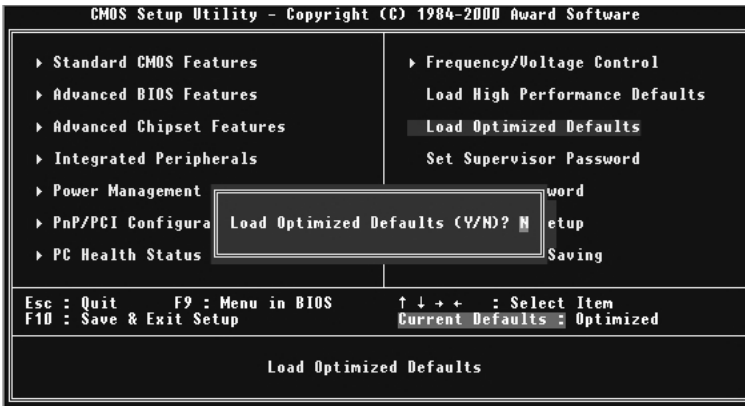


WARNING! **This setting is for experienced or overlocking users only.** If the system crashes or hangs after enabling the feature, please **CLEAR CMOS DATA** to resolve the problem. For more information, refer to Clear CMOS Jumper: JBAT1 in Chapter 2.

Load Optimized Defaults

This option on the main menu allows users to restore all the BIOS settings to the default Optimized values. The Optimized Defaults are the default values also set by the mainboard manufacturer for both optimized and stable performance of the mainboard.

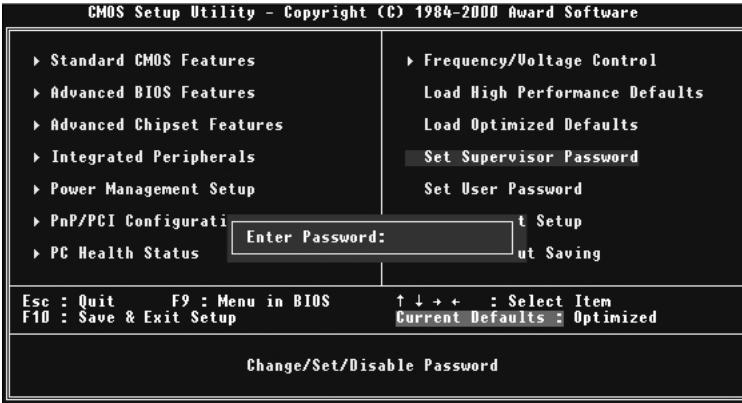
When you select Load Optimized Defaults, a message as below appears:



Pressing 'Y' loads the default values that are factory settings for optimal and stable system performance.

Set Supervisor/User Password

When you select this function, a message as below will appear on the screen:



Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously set password from CMOS memory. You will be prompted to confirm the password. Re-type the password and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To clear a set password, just press <Enter> when you are prompted to enter the password. A message will show up confirming the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup without entering any password.

When a password has been set, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also have BIOS to request a password each time the system is booted. This would prevent unauthorized use of your computer. The setting to determine when the password prompt is required is the Security Option of the Advanced BIOS Features menu. If the Security Option is set to *System*, the password is required both at boot and at

Chapter 3

entry to Setup. If set to *Setup*, password prompt only occurs when trying to enter Setup.



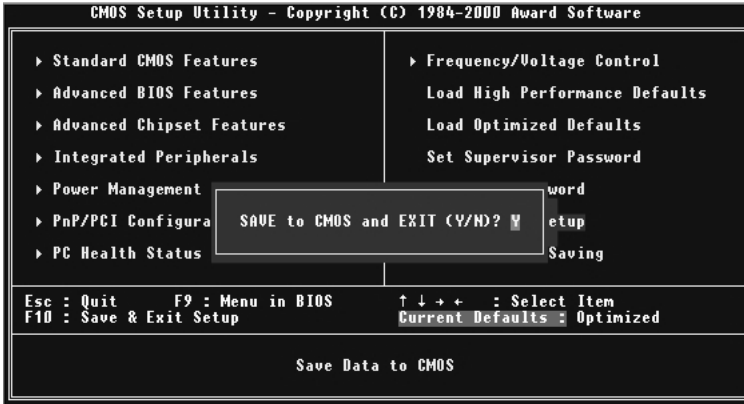
About Supervisor Password & User Password:

Supervisor password : Can enter and change the settings of the setup menus.

User password: Can only enter but do not have the right to change the settings of the setup menus.

Save & Exit Setup

When you want to quit the Setup menu, you can select this option to save the changes and quit. A message as below will appear on the screen:



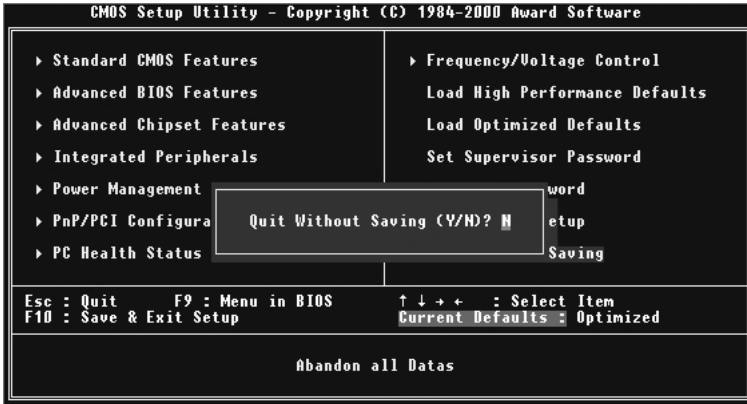
Typing “Y” will allow you to quit the Setup Utility and save the user setup changes to RTC CMOS.

Typing “N” will return to the Setup Utility.

Chapter 3

Exit Without Saving

When you want to quit the Setup menu, you can select this option to abandon the changes. A message as below will appear on the screen:



Typing “Y” will allow you to quit the Setup Utility without saving any changes to RTC CMOS.

Typing “N” will return to the Setup Utility.

4

Driver Setup

This chapter gives you detailed instructions on installation & setup of VIA chipset drivers & C-Media CMI8738/AD1885 AC'97 audio drivers. It consists of the following topics:

VIA Apollo P4X266 Chipset Drivers	4-66
C-Media CMI8738 Audio Driver	4-71
Realtek ALC201A Audio Driver	4-73



Note: You must install VIA chipset drivers first before installing other drivers like audio or VGA drivers.

VIA Apollo P4X266 Chipset Drivers

The VIA P4X266 chipset provides superior performance between the CPU, DRAM, V-Link bus and AGP 8x graphics controller bus with pipelined, burst and concurrent operation. With a highly integrated PCI/LPC controller, its internal bus structure is based on 66MHz PCI bus that provides 2x bandwidth compared to previous generation PCI/ISA bridge chips.

Features

- Integrated Ultra DMA 33/66/100 master mode PCI EIDE controller.
- Full featured Accelerated Graphics Port (AGP) controller
 - Supports 533MHz 8x and 266MHz 4x transfer modes for AD and SBA signaling.
 - Pseudo-synchronous with the host CPU bus with optimal skew control.
 - Windows 95 OSR-2 VXD and integrated Windows 98/NT5 miniport driver support.

System Requirements

Computer	Intel® Pentium® 4 processors
Monitor	VGA Support, minimum 640 x 480 resolution
Operating system	DOS 5.0 or higher, Windows® 95/98, Windows® NT3.51 or 4.0, or OS/2®, Windows® 2000, or Windows® ME
CD-ROM	Double speed or higher
Chipset	VIA Apollo P4X266 chipset

Driver Installation for Windows® 98SE

1. Insert the supplied CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **VIA Chipset Drivers** and the screen will show **VIA Service Pack 4.XX**.
4. Click **Next** and the screen will show a **VIA Service Pack 1 README** dialog box.
5. Click **Next** and the screen will show four drivers: **VIA ATAPI Vendor Support Driver**, **AGP VxD Driver**, **IRQ Routing Miniport Driver** and **VIA INF Driver 1.XX**. Select all four drivers and click on **Next**.
6. The setup program will request you to choose **Install VIA ATAPI Vendor Support Driver**. Select **Install** and click **Next** to continue.
7. Select **Click to enable DMA Mode** and click **Next** to continue.
8. The setup program will request you to choose **Install VIA AGP VxD in Turbo mode**, **Install VIA AGP VxD in normal mode** or **Uninstall VIA AGP VxD**. Select **Install VIA AGP VxD in turbo mode** and click on **Next**.
9. Select **Install VIA IRQ Routing Miniport Driver** and click on **Next**.
10. The setup program will request you to choose whether to restart the computer or not. Please select “Yes, I want to restart my computer now” and click **Finish**. The computer will restart and complete the VIA Chipset Drivers installation.

Chapter 4

Driver Installation for Windows® 2000



Note: Before installing the VIA chipset driver, you should installing Windows 2000 Service Pack2 or the latest version.

1. Insert the supplied CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **Via Chipset Drivers** and the screen will show **VIA Service Pack 4.XX**.
4. Click **Next** and the screen will show a **VIA Service Pack 1 README** dialog box.
5. Click **Yes** and the screen will show three drivers: **VIA PCI IDE Bus Driver (Windows 2000)**, **AGP VxD Driver** and **VIA INF Driver 1.XX**. Select all and click **Next** to proceed.
6. The screen will show a **VIA PCI IDE Bus Driver** dialog box. Select **Install** and then click on **Next**.
7. The screen will show a **VIA AGP Driver 4.XX** dialog box. Select **Install AGP 4X/133 driver** and click **Next**.
8. The setup program will request you to choose whether to restart the computer or not. Please select “Yes, I want to restart my computer now” and click **Finish**. The computer will restart and finish the VIA Chipset Drivers installation.



One Touch Setup:

*In Windows® 2000, you probably will see the **One Touch Setup** button appear on the setup screen. Choosing the button will help you install more than one driver into the system without going through the installation process step by step and save a lot of time. After clicking on **One Touch Setup**, a window will show up listing what drivers will be installed. Install other drivers not included by **One Touch Setup** manually if any.*

Driver Installation for Windows® ME

1. Insert the supplied CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **Via Chipset Drivers** and the screen will show **VIA Service Pack 4.XX**.
4. Click **Next** and the screen will show a **VIA Service Pack 1 README** dialog box.
5. Click **Yes** and the screen will show three drivers: **VIA PCI IDE Bus Driver (Windows 2000)**, **AGP VxD Driver** and **VIA INF Driver 1.XX**. Select all and click **Next** to proceed.
6. The screen will show a **VIA PCI IDE Bus Driver** dialog box. Select **Install** and then click on **Next**.
7. The screen will show a **VIA AGP Driver 4.XX** dialog box. Select **Install AGP 4X/133 driver** and click **Next**.
8. The setup program will request you to choose whether to restart the computer or not. Please select “Yes, I want to restart my computer now” and click **Finish**. The computer will restart and finish the VIA Chipset Drivers installation.



One Touch Setup:

*In Windows® ME, you probably will see the **One Touch Setup** button appear on the setup screen. Choosing the button will help you install more than one driver into the system without going through the installation process step by step and save a lot of time. After clicking on **One Touch Setup**, a window will show up listing what drivers will be installed. Install other drivers not included by **One Touch Setup** manually if any.*

Chapter 4

Driver Installation for Windows® NT4.0



Note: Install Windows® NT4.0 Service Pack 6 or above before installing the VIA drivers into Windows® NT.

1. Insert the provided CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **VIA Chipset Drivers** and the screen will show **VIA Service Pack 4.XX**.
4. Click **Next** and the screen will show the **VIA Service Pack 1 README** dialog box.
5. Click **Yes** to proceed and then select **Install** to enable (Ultra) DMA for IDE Driver.
6. The **Choose Destination Location** dialog box appears. Click **Next**.
7. The **Select Program Folder** dialog box appears. Click **Next**.
8. Click on “Yes, I want to restart my computer” and then click **Finish** to restart your computer and complete installation.

C-Media CMI8738 Audio Driver (P4XB-R)

C-Media CMI8738 is an audio controller for PCI sound cards. With high speed PCI V2.1 bus controller and legacy audio SBPro® DSPemulator, CMI8738 is designed for PC add-in cards and all-in-one motherboards. No external CODEC is needed in CMI8738: CMI-8738 supports the legacy audio -- SBPRO™, FM emulator/DLS wavetable music synthesis, and HRTF 3D positional audio functions.

Features

- PCI Plug and Play (PnP) bus interface. 32-bit PCI bus master.
- Full-duplex playback and recording. Built-in 16-bit CODEC.
- HRTF 3D positional audio, supporting both DirectSound 3D® & A3D® interfaces. Also supports earphones, 2/4/6 channel speakers mode.
- Support Windows 98 /Windows 2000 and Windows NT 4.0.
- Built-in 32 OHM earphone buffer.
- MPU-401 Game/Midi port and legacy audio SB Pro support.
- Downloadable Wave Table Synthesizer, supporting Direct Music®.
- Stereo Mixer
 - Stereo analog mixing from CD-Audio and Line-in.
 - Stereo digital mixing from Voice, FM/Wave-table, and Digital CD-Audio.
 - Mono mixing from MIC. Software adjustable volume.
- Game and MIDI Interface
 - Fully compatible with MPU-401 Midi UART and Sound Blaster Midi mode/Standard IBM PC joystick/game port (dual channels).

Chapter 4

Driver Installation for Windows® 98/ME/2000

1. Insert the supplied CD disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **C-Media Sound Drivers** and follow the on-screen instructions to complete the installation.
4. After completion of the installation, please restart Windows system for new driver installation. The system will install the device drivers automatically.

Driver Installation for Windows® NT 4.0



Note: We recommend that you install Windows NT 4.0 before you install this PCI audio card, and you not install any other sound card device drivers in your current system.

1. Click “Start”, move the highlight bar to “Setting”, and select the “Control Panel”.
2. Double-click “Multimedia”.
3. Select “Devices”, and press “Add”.
4. Select “Unlisted or Updated Driver” in “List of Drivers”.
5. Specify the drive path where NT drivers are in (such as D:\NT40\DRV).
6. Select “C-Media CM8738,” and press “OK”.
7. Select proper I/O value.
8. Press “OK.”
9. Restart the system when being asked.
10. Now, you have already installed the PCI Audio Adapter under Microsoft Windows NT 4.0 successfully. If you want to install the Windows applications, continue the following steps:
11. Click “Start”.
12. Select “Run”.
13. Key in drive path where the Windows NT application installation program are in; for example, “D:\NT40\APP\SETUP.EXE”
14. Click “OK” to start the installation procedure, and follow the on-screen instructions to complete the installation. When all of application software has been installed, shut down the Windows NT system, then reboot your system.

Realtek ALC201A Audio Driver (P4XB-S)

The ALC201A is an 18-bit, full duplex AC'97 2.2 compatible stereo audio CODEC designed for PC multimedia systems, including host/soft audio and AMR/CNR based designs. ALC201A AC'97 CODEC incorporates proprietary converter technology to achieve high SNR greater than 90 dB. In addition, it supports multiple CODEC extension with independent variable sampling rate and built-in 3D effects. It also provides two pairs of stereo outputs with independent volume controls, a mono output, and multiple stereo and mono inputs, along with flexible mixing, gain and mute functions to provide a completely integrated audio solution for PCs.

Features

- AC'97 2.2 Compatible & WHQL Compliant
- High Performance Converter Technology
- 18-bit Stereo Full-Duplex CODEC with Independent Variable Sampling Rate
- Four Analog Line-Level Stereo Inputs for Connection from LINE, CD, VIDEO and AUX
- Two Analog Line-Level Stereo Inputs for Speakerphone and PC BEEP
- Two MIC Inputs w/ Software Selectable
- High Quality Differential CD Input
- True Stereo Line Level Outputs
- EAPD (External Amplifier Power Down) Control
- 3D Stereo Enhancement
- Multi-CODEC Extension
- SNR Greater Than 95 dB
- Line Output with 50mW/20ohm Driving Capability
- Headphone Jack-Detection to Mute LINE Output
- MC'97 Chain-In Allows for Multi-Channel Application
- Supports SPDIF-Out, Fully Compliant to AC'97 Specification Rev. 2.2
- Power Management Support
- Power Supply (Digital 3.3V/ Analog 5V)
- Meets Microsoft PC99 & WLP 2.0 Audio Requirements

48-Pin LQFP Package

Chapter 4

Driver Installation for Windows® 98/ME/2000/NT4.0

1. Insert the provided CD_ROM disk into the CD-ROM drive.
2. The CD will auto-run and the setup screen will appear.
3. Click on **ADVANCED Sound Drivers** and follow the on-screen instructions to complete the installation.
4. After completion of the installation, please restart Windows system for new driver installation. The system will install the device drivers automatically.