VIA Mainboard User's Manual

VIA P4MA PRO 533

Version 1.00 - February 12, 2003

P/N 99-51-012411

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.

$C\epsilon$ FC   Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

TRADEMARKS

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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 visably damaged
12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60^0 C (140^0F), IT MAY DAMAGE THE EQUIPMENT.

Box Contents

- 1 x VIA Mainboard

- 1 x User's manual

- 1 x Floppy ribbon cable

- 1 x ATA-66/100/133 IDE ribbon cable

- 1 x 2 Port USB 2.0 Module

- 1 x Driver Utilities CD

Contents

1

Specifications

The VIA P4MA PRO 533 mainboard is based around the VIA ProSavageDDR P4M266A chipset, which brings support for high-performance DDR266 SDRAM to the Intel® Pentium®4 platform. It is a high performance, cost-effective and energy efficient SMA chipset for the desktop PC. VIA's advanced V-Link controller brings optimal system efficiency by effectively doubling bandwidth between the chipset's north and south bridges. P4M266A integrates S3 Graphics' 128-bit ProSavage8 graphics accelerator into a single chip, providing ideal solution for the consumer and entry level professionals.

This chapter includes the following sections:

Mainboard Specifications

CPU

- Supports Intel® Pentium® 4 Willamette/Northwood and Celeron® processors in the 478 pin package
- Supports 1.6GHz, 1.7GHz, 1.8GHz, 1.9GHz, 2GHz, 2.2GHz and upwards

Chipset

- VIA P4M266A/VT8235 chipset
  - Supports Intel® Pentium® 4 and Celeron® processors with 533/400 MHz (133/100 MHz QDR) CPU Front Side Bus (FSB)
  - Integrated ProSavage8 AGP Graphics
  - External 4x AGP Bus
  - High Bandwidth V-Link Client controller
  - Integrated Hardware Sound Blaster/Direct Sound 6 channel AC'97 audio
  - Ultra DMA 66/100/133 master mode PCI EIDE controller
  - ACPI 1.0B and APM 1.2 compliant

Main Memory

- 2 x 184-pin DDR DIMM sockets
- Supports up to 2GB of 2.5v DDR SDRAM (PC2100/PC1600)

Slots

- 1 x AGP (Accelerated Graphics Port) 4X slot
- 3 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 66/100/133 operation modes
- Can connect up to 2 channel for 4 IDE devices

Onboard Floppy

- 1 x FDD Connector

Onboard LAN

- VIA VT6103 10/100 Base-T Ethernet PHY

Onboard Audio

- VIA VT1616 6 channel AC'97 Codec

Onboard USB 2.0/1.1
- 6 x USB 2.0/1.1 ports

Onboard I/O Connectors
- 2 USB connectors for 4 additional USB 2.0 ports
- SPDIF (optical & coaxial) connector
- Front-panel audio connectors (Mic and Line Out)
- CD Audio-in connector
- FIR connector
- Wake-on-LAN, Wake-on-Ring
- Second COM Port connector
- CPU/System FAN
- System intrusion connector

Back Panel I/O
- 1 PS2 mouse port
- 1 PS2 keyboard port
- 1 Parallel port
- 1 game/MIDI port
- 1 RJ-45 LAN port
- 1 Serial port
- 2 USB 2.0 ports
- 1 VGA port
- 3 audio jacks : line-out, line-in, and mic-in; switched to 6 channel output during 6 channel operations with Smart5.1 (see Appendix)

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

Dimension
- MicroATX Form Factor
- 24.5cm x 20.5cm

Mounting
- 6 mounting holes

Mainboard Layout

Top: Mouse
Bottom: Keyboard

Top: RJ45
Bottom: USB ports

Top:
Parallel port
Bottom:
COM 1/VGA out

Top: Game port
Bottom:
Line-Out
Line-In
Mic

CPUFAN

Socket 478

IDE 1

AUX12V

IDE 2

ATXPWR

P4M266A

SPDIF

F_AUDIO
CD_IN

AGP Slot

PCI Slot 1

FIR

PCI Slot 2

VIA

FDD

OB_Codec   COM 2   PCI Slot 3

CLEAR_CMOS

BIOS

CNR

CI

USB 3/4   F_PANEL

WOL

SYSFAN

WOR

USB 5/6
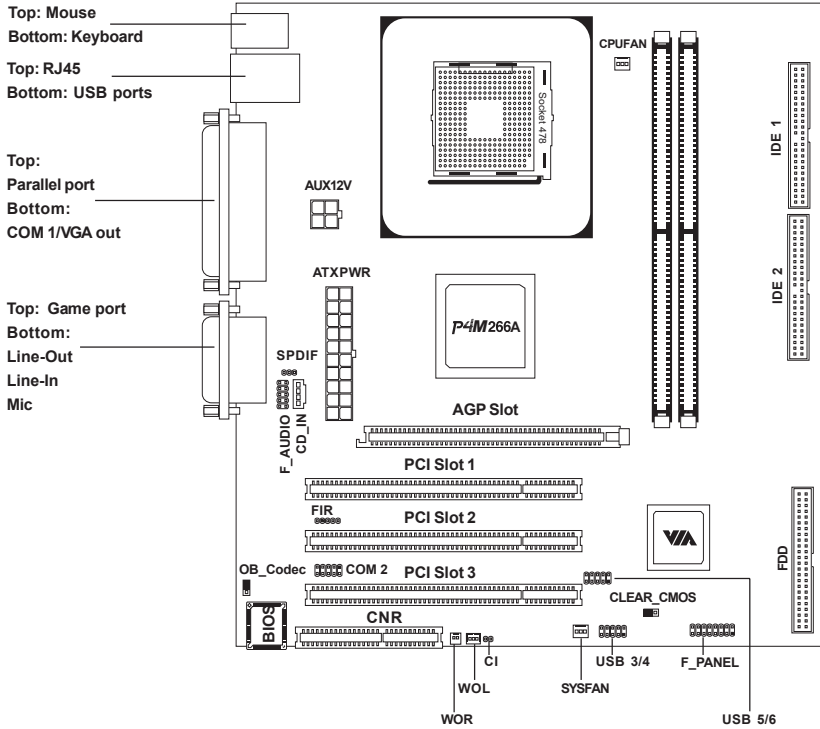
VIA P4MA PRO 533 Mainboard

Connectors Guide

Connectors	Function	Reference
ATXPWR	ATA 20-pin power connector	see p. 2-7
ATX12V	ATA 12 V power connector	see p. 2-7
JMS1	Mouse connector	see p. 2-8
JKB1	Keyboard connector	see p. 2-8
USB Port Connectors	Connecting to USB devices	see p. 2-9
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Audio PortConnectors	Line-Out/Line-In/Mic-In	see p. 2-10
RJ45 NIC Port	LAN port	see p. 2-10
VGA Out	VGA connector	see p. 2-10
FDD	Floppy disk drive connector	see p. 2-11
FIR	IrDA Infrared Module connector	see p. 2-11
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CD-IN	CD-In connector	see p. 2-12
IDE1 & IDE2	Hard disk connectors	see p. 2-13
CPUFAN/SYSFAN	Fan Power connectors	see p. 2-14
F_PANEL	Case connectors	see p. 2-14
SPDIF	Digital audio connector	see p. 2-16
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USB 3/4	USB pin-header	see p. 2-17
USB 5/6	USB pin-header	see p. 2-17
WOR	Wake-On Ring connector	see p. 2-18
WOL	Wake-On LAN connector	see p. 2-18
COM2	The second serial port	see p. 2-19
CLEAR_CMOS	Clear CMOS jumper	see p. 2-20
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AGP Slot	Connecting to AGP card	see p. 2-22
PCI Slot	Connecting to PCI cards	see p. 2-22
CNR Slot	Connecting to CNR card	see p. 2-22

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

The VIA P4MA PRO 533 mainboard supports the Intel®Pentium®4 Willamette/ Northwood and Celeron®processors 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

Open Lever

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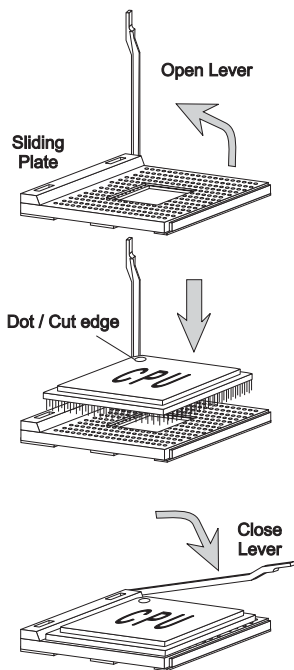
1. Pull the lever sideways away from the socket. Then raise the lever up to a 90-degree angle.

Dot / Cut edge

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.

Close Lever

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

STOP

WARNING! Overheating will cause serious damage to the CPU and system. Ensure the cooling fan and heatsink work properly to protect the CPU from overheating.

CPU Core Speed

If	CPU Clock	=	100MHz
	Core / Bus ratio	=	18
then	CPU core speed	=	CPU Clock x Core / Bus ratio
		=	100MHz x 18
		=	1.8GHz

> **STOP**
> **WARNING!**
>
> **Overclocking**
> 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 be-

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 and fan onto the retention mechanism.

Retention mechanism
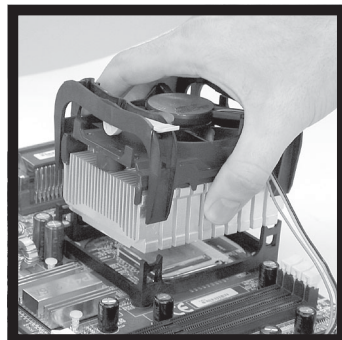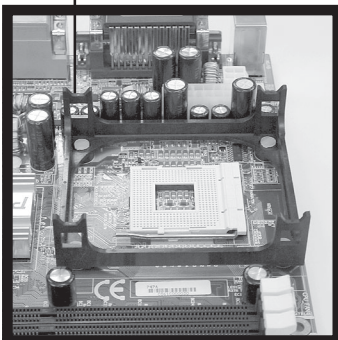
3. Mount the fan on top of the heatsink. Press down the fan firmly until its four clips become wedged in the holes of the retention mechanism.
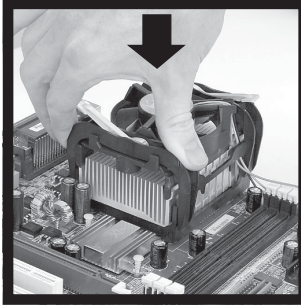
4. Press the two levers down to secure the fan. Each lever can be pressed down in only ONE direction.
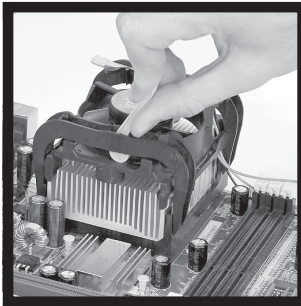
5. Connect the fan power cable from the mounted fan to the 3-pin fan power connector on the mainboard.
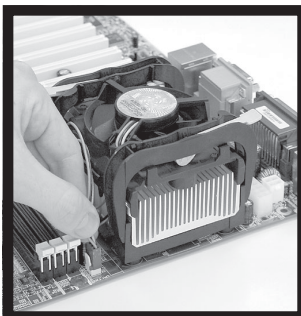
Memory Installation

The VIA P4MA PRO 533 mainboard provides 2 sockets for 184-pin, 2.5V DDR DIMM modules with 4 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 1~2).

DDR (Double Data Rate) SDRAM is similar to conventional SDRAM, but doubles the rate of transfer by transfering data twice per cycle. This is achieved by transfering 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. DDR SDRAM is also known as SDRAM-II, DDR DRAM and DSDRAM (Double-Speed DRAM). 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.

**DDR DIMM Sockets
(DDR 1~2)**
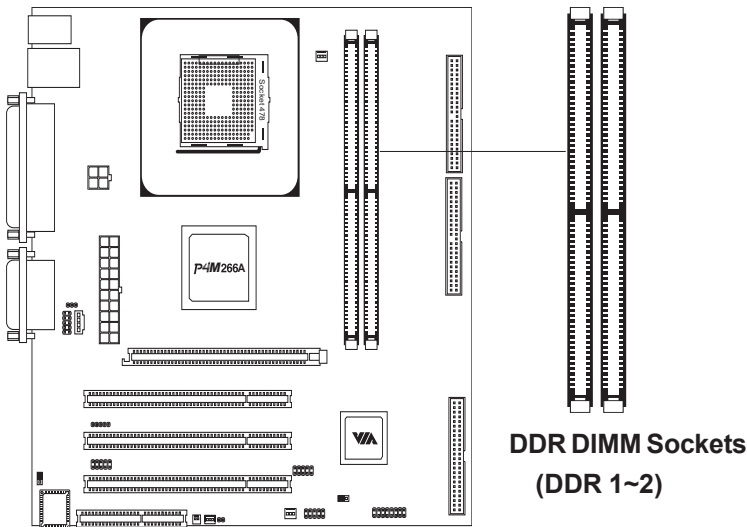
DDR Module Installation

You can install either single sided or double sided 184-pin DDR DIMM modules into the DDR DIMM slot, depending on your requirements. Differing from SDR DIMM, DDR DIMM modules 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 DDR SDRAM modules in any of the following combinations:

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

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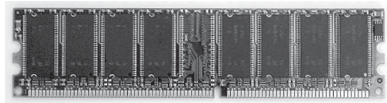
Notch

2. Insert the DDR module vertically into the DDR DIMM slot. Make sure the notch is correctly aligned.
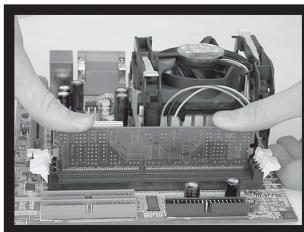
3. The plastic clips at sides of the DIMM slot will automatically close shut.

Power Supply

The VIA P4MA PRO 533 mainboard requires 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: ATXPWR

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 plugs firmly into the connector.
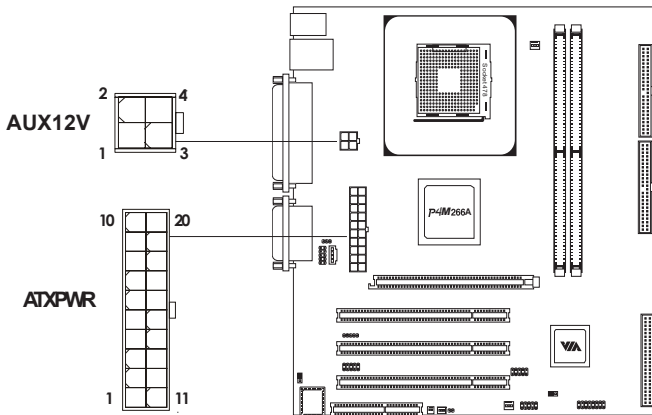
ATX 12V Power Connector: ATX12V

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

ATXPWR 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

ATX12V Pin Definition

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

Back Panel

The Back Panel provides the following connectors:
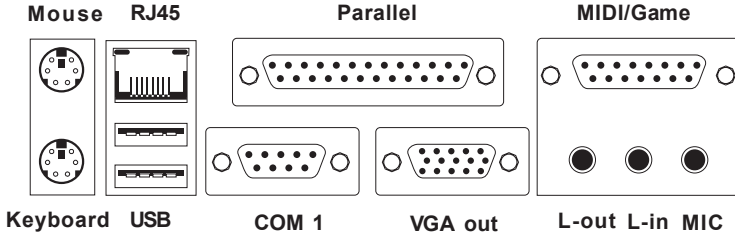
Mouse Connector: JMS1

The VIA P4MA PRO 533 mainboard provides 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:

Keyboard Connector: JKB1

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.
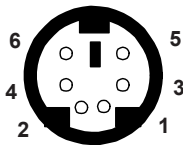
PS/2 Mouse (6-pin Female)
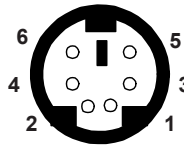
PS/2 Keyboard (6-pin Female)

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 Port Connectors

The VIA P4MA PRO 533 mainboard provides 2 USB 2.0 ports (plus 2 pin-headers for up to 4 additional USB 2.0 connections; see 2-17). USB-compatible devices can be plugged directly into these ports.

5 6 7 8

1 2 3 4
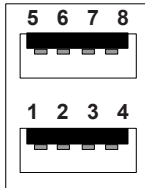
USB Ports

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	VCC	+5V
2	-DATA 0	Negative Data Channel 0
3	+DATA 0	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.

13   **1**

25   **14**
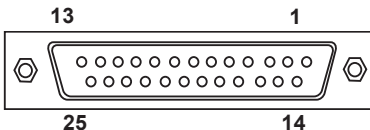
Pin Definition

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	PaperEnd
13	SELECT	Select
14	AUTOFEED#	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

Serial Port Connectors: COM 1

The mainboard offers one 9-pin male Serial Port connector (COM 1) . You can attach a serial mouse or other serial devices directly to this port.

1 2 3 4 5

6 7 8 9
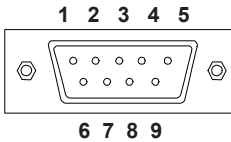
9-Pin Male DIN Connectors

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In / Receive
3	SOUT	Serial Out / Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

MIDI/Game Connector

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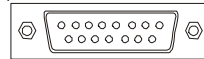
Audio Port Connectors

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. Please note when 6-channel applications are used, all three connectors become output connectors with Smart 5.1 (See Appendix). **Line-Out** becomes Front L/R; **Line-In** becomes Rear L/R; **Mic-In** becomes Center/Sub.

1/8" Stereo Audio Connectors

(2 Channel)

Line Out   Line In   MIC

Front L/R   Rear L/R   Center Sub

(6 Channel)
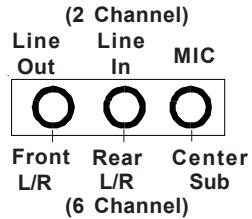
RJ-45 NIC Port

The mainboard provides one standard RJ-45 port for connection to the Local Area Network (LAN). You can connect a network cable to the LAN port.
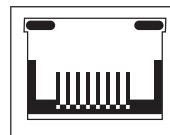
VGA Out

A DB-15 pin female connector that connects to a VGA monitor.
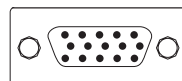
Connectors

Floppy Disk Drive Connector: FDD

The standard floppy disk drive connector supports 360K, 720K, 1.2M, 1.44M, and 2.88M.
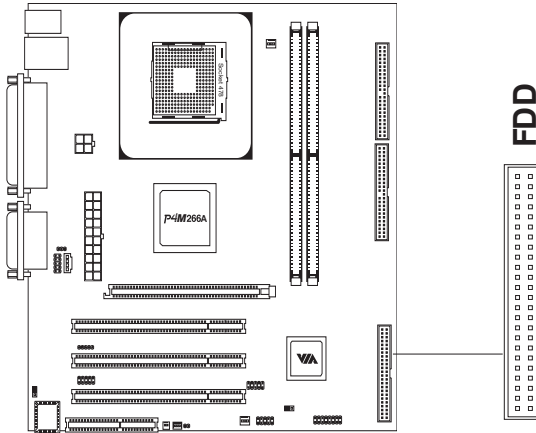
IrDA Infrared Module Connector: FIR

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

Pin Definition

PIN	SIGNAL
1	VCC
2	CIRRX
3	IRRX
4	GND
5	IRTX
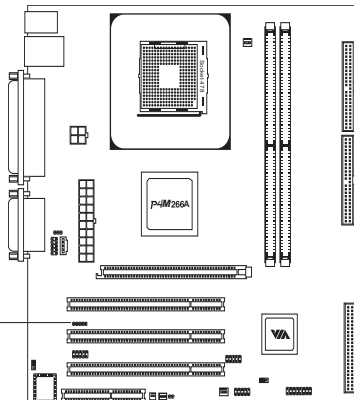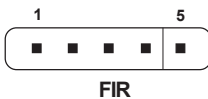
Front Panel Audio Connector: F_AUDIO

This connector allows you to connect audio jacks on front panel for convenient connection and control of audio devices.

Pin Definition

PIN	SIGNAL
1	MIC_IN2
2	GND_AUD
3	MIC_VCC
4	+5VCODEC
5	LINEOUTR_AP
6	LINEOUTR
7	NC
8	NC
9	LINEOUTL_AP
10	LINEOUTL
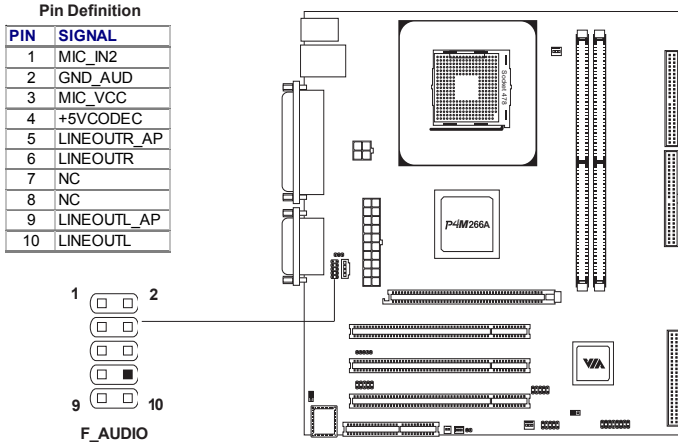
F_AUDIO

CD-In Connector: CD_IN

This connector is for the CD-ROM audio connector.

CD_IN

CD_R
CD_GND
CD_L
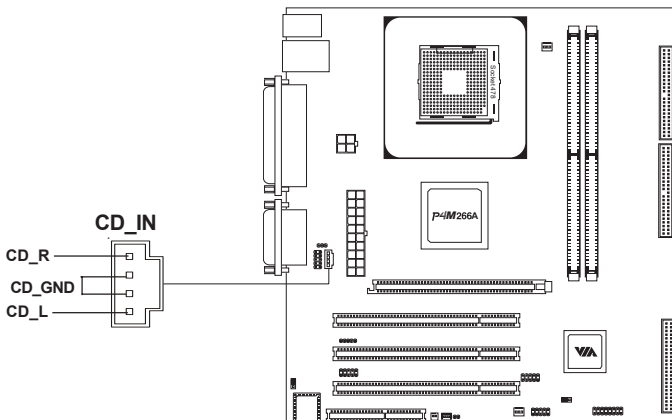
Hard Disk Connectors: IDE1 & IDE2

The VIA P4MA PRO 533 mainboard has a 32-bit Enhanced PCI IDE and Ultra DMA 33/66/100/133 controller that provides PIO mode 0~4, Bus Master, and Ultra DMA 33/66/100/133 functions. You can connect up to four hard disk drive, CD-ROM, LS-120 and other devices. These connectors utilize the provided IDE hard disk cable.
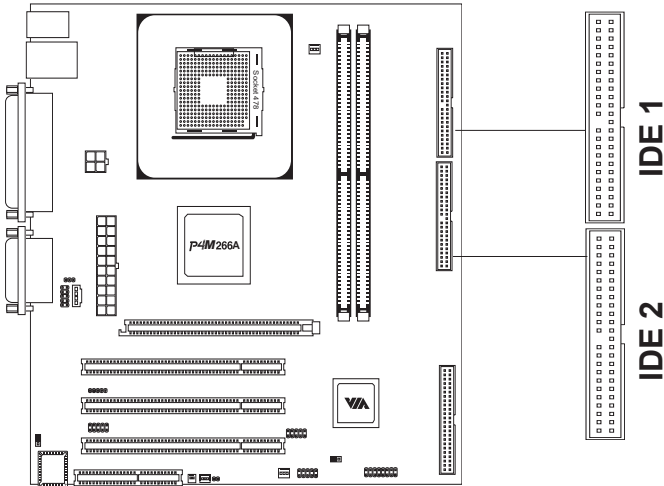
IDE1 (Primary IDE Connector)
The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure the second hard drive to Slave mode by setting the jumper accordingly.

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.

Fan Power Connectors: CPU/SYS FAN

The CPUFAN (CPU fan) and SYSFAN (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. Both CPU and System fan connectors have sensors to detect fan speed, but the power fan does not have sensor.
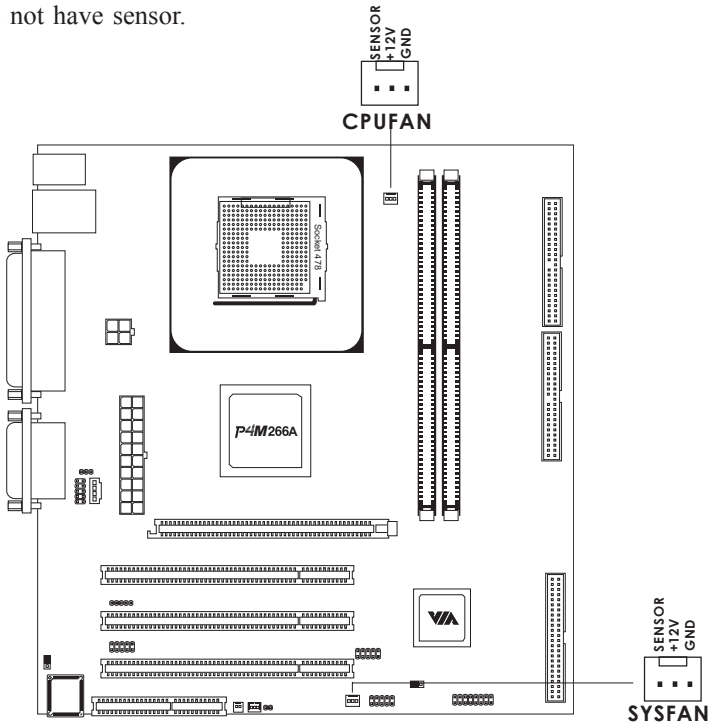
Note: Always consult the vendor for proper CPU cooling fan.

Case Connectors: F_PANEL

The connector block F_PANEL allow you to connect to the Power Switch, Reset Switch, Power LED, HDD LED and SLED on the case.

Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	PWR_LED+	2	HD_LED+
3	PWR_LED+	4	HD_LED-
5	PWR_LED-	6	PW_BN+
7	SPEAKER+	8	PW_BN-
9	NC	10	RESET+
11	NC	12	RESET-
13	SPEAKER-	14	SLED+
15	NC	16	SLED-

F_PANEL
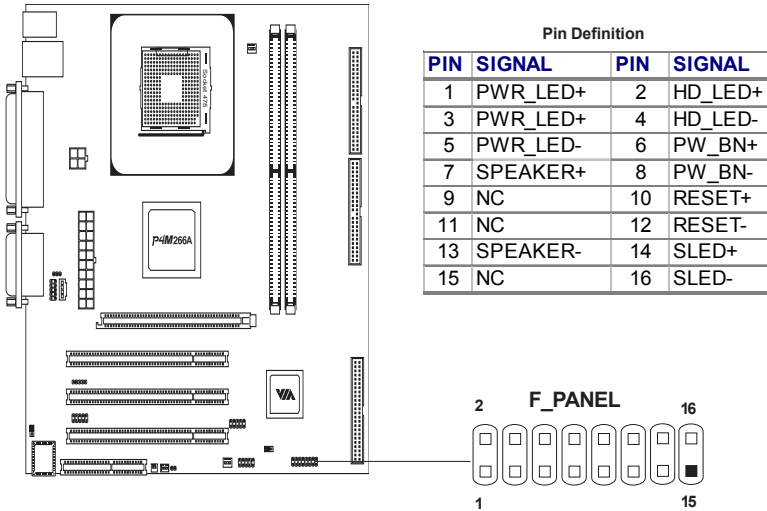
Power Button (PW_BN)

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

Reset Switch (RST_SW)

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.

Power LED (PW_LED)

The LED is lit when the system is power on. If the system is in S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, the LED will blink.

HDD LED (HD_LED)

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

Sleep LED (SLP_LED)

The SLED is lit when the system is in the S1 (POS - Power On Suspend) state.

Speaker (SPEAKER)

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

Digital Audio Connector: SPDIF

The SPDIF output provides digital audio to external speakers or compressed AC3 data to an external Dolby Digital Decoder. Please make sure the SPDIF module is CORRECTLY plugged onto the connector. Incorrect orientation may cause permanent damage to the module.
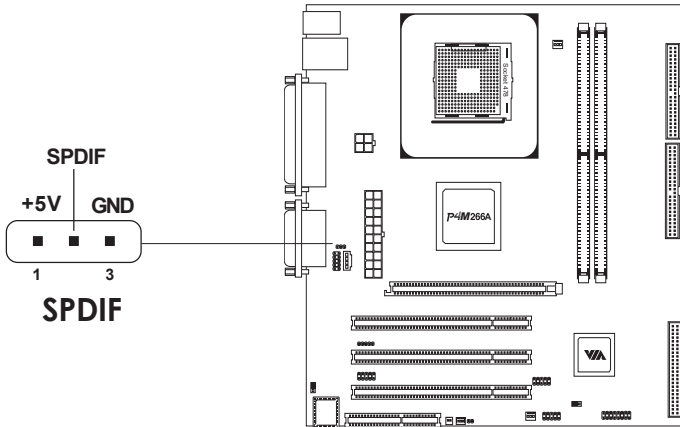
Chassis Intrusion Connector: CI

This connector is for a chassis designed with intrusion detection feature. It requires a chassis intrusion sensor or on a chassis. If any chassis component is moved, the sensor triggers and sends a high-level signal to this connector to record a chassis intrusion event.
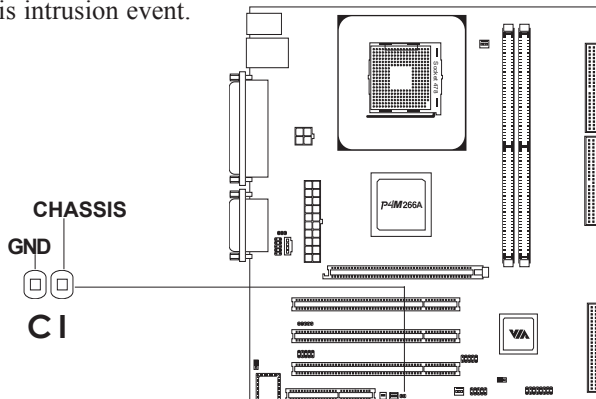
USB Pin-Headers: USB 3/4 and USB 5/6

The mainboard provides 2 front USB pin-header connectors, allowing up to 4 additional USB ports**.** Please plug the USB 4-port modules onto these pin-headers.
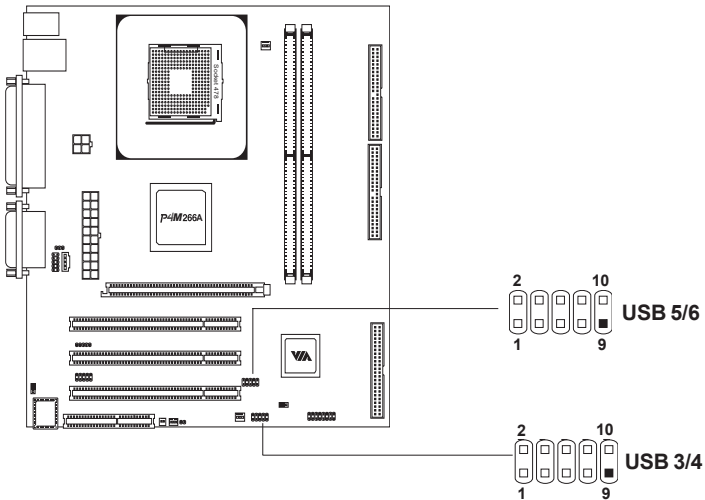
USB 3/4 Pin Definition			
PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB0-	4	USB1-
4	USB0+	6	USB1+
7	GND	8	GND
9	NC	10	GND

USB 5/6 Pin Definition			
PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USBDT4-	4	USBDT5-
4	USBDT4+	6	USBDT5+
7	GND	8	GND
9	NC	10	GND

Wake-On Ring Connector: WOR

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.
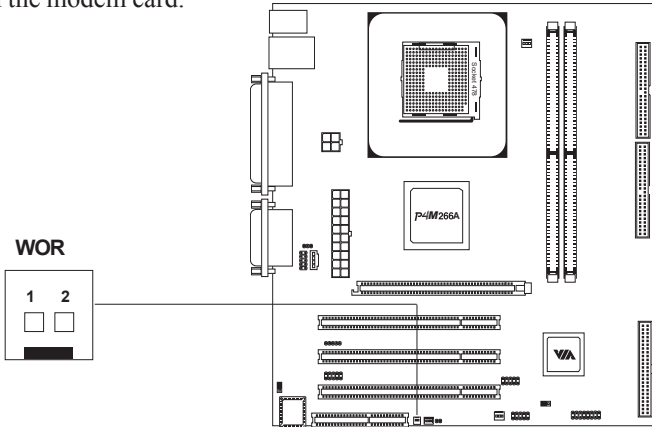
Wake-On LAN Connector: WOL

This connector allows you to connect a network card with the Wake-On LAN function. The connector will power up the system when a signal is received through the network card.
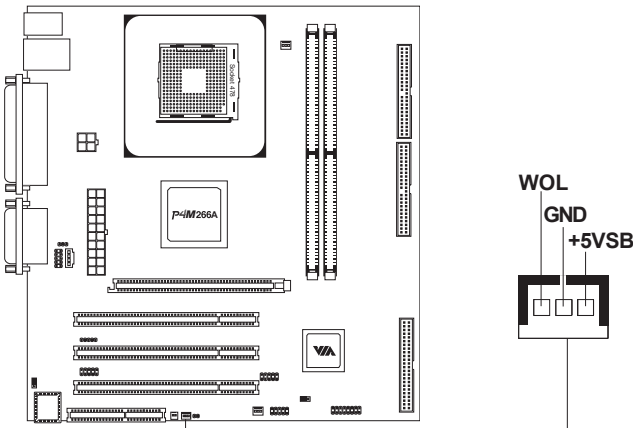
Second COM Port Connector

This connector allows you to connect a second COM port.
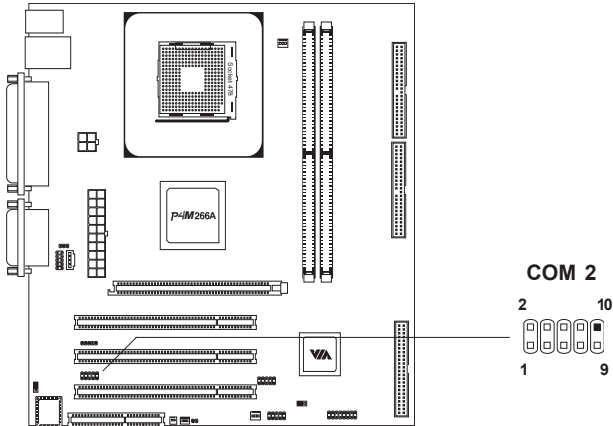
COM 2

Pin Definition

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In / Receive
3	SOUT	Serial Out / Transmit
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Jumpers

The VIA P4MA PRO 533 mainboard provides 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: CLEAR_CMOS

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. 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 CLEAR_CMOS (Clear CMOS jumper). Follow the instructions below to clear the data:

CLEAR_CMOS

Clear CMOS

Keep CMOS

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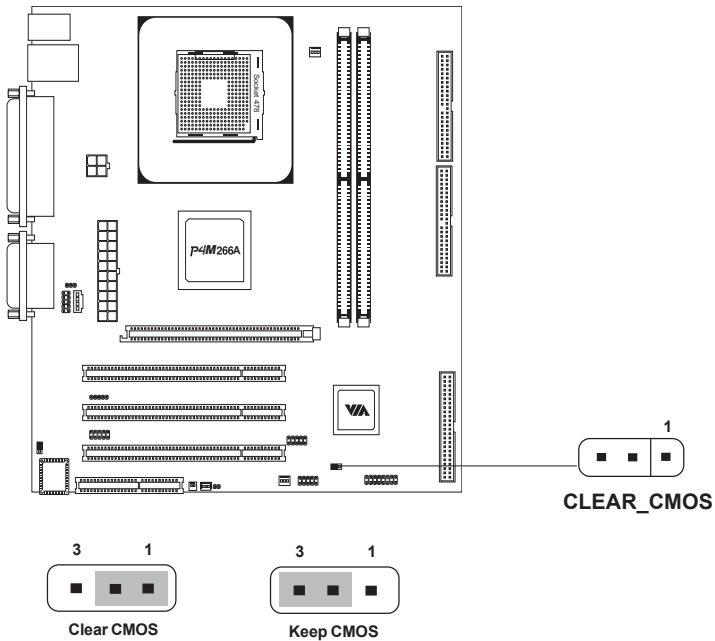
WARNING! You can clear the CMOS by shorting 1-2 pin while the system is off. Then return it to the 2-3 pin position. Avoid clearing the CMOS while the system is on; this will damage the mainboard.

Audio Codec Auto Detect Jumper: OB_CODEC

This jumper enables or disables the audio codec auto detect function. If a CNR card based audio codec is found, then the auto detect function will automatically disable the onboard audio codec to avoid conflict. If the auto detect function is disabled, then the mainboard will always disable the onboard audio codec.

OB_CODEC

Auto Mode

Disabled
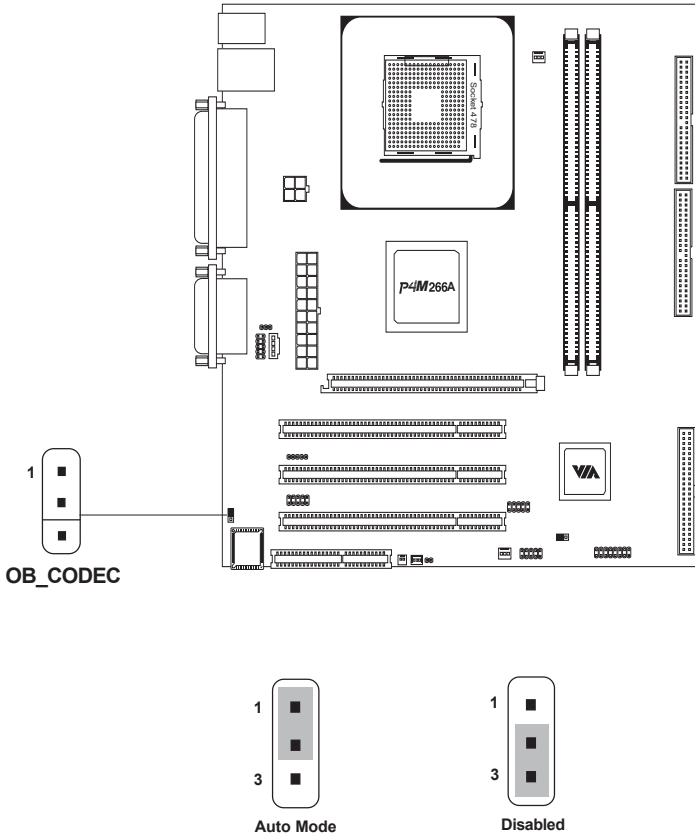
Slots

The mainboard provides three 32-bit Master PCI bus slots, one AGP4X slot and one CNR slot.
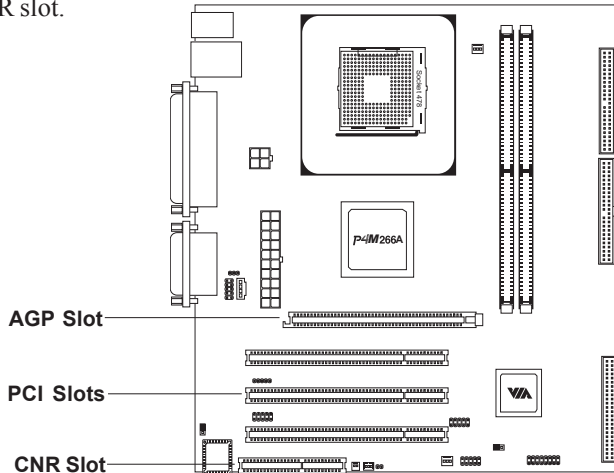
AGP (Accelerated Graphics Port) Slot

The AGP4X slot allows you to insert an 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 (266MB/s), 2x (533MB/s) and 4x (1.07GB/s).

PCI Slots

The three 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) Slot

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 is controlled by the mainboard's chipset.

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 C#	INT D#	INT A#	INT B#
ProSavage8	INT A#			
AGP Slot	INT A#	INT B#		
LAN RT8100BL	INT B#			

3

BIOS Setup

This chapter gives you detailed explaination of BIOS setup functions. It consists of the following topics:

Entering Setup

Power on the computer and press DEL straight away to enter the BIOS setup menu. If you missed the BIOS setup entry point, you may restart the system and try again.

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 submenu
<+/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 Page Setup Menu
<F5>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<F6>	Load the default CMOS value from Fail-Safe default table, only for Option Page Setup Menu
<F7>	Load Optimized defaults
<F10>	Save all the CMOS changes and exit

Getting Help
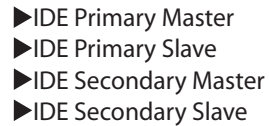
After entering the BIOS setup menu, the Main Menu appears.

Main Menu

The main menu displays all BIOS setup categories. Use the control keys (↓↑) to select any item/sub-menu. Description of the selected/highlighted category is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) on the left of field, this means a sub-menu is available. The sub-menu contains additional options. You can use control keys (↓↑) to highlight the field and press <Enter> to enter the sub-menu. To return from the sub-menu 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/sub-menu by pressing <F1>. The help screen displays the keys for use and navigate the BIOS setup. Press <Esc> to exit the help screen.

The Main Menu

The Main Menu contains twelve setup functions and two exit choices. Use arrow keys to select the items and press <Enter> to accept or enter the submenu.

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ Frequency/Voltage Control
   ▶ Advanced BIOS Features            Load Fail-Safe Defaults
   ▶ Advanced Chipset Features         Load Optimized Defaults
   ▶ Integrated Peripherals            Set Supervisor Password
   ▶ Power Management Setup            Set User Password
   ▶ PnP/PCI Configurations            Save & Exit Setup
   ▶ PC Health Status                  Exit Without Saving

   Esc : Quit                       ↑ ↓ → ←   : Select Item
   F10 : Save & Exit Setup

                  Time, Date, Hard Disk Type...
```

Standard CMOS Features
Use this menu to set 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 set chipset specific features and optimize system performance.

Integrated Peripherals
Use this menu to set onboard peripherals features.

Power Management Setup
Use this menu to set onboard power management functions.

PnP/PCI Configurations
Use this menu to set the PnP and PCI configurations.

PC Health Status
This menu shows the PC health status.

Frequency/Voltage Control
Use this menu to set the system frequency and voltage control.

Load Fail-Safe Defaults
Use this menu to load the BIOS default settings for minimal and stable system operations.

Load Optimized Defaults
Use this menu to load BIOS default settings for optimal and high performance system operations.

Set Supervisor Password
Use this menu to set supervisor password.

Set User Password
Use this menu to set user password.

Save & Exit Setup
Save BIOS setting changes and exit setup.

Exit Without Saving
Abandon all BIOS setting changes and exit setup.

Standard CMOS Features

Use the arrow keys to highlight the item and use the <PgUp> or <PgDn> keys
to select the value you desire for each item.

```
         Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Standard CMOS Features
    Date (mm:dd:yy)          Sun, Feb 10 2002        Item Help
    Time (hh:mm:ss)          16 : 55 : 18
                                                  Menu Level   ▶
  ▶ IDE Primary Master       [ None]
  ▶ IDE Primary Slave        [ None]              Change the day, month,
  ▶ IDE Secondary Master                          year and century
  ▶ IDE Secondary Slave

    Drive A                  [1.44M, 3.5 in.]
    Drive B                  [None]

    Halt On                  [All , But Keyboard]

    Base Memory              65535K
    Extended Memory          64512K
    Total Memory             64512K


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

Date
The date format is <Day><Month><Date><Year>.

> **Day** - day of the week, for example Friday. Read-only.
> **Month** - the month from Jan to Dec.
> **Date** - the date from 1 to 31.
> **Year** - the year, range from 1999 to 2098.

Time
> The time format is <Hour><Minute><Second>.

Drive A/B
Set the type of floppy drive 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*.

Halt On
Determine the system behaviour if an error is detected during bootup. Settings:
All Errors   System halts when any error is detected.
No Errors   System does not halt for any error.
All, But Keyboard   System halts for all errors (except keyboard error).
All, But Diskette   System halts for all errors (except diskette error).
All, But Disk/Key   System halts for all errors (except disk/keyboard error)

IDE Primary Master/Slave and Secondary Master/Slave

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

```
              Phoenix - Award WorkstationBIOS CMOS Setup Utility
                              IDE Primary Master

      IDE HDD Auto-Detection      [Press Enter]              Item Help

      IDE Primary Master          [Auto]              Menu Level    ▶▶
      Access Mode                 [Auto]
                                                      To auto-detect the
      Capacity                    0 MB                HDD's size, head... on
                                                      this channel
      Cylinder                    0
      Head                        0
      Precomp                     0
      Landing Zone                0
      Sector                      0

      PIO Mode                    [Auto]
      Ultra DMA Mode              [Auto]




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

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. Select Auto whenever possible. If you select Manual, make sure the information provided is from your hard disk vendor or system manufacturer.

IDE Primary Slave	The settings are None, Auto, Manual.
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.
PIO Mode	The settings are Mode 0/1/2/3/4, Auto.
Ultra DMA Mode	The settings are Disabled and Auto.

Advanced BIOS Features

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                    Advanced BIOS Features

    Virus Warning              [Disabled]          Item Help
    CPU Hyper-Threading        [Enabled]
    CPU L2 Cache ECC Checking  [Enabled]        Menu Level    ▶
    Quick Power On Self Test   [Enabled]
    First Boot Device          [Floppy]         Allows you to choose
    Second Boot Device         [HDD-0]          the VIRUS warning
    Third Boot Device          [LS120]          feature for IDE Hard
    Boot Other Device          [Enabled]        Disk boot sector
    Swap Floppy Drive          [Disabled]       protection. If this
    Boot Up Floppy Seek        [Disabled]       function is enabled
    Boot Up NumLock Status     [On]             and someone attempt to
    Typematic Rate Setting     [Enabled]        write data into this
    Typematic Rate (Chars/Sec)[30]              area , BIOS will show
    Typematic Delay (Msec)     [250]            a warning message on
    Security Option            [Setup]          screen and alarm beep
    MPS Version Control For OS[1.4]
    Display Full Screen Logo   [Enabled]
    Show Summary Information    [Enabled]
    Display Small Logo         [Disabled]

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

Virus Warning
Set the Virus Warning feature for IDE Hard Disk boot sector protection. If the function is enabled, any attempt to write data into this area will cause a beep and a warning message will be displayed. Settings: *Disabled* and *Enabled*.

CPU L2 Cache ECC Checking
Set the ECC (Error-Correcting Code) feature for Level 2 cache. Facilitates error detection/correction when data passes through Level 2 cache. Settings: *Enabled* and *Disabled*.

Quick Power On Self Test
Shorten Power On Self Test (POST) cycle and enable shorter bootup time. Allow BIOS to skip some check items during POST. Settings: *Enabled* and *Disabled*.

First/Second/Third Boot Device
Set the boot device sequence as BIOS attempts to load the disk operating system. The settings are:

Floppy	The system will boot from floppy drive.
LS120	The system will boot from LS-120 drive.
HDD-0	The system will boot from first HDD.

SCSI	The system will boot from SCSI.
CD-ROM	The system will boot from CD-ROM.
HDD-1	The system will boot from second HDD.
HDD-2	The system will boot from third HDD.
HDD-3	The system will boot from fourth HDD.
ZIP100	The system will boot from ATAPI ZIP drive.
USB-FDD	The system will boot from USB floppy drive.
USB-ZIP	The system will boot from USB ZIP drive.
USB-CDROM	The system will boot from USB CDROM.
USB-HDD	The system will boot from USB HDD.
LAN	The system will boot from network drive.
Disabled	Disable this sequence.

Boot Other Device
Enable the system to boot from other devices if the system fails to boot from the First/Second/Third boot device. Settings: *Enabled* and *Disabled*.

Swap Floppy Drive
If the system has two floppy drives, choose enable to assign physical drive B to logical drive A and vice-versa. Settings: *Enabled* and *Disabled.*

Boot Up Floppy Seek
Set floppy seek during POST, BIOS will determine whether the floppy is 40 or 80 tracks. Settings: *Enabled* and *Disabled*.

Boot Up NumLock Status
Set the NumLock status when the system is powered on. "On" will turn key pad into number keys, and "Off" will turn key pad into arrow keys. Settings: *On* and *Off*.

Typematic Rate Setting
Set the typematic rate and delay. Settings: *Enabled* and *Disabled*.

Typematic Rate (Chars/Sec)
When 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)
When Typematic Rate Setting is enabled. 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
Specifies the type of BIOS password protection that is implemented. Settings are described below:

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

MPS Version Control
Decides the version of Multiprocessing Specification supported.

Display Full Screen logo
Show full screen logo during BIOS bootup process. Settings: *Enabled* and *Disabled*.

Show Summary Information
Show summary information during BIOS bootup process. Settings: *Enabled* and *Disabled*.

Display Small Logo
Show small energy star logo during BIOS bootup process. Settings: *Enabled* and *Disabled*.

Advanced Chipset Features

The Advanced Chipset Features menu is used for optimizing the chipset functions.

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                       Advanced Chipset Features
   ┌──────────────────────────────────────────────┬─────────────────────┐
   │ AGP Aperture Size          [128M]             │     Item Help       │
   │ AGP Mode                   [4X]               │                     │
   │ AGP Driving Control        [Auto]             │  Menu Level    ►    │
   │ AGP Driving Value          --                 │                     │
   │ CPU to PCI POST Write      [Enabled]          │                     │
   │ VGA Share Memory Size      [32M]              │                     │
   │ FB Address Conversion      [Enabled]          │                     │
   │ FB Page Close Prediction   [Enabled]          │                     │
   │                                               │                     │
   │                                               │                     │
   │                                               │                     │
   │                                               │                     │
   │                                               │                     │
   │                                               │                     │
   └──────────────────────────────────────────────┴─────────────────────┘
    ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
      F5: Previous Values      F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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

AGP Aperture Size

This setting controls how much memory space can be allocated to AGP for display purposes. The aperture is a portion of the PCI memory address range dedicated to graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. Settings: *4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256MB*.

AGP Mode

This mainboard supports AGP 4x interface. When the AGP 4x video card is used, it can transfer video data at 1066MB/s. AGP 4x is backward-compatible, leave the default 4x mode on if unsure. When set to 1x mode, the maximum transfer rate it to 266MB/s, and 2x mode transfer data at 533MB/s. Settings: *4X, 2X,* and *1X*.

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 system errors. Settings: *Auto* and *Manual*.

CPU to PCI POST Write
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. Settings: *Enabled* and *Disabled*.

VGA Share Memory Size
Set the VGA Share Memory Size. Settings: *8M, 16M* and *32M*.

FB Address Conversion
Set the Frame Buffer address conversion mechanism. This feature optimizes MA table for VGA frame buffer accesses according to DRAM page size in use. It is expected to improve VGA performance. Settings: *Enabled* and *Disabled*.

FB Page Close Prediction
Set the Frame Buffer Page Close Prediction function. This feature automatically closes those frame-buffer DRAM pages no longer needed. It is expected to improve DRAM related performance. Settings: *Enabled* and *Disabled*.

Integrated Peripherals

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Integrated Peripherals
┌──────────────────────────────────────────┬───────────────────────┐
│ ▶ SuperIO Device           [Press Enter]  │       Item Help       │
│                                           │                       │
│   Onboard IDE Channel 1    [Enabled]      │  Menu Level    ▶      │
│   Onboard IDE Channel 2    [Enabled]      │                       │
│   IDE Prefetch Mode        [Enabled]      │                       │
│                                           │                       │
│   Display Card Priority    [AGP]          │                       │
│   Onboard Lan Boot ROM     [Disabled]     │                       │
│                                           │                       │
│   AC97 Audio               [Auto]         │                       │
│   MC97 Modem               [Auto]         │                       │
│   VIA OnChip LAN           [Enabled]      │                       │
│                                           │                       │
│   USB Keyboard Support     [Disabled]     │                       │
│   Onboard Fast IR          [Disabled]     │                       │
│   Fast IR IRQ                  --         │                       │
│   Fast IR DMA                  --         │                       │
│                                           │                       │
├──────────────────────────────────────────┴───────────────────────┤
│ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help │
│   F5: Previous Values     F6: Fail-Safe Defaults  F7: Optimized Defaults │
└────────────────────────────────────────────────────────────────────┘
```

Onboard IDE Channel 1/2

The integrated peripheral controller contains an IDE interface with sup-
port for two IDE channels. Choose *Enabled* to activate each channel
separately. Settings: *Disabled, Enabled.*

IDE Prefetch Mode

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

Display Card Priority

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

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) con-
troller 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* and *Disabled.*

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. Settings: *Auto* and *Disabled*.

VIA-3043 OnChip LAN
Decide whether to invoke the boot ROM of VIA-3043 onchip LAN. Settings: *Enabled* and *Disabled*.

USB Keyboard Support
Enable USB Keyboard Support for DOS and Windows 95. Settings: *Enabled* and *Disabled*.

Onboard LAN Boot ROM
Decide whether to invoke the boot ROM of Onboard LAN. Settings: *Enabled* and *Disabled*.

Onboard Fast IR
Enable onboard fast IR functions. Settings: *Enabled* and *Disabled.*

SuperIO Device

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

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility
                            SuperIO Device
    ┌──────────────────────────────────────────┬─────────────────────────┐
    │ Onboard FDC Controller      [Enabled]     │      Item Help          │
    │ Onboard Serial Port 1       [3F8/IRQ4]    │                         │
    │ Onboard Serial Port 2       [2F8/IRQ3]    │  Menu Level    ▶▶       │
    │ Onboard Parallel Port       [378/IRQ7]    │                         │
    │ Parallel Port Mode          [SPP]         │                         │
    │ EPP Mode Select             [EPP1.7]      │                         │
    │ ECP Mode Use DMA            [3]           │                         │
    │ Game Port Address           [200]         │                         │
    │ Midi Port Address           [330]         │                         │
    │ Midi Port IRQ               [10]          │                         │
    │                                           │                         │
    │                                           │                         │
    │                                           │                         │
    │                                           │                         │
    │                                           │                         │
    └──────────────────────────────────────────┴─────────────────────────┘
    ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
       F5: Previous Values     F6: Fail-Safe Defaults   F7: Optimized Defaults
```

Onboard FDC Controller

Enable the onboard floppy controller. Select "Enabled" when you have installed a floppy disk drive. Settings: *Enabled* and *Disabled*.

Onboard Serial Port 1/2

Set 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*.

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

Set the parallel port mode. To operate the onboard parallel port as Standard Parallel Port, choose "SPP." To operate the onboard parallel port in the EPP mode, choose "EPP." By choosing "ECP", the onboard parallel port will operate in ECP mode. Choosing "ECP + EPP" will allow the onboard parallel port to support both the ECP and EPP modes simultaneously. Settings are:

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port
ECP + EPP: Extended Capability Port + Enhanced Parallel Port

EPP Mode Select
Select the Enhance Parallel Port mode. Settings: *EPP1.9* and *EPP1.7.*

ECP Mode Use DMA
ECP utilises a DMA channel. This field is only available if Parallel Port Mode is set to "ECP". Select DMA channel for ECP use. Settings: *1* and *3.*

Game Port Address
Set I./O port address for onboard game port. Settings: *Disabled,* and *200.*

Midi Port Address
Set I./O port address for onboard midi port. Settings: *Disabled, 330,* and *300 .*

Midi Port IRQ
Set an IRQ for the onboard midi port. This field is only available if midi port is not "Disabled". Settings: *5* and *10.*

Power Management Setup

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

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                     Power Management Setup

   ACPI function              [Enabled]                Item Help
   ACPI Suspend Type          [S1(POS)]
   HDD Power Down             [Disabled]        Menu Level  ▶
   Power Management Timer     [Disabled]
   Video Off Option           [Suspend -> Off]  ACPI is required in
                                                Windows 98SE, ME, 2000
   Power Off by PWRBTN        [Instant-Off]     & XP for better power
   Run VGABIOS if S3 Resume   [Auto]            management integrity.
   AC Loss Auto restart       [Off]

 ▶ Peripherals Activities     [Press Enter]
 ▶ IRQs Activities            [Press Enter]




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

ACPI Function

Activate the ACPI (Advanced Configuration and Power Management Interface) Function. If your operating system is ACPI-aware (i.e. Windows 98/98SE/ME/2000/XP) select Enabled. Settings: *Enabled* and *Disabled*.

ACPI Suspend Type

Set the power saving mode for ACPI function. Settings are:

S1/POS - S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system context.

S3/STR - S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.

S1 & S3 - Depends on OS to select S1 or S3.

HDD Power Down

Set the time to power down HDD after hard disk inactivity. Settings: *Disable* and *1~15* Min.

Power Management Timer
Set the idle time before system enters power saving mode. ACPI OS such as Windows XP will override this option. Settings: *Disable* and *1/2/4/6/ 8/10/20/30/40* min and *1* hr.

Video Off Option
Select whether or not to turn off the screen when system enters power saving mode, ACPI OS such as Windows XP will override this option. Settings are:
Always On - The screen is always on even when system enters power saving mode.
Suspend -> Off - The screen is turned off when system enters power saving mode.

Power Off by PWRBTN
This field configures the power button function. Settings are:
Delay 4 Sec - The system is turned off if power button is pressed for more than four seconds.
Instant-Off - The power button functions as a normal power-on/-off button.

Run VGABIOS if S3 Resume
Select whether to run VGA BIOS if resumed from S3 state. This is only necessary for older VGA drivers, select Auto if in doubt. Settings: *Auto, Yes* and *No.*

AC Loss Auto restart
The field defines how the system will act after an AC power loss during system operation. Choose the system power state when AC power resumes. Settings are:
Off Keep the system in off state until power button is pressed.
On The system automatically restarts when AC power resumes.

Peripheral Activities

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

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                         Peripherals Activities

   VGA Event                      [Off]                    Item Help
   LPT & COM Event                [LPT/COM]
   HDD & FDD Event                [On]            Menu Level    ▶▶
   PCI Master Event               [Off]
                                                 Decide whether or not
   PS2KB Wakeup Select            [Hot key]      the power management
   PS2MS Wakeup from S3/S4/S5[Disabled]          unit should monitor
   PS2KB Wakeup from S3/S4/S5[Disabled]          VGA activities.
   USB Resume                     [Disabled]
   PowerOn by PCI Card            [Disabled]
   Modem Ring Resume              [Disabled]

   RTC Alarm Resume               [Disabled]
   Date (of Month)                --
   Resume Time (hh:mm:ss)         --: -- : --




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

VGA Event

Decide whether or not the power management unit should monitor VGA activities. Settings: *Off* and *ON*.

LPT & COM Event

Decide whether or not the power management unit should monitor parallel port (LPT) and serial port (COM) activities. Settings: *None, LPT, COM* and *LPT/COM*.

HDD & FDD Event

Decide whether or not the power management unit should monitor hard disks and floppy drives activties. Settings: *Off* and *On*.

PCI Master Event

Decide whether or not the power management unit should monitor PCI master activties. Settings: *Off* and *On*.

PS2KB Wakeup Select

When Select Password, Please press ENTER key to change Password, Max 8 characters. Settings: *Password* and *Hot key*.

PS2MS Wakeup from suspend

Enable mouse to wake up system from power saving mode. Settings: *Enabled* and *Disabled.*

PS2KB Wakeup from suspend

Select which "Hot-Key" is used to wake-up the system from power saving mode. Settings: *Disabled, Ctrl+F1, Ctrl+F2, Ctrl+F3, Ctrl+F4, Ctrl+F5, Ctrl+F6, Ctrl+F7, Ctrl+F8, Ctrl+F9, Ctrl+F10, Ctrl+F11, Ctrl+F12, Power, Wake* and *Any Key.*

USB Resume

Decide whether or not the USB devices can wake the system from suspend state. Settings: *Disabled* and *Enabled.*

PowerOn by PCI Card

Decide whether or not a PCI card can power up the system or resume it from suspend state. Such PCI cards include LAN, onboard USB ports, etc. Settings: *Disabled* and *Enabled.*

Modem Ring Resume

Decide whether or not Ring-In signals from Modem can wake up the system from suspend state. Settings: *Disabled* and *Enabled.*

RTC Alarm Resume

The field is used to enable or disable the feature of booting up the system on a scheduled time/date. Settings: *Disabled* and *Enabled.*

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. F*ormat is <hour><minute><second>.

IRQs Activities

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

```
                  Phoenix - Award WorkstationBIOS CMOS Setup Utility
                                  IRQs Activities
 ┌────────────────────────────────────────────────┬──────────────────────────┐
 │   Primary INTR              [On]                 │        Item Help         │
 │   IRQ3  (COM 2)             [Disabled]           ├──────────────────────────┤
 │   IRQ4  (COM 1)             [Enabled]            │  Menu Level    ▶▶        │
 │   IRQ5  (LPT 2)             [Enabled]            │                          │
 │   IRQ6  (Floppy Disk)       [Enabled]            │  If you choose Disabled  │
 │   IRQ7  (LPT 1)             [Enabled]            │  , the power management  │
 │   IRQ8  (RTC Alarm)         [Disabled]           │  unit will not monitor   │
 │   IRQ9  (IRQ2 Redir)        [Disabled]           │  any IRQ activities.     │
 │   IRQ10 (Reserved)          [Disabled]           │                          │
 │   IRQ11 (Reserved)          [Disabled]           │                          │
 │   IRQ12 (PS/2 Mouse)        [Enabled]            │                          │
 │   IRQ13 (Coprocessor)       [Enabled]            │                          │
 │   IRQ14 (Hard Disk)         [Enabled]            │                          │
 │   IRQ15 (Reserved)          [Disabled]           │                          │
 │                                                  │                          │
 │                                                  │                          │
 │                                                  │                          │
 ├──────────────────────────────────────────────────────────────────────────┤
 │ ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help│
 │      F5: Previous Values     F6: Fail-Safe Defaults   F7: Optimized Defaults │
 └──────────────────────────────────────────────────────────────────────────┘
```

Primary INTR

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

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. Settings: *Disabled* and *Enabled.*

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 the BIOS configuration of the PCI bus system. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
          Phoenix - Award WorkstationBIOS CMOS Setup Utility
                       PnP/PCI Configurations

   PNP OS Installed          [NO]              │       Item Help
   Reset Configuration Data  [Disabled]        ├──────────────────────
                                               │ Menu Level    ▶
   Resources Controlled By   [Auto(ESCD)]      │
   IRQ Resources               --              │ Select Yes if you are
   Assign IRQ For VGA        [Enabled]         │ using a Plug and Play
   Assign IRQ For USB        [Enabled]         │ capable operating
                                               │ system Select No if
                                               │ you need the BIOS to
                                               │ configure non-boot
                                               │ devices



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

PNP OS Installed

When set to *Yes*, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). Other cards will be initialized by the PnP operating system like Windows®95 or 98/98SE. When set to *No*, BIOS will initialize all the PnP cards. Set to *Yes* the operating system is Plug & Play capable. The settings: *No* and *Yes*.

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: *Enabled* and *Disabled*.

Resource Controlled By

The BIOS can automatically configure all the boot and Plug and Play compatible devices. Choose "Auto(ESCD)" if unsure, the BIOS will automatically assign IRQ, DMA and memory base address fields. The settings: *Auto (ESCD)* and *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.

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
                              IRQ Resources

     IRQ-3  assigned to       [PCI Device]              Item Help
     IRQ-4  assigned to       [PCI Device]
     IRQ-5  assigned to       [PCI Device]        Menu Level    ▶▶
     IRQ-7  assigned to       [PCI Device]
     IRQ-10 assigned to       [PCI Device]        Legacy ISA for devices
     IRQ-11 assigned to       [PCI Device]        compliant with the
     IRQ-12 assigned to       [PCI Device]        original PC AT bus
     IRQ-14 assigned to       [PCI Device]        specification, PCI/ISA
     IRQ-15 assigned to       [PCI Device]        PnP for devices
                                                  compliant with the
                                                  Plug and Play standard
                                                  whether designed for
                                                  PCI or ISA bus
                                                  architecture

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

IRQ Resources list IRQ 3/4/5/7/10/11/12/14/15 for users to set each IRQ a type depending on the type of device using the IRQ. Settings:

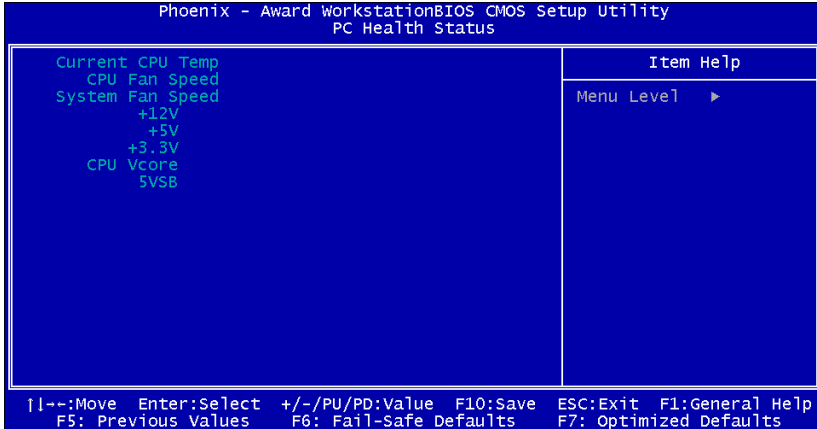*PCI Device*   For Plug & Play compatible devices designed for PCI bus architecture.

Reserved   The IRQ will be reserved for further request.

Assign IRQ For VGA/USB

Assign IRQ for VGA and USB devices. Settings: *Disabled* and *Enabled*.

PC Health Status

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

```
         Phoenix - Award WorkstationBIOS CMOS Setup Utility
                         PC Health Status
┌────────────────────────────────────────────┬─────────────────────────┐
│   Current CPU Temp                           │        Item Help        │
│    CPU Fan Speed                             ├─────────────────────────┤
│ System Fan Speed                             │  Menu Level      ▶      │
│          +12V                                │                         │
│           +5V                                │                         │
│          +3.3V                               │                         │
│    CPU Vcore                                 │                         │
│          5VSB                                │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
│                                              │                         │
└────────────────────────────────────────────┴─────────────────────────┘
 ↑↓→←:Move   Enter:Select  +/-/PU/PD:Value  F10:Save   ESC:Exit  F1:General Help
    F5: Previous Values     F6: Fail-Safe Defaults     F7: Optimized Defaults
```

Current CPU Temp, CPU Fan Speed, System Fan Speed, +12V, +5V, +3.3V, CPU Vcore, 5VSB.

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

```
        Phoenix - Award WorkstationBIOS CMOS Setup Utility
                      Frequency/Voltage Control
┌─────────────────────────────────────────────┬───────────────────────┐
│  DRAM Clock                 [By SPD]          │      Item Help        │
│  DRAM Timing                [By SPD]          ├───────────────────────┤
│  SDRAM CAS Latency            --              │  Menu Level    ▶      │
│  Bank Interleave              --              │                       │
│  Precharge to Active(Trp)     --              │                       │
│  Active to Precharge(Tras)    --              │                       │
│  Active to CMD(Trcd)          --              │                       │
│  DRAM Command Rate          [2T Command]      │                       │
│  DRAM Burst Len             [4]               │                       │
│                                               │                       │
│  Current CPU Voltage         Default          │                       │
│  CPU Vcore Select           [Default]         │                       │
│  DRAM Voltage               [Default]         │                       │
│                                               │                       │
│  Current CPU Speed                            │                       │
│  CPU Clock                  [100]             │                       │
│  CPU Ratio                  [ 8 X]            │                       │
│                                               │                       │
│  Spread Spectrum            [Disabled]        │                       │
└─────────────────────────────────────────────┴───────────────────────┘
 ↑↓→←:Move  Enter:Select  +/-/PU/PD:Value  F10:Save  ESC:Exit  F1:General Help
   F5: Previous Values    F6: Fail-Safe Defaults   F7: Optimized Defaults
```

DRAM Clock

The chipset supports synchronous and asynchronous mode between host clock and DRAM clock frequency. Settings: *By SPD, 100MHz* and *133MHz*.

DRAM Timing

This setting determines whether DRAM timing is configured by reading 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. Settings: *Manual* and *By SPD*.

SDRAM CAS Latency

Set the time between SDRAM read command and when the data actually becomes available. Settings: *2* and *2.5*.

Bank Interleave

Set the interleave mode of the SDRAM interface. Interleaving allows banks of SDRAM to alternate their refresh and access cycles. One bank will undergo its refresh cycle while another is being accessed. This improves performance of the SDRAM by masking the refresh time of each bank. Settings: *Disabled, 2 Bank* and *4 Bank*.

Precharge to Active (Trp)

Set the time from DRAM precharge to active state. Settings: *2T* and *3T*.

Active to Precharge (Tras)
Set the time from active back to precharge state. Settings: *5T* and *6T.*

Active to CMD (Trcd)
Set the time from active state to command state. Settings: *2T* and *3T.*

DRAM Command Rate
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. Settings: *2T Command* and *1T Command*.

DRAM Burst Len
This setting allows you to set the size for DRAM Burst-Length. The bigger the size, the faster the system addresses memory. Settings: *4* and *8*.

CPU Vcore Select
This setting allows you to adjust the CPU Vcore by increasing or decreasing 0.025 each time. Please note that it may be dangerous to adjust the Vcore over 10% of original CPU specification.

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. If the CPU clock is set over the tolerance limit of the CPU, the mainboard will show the following message "IMPROPER OVERCLOCKING SETTING, SYSTEM IS RESETTING CPU CLOCK TO DEFAULT. Please re-enter BIOS Setup and remember to save before quit!". This feature protects the CPU from damage due to overclocking.

CPU Clock 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.
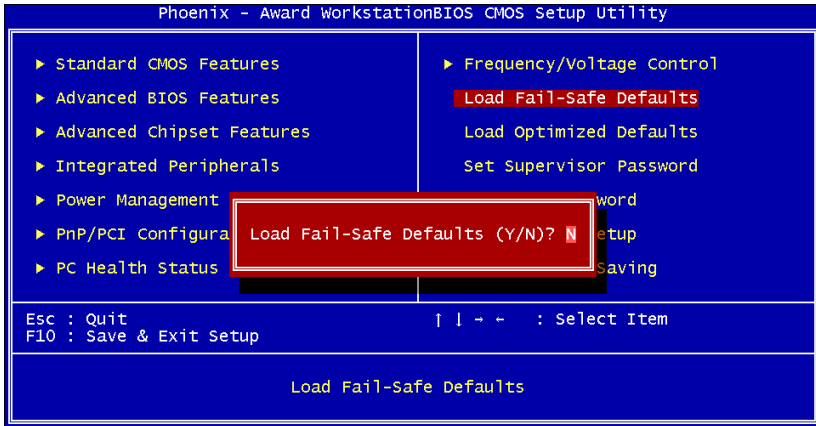
Spread Spectrum
When the motherboard's clock generator pulses, the extreme values (spikes) of the pulses creates EMI (Electromagnetic Interference). The Spread Spectrum function reduces the EMI generated by modulating the pulses so that the spikes of the pulses are reduced to flatter curves. If you do not have any EMI problems, 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. Settings: *Disabled, -1.50%, -1.00%, -0.70%, -0.50%, +/-0.75%, +/-0.50%, +/-0.35%* and *+/-0.25%*.

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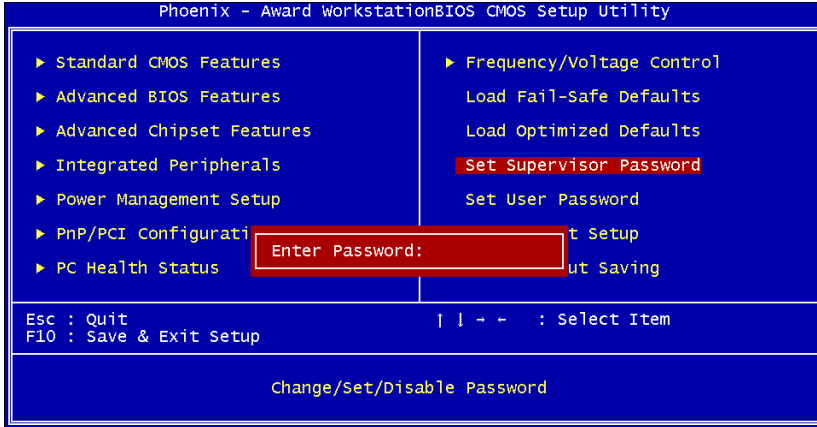
When you select Load Optimized Defaults, a message as below appears:

```
            Phoenix - Award WorkstationBIOS CMOS Setup Utility
  ┌──────────────────────────────────────────────────────────────────┐
  │  ▶ Standard CMOS Features        ▶ Frequency/Voltage Control       │
  │  ▶ Advanced BIOS Features           Load Fail-Safe Defaults        │
  │  ▶ Advanced Chipset Features        Load Optimized Defaults        │
  │  ▶ Integrated Peripherals           Set Supervisor Password        │
  │  ▶ Power Management    ┌─────────────────────────────────┐ word    │
  │  ▶ PnP/PCI Configura   │ Load Optimized Defaults (Y/N)? N │ etup    │
  │  ▶ PC Health Status    └─────────────────────────────────┘ Saving  │
  │                                                                    │
  ├──────────────────────────────────────────────────────────────────┤
  │  Esc : Quit                        ↑ ↓ → ←   : Select Item         │
  │  F10 : Save & Exit Setup                                           │
  ├──────────────────────────────────────────────────────────────────┤
  │                    Load Optimized Defaults                         │
  └──────────────────────────────────────────────────────────────────┘
```

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:

```
           Phoenix - Award WorkstationBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control
  ▶ Advanced BIOS Features             Load Fail-Safe Defaults
  ▶ Advanced Chipset Features          Load Optimized Defaults
  ▶ Integrated Peripherals             Set Supervisor Password
  ▶ Power Management Setup             Set User Password
  ▶ PnP/PCI Configurati                                  t Setup
  ▶ PC Health Status      Enter Password:                ut Saving

  Esc : Quit                          ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                    Change/Set/Disable Password
```

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 that 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 entry to Setup. If set to *Setup*, password prompt only occurs when trying to enter Setup.
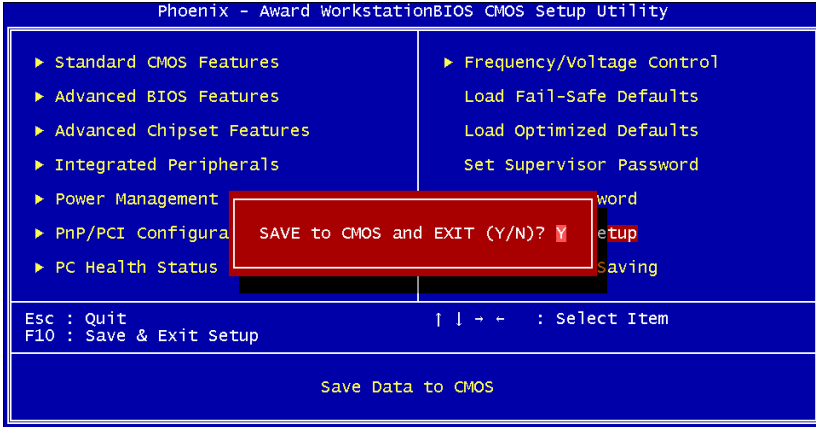
About Supervisor Password & User Password:

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.
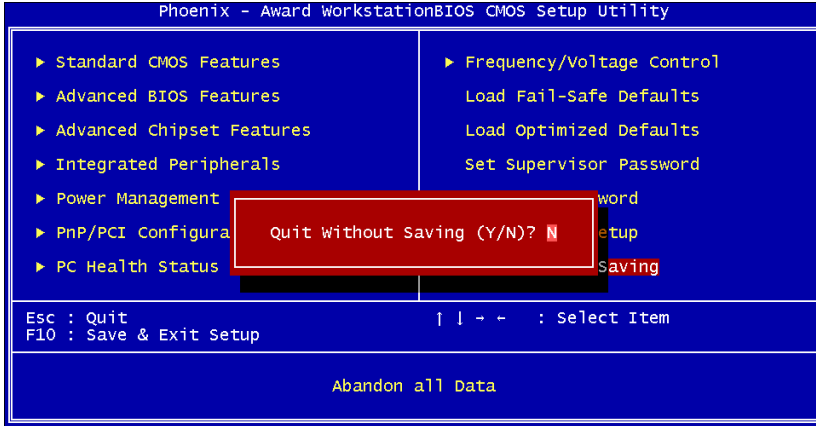
Save & Exit Setup

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:

```
         Phoenix - Award WorkstationBIOS CMOS Setup Utility
  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control
  ▶ Advanced BIOS Features            Load Fail-Safe Defaults
  ▶ Advanced Chipset Features         Load Optimized Defaults
  ▶ Integrated Peripherals            Set Supervisor Password
  ▶ Power Management       ┌──────────────────────────┐word
  ▶ PnP/PCI Configura      │ SAVE to CMOS and EXIT (Y/N)? Y │etup
  ▶ PC Health Status       └──────────────────────────┘Saving

  Esc : Quit                          ↑ ↓ → ←   : Select Item
  F10 : Save & Exit Setup

                         Save Data to CMOS
```

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

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:

```
              Phoenix - Award WorkstationBIOS CMOS Setup Utility

  ▶ Standard CMOS Features          ▶ Frequency/Voltage Control
  ▶ Advanced BIOS Features            Load Fail-Safe Defaults
  ▶ Advanced Chipset Features         Load Optimized Defaults
  ▶ Integrated Peripherals            Set Supervisor Password
  ▶ Power Management        word
  ▶ PnP/PCI Configura   Quit Without Saving (Y/N)? N   etup
  ▶ PC Health Status                               Saving

 Esc : Quit                       ↑ ↓ → ←   : Select Item
 F10 : Save & Exit Setup

                         Abandon all Data
```

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

Software Setup

This chapter gives you brief descriptions of each mainboard drivers and applications. It consists of the following topic:

Note: You must install VIA chipset drivers first before installing other drivers such as audio or VGA drivers. The applications will only function correctly if the necessary drivers are already installed.

Driver Utilities CD Content

Getting Started

The VIA P4MA PRO 533 mainboard includes a Driver Utilities CD which contains driver utilities and software to enhance the performance of the mainboard. Please check that you have this CD in your retail box. If the CD is missing in your retail box, please contact your local dealer for the CD.

Note: The driver utilities and software are updated from time to time. Please visit VPSD website (http://www.viavpsd.com/) for the latest updated driver utilities and software.

Running the Driver Utilities CD

To start using the CD, just simply insert the CD into your local CD-ROM or DVD-ROM drive. The CD should run automatically when you close your CD-ROM or DVD-ROM drive. The driver utilities and software menu screen should then appear on your desktop. If the CD does not run automatically, you can run the CD manually by typing "D:\Setup.exe" at Start\Run.

(Please note that D: might not be your CD-ROM/DVD-ROM drive's letter. Make sure you type the correct letter of CD-ROM/DVD-ROM drive on your system).

CD Content

Upon running the CD, the following driver utilities and software menu screen appears as follow:

The driver utilities and software in this CD are:

- **VIA 4in1 Drivers**: Contains VIA ATAPI Vendor Support Driver (enables the performance enhancing bus mastering functions on ATA-capable Hard Disk Drives and ensures IDE device compatibility), AGP VxD Driver (provides service routines to your VGA driver and interface directly to hardware, providing fast graphical access), IRQ Routing Miniport Driver (sets the system's PCI IRQ routing sequence) and VIA INF Driver (enables the VIA Power Management function).

- **VIA ProSavage8 P4M266A VGA Driver**: Enhance the onboard VIA VGA.

- **VIA Audio Driver**: Enhance the onboard VIA audio chip.

- **VIA LAN Driver**: Enhance the onboard VIA LAN chip.

- **VIA USB 2.0 Driver**: Enhance VIA USB 2.0 ports.

- **VIA FIR Driver**: Support for FIR.

- **FliteDeck**: Contains four sub-utilities (optional)
    i) JetStream: enables directly overclocking FSB under Windows OS.
    ii) MissionControl: lets you monitor local and remote computer systems.
    iii) SysProbe: allows you to view your computer hardware configuration
    iv) FlashPort: allows you to flash BIOS under Windows OS.

5

Appendix

This chapter gives you brief descriptions of how Smart 5.1 is enabled and what Hyper-Threading is. It consists of the following topics:

Smart 5.1 - Intelligent 6 Channel Audio

Enabling Smart 5.1 Intelligent 6 Channel Audio

Smart5.1 allows the user to output 6 channel audio directly from the audio jacks on the mainboard, using the traditional line-in and microphone jacks as output jacks. For it to work properly, both the OS and the software application used need to support 6 channel audio. Win98 supports 4 channel only.Please follow the example A and B to enable the Smart 5.1 funtion, and the examples are based on Windows XP. Start the settings in Control Panel of your computer.

Example A

1. Double click [Sounds and Audio Devices] icon in Control Panel.

2. The panel of [Sounds and Audio Devices Properties] appears and select [Audio] tab. Then press [Advanced] as shown in the
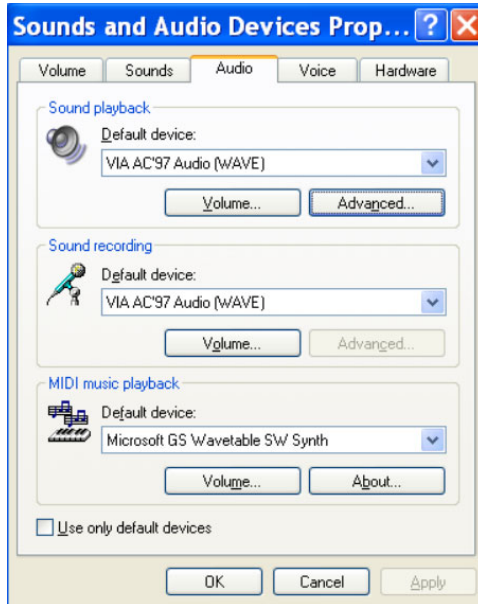
3. Choose [5.1 surround sound speakers] to support the 6 channel function.
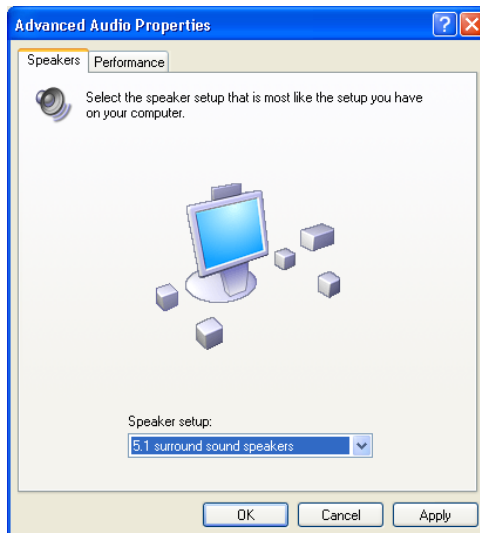
Example B

1. Double click [Sounds and Audio Devices] icon in Control Panel and then select [Audio] tab on the panel as shown below. Press [Volume] button in the [Sound playback] column.
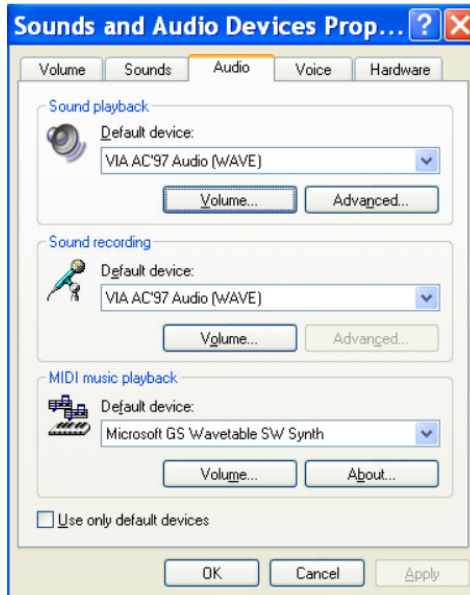
2. [Front Speaker] panel appears and then select [Options] menu to check the item [Advanced
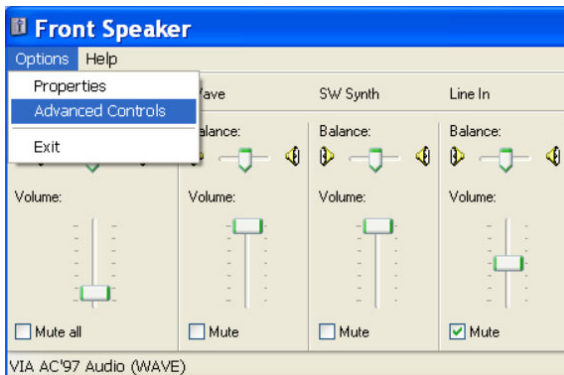
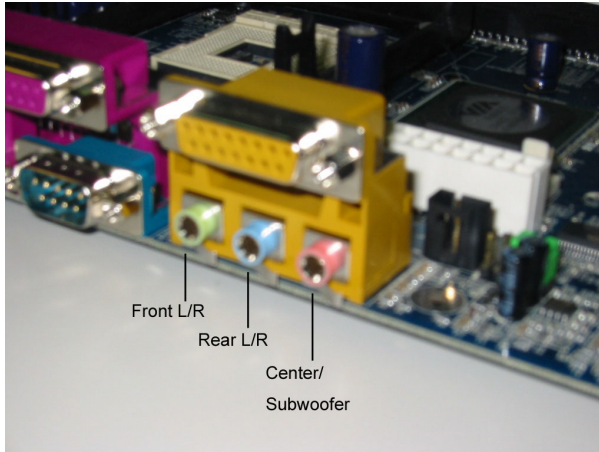3. Then [Front Speaker] panel displays [Advanced] button and press it.
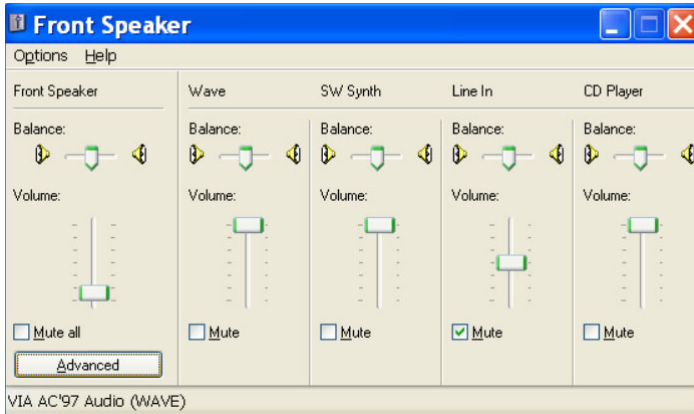
4. Check the item [Smart5.1 Enable] in the panel below.
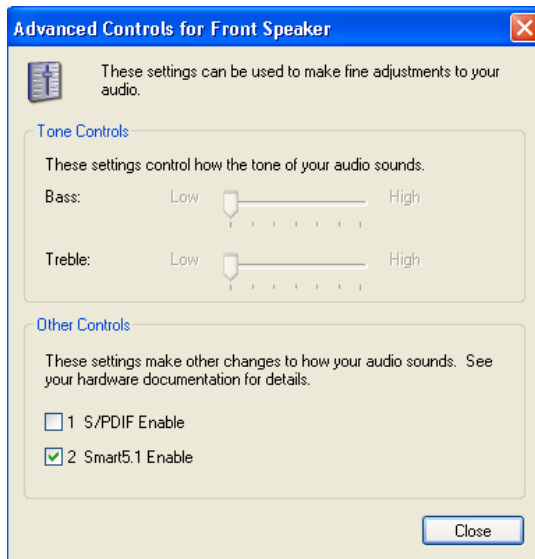
After completing the previous settings, you just have to connect your speakers to the 3 Jack Connector like shown below. Now your Smart 5.1 capabilities are enabled.

Front L/R
Rear L/R
Center/
Subwoofer

Following the system setup, users need to install software for playing DVD. Currently the two main DVD-playing applications are WIN-DVD v4.0 and Power DVD XP v4.0. Both of them are able to support 5.1 channel. Please follow the instructions below to do the proper settings for Smart 5.1.

WIN-DVD v4.0
1. Open the application and click on the right arrow icon shown as the picture below. Then select [Audio Effect].

2. The panel of Audio Effect appears and click on the lower right corner button as shown in the picture below.
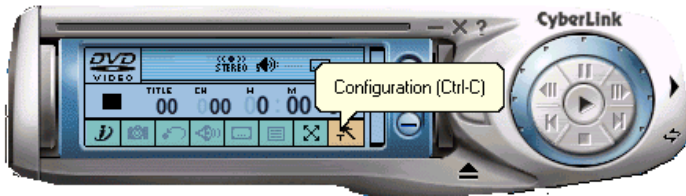

3. The [Setup] panel appears and select [Audio] tab. Then choose the item [6 Channel (5.1 Home Theater)] in the column of [Audio Speaker Configuration]. Finally users can click [Test] button to verify the channel output. You will hear sound of flowing water from different speakers if each setup has been completed successfully.
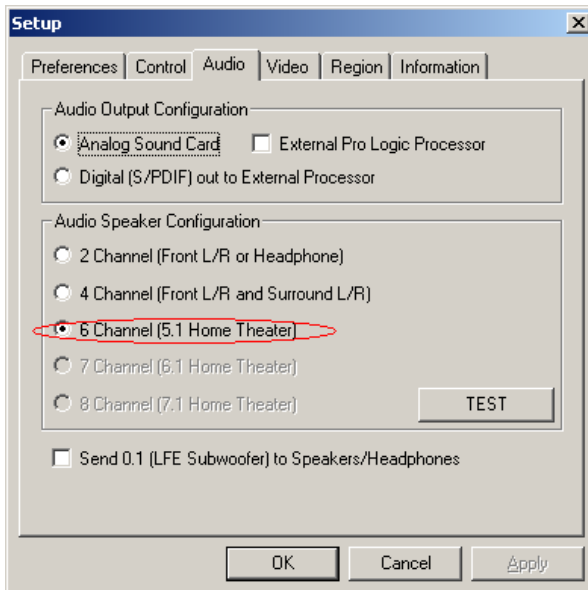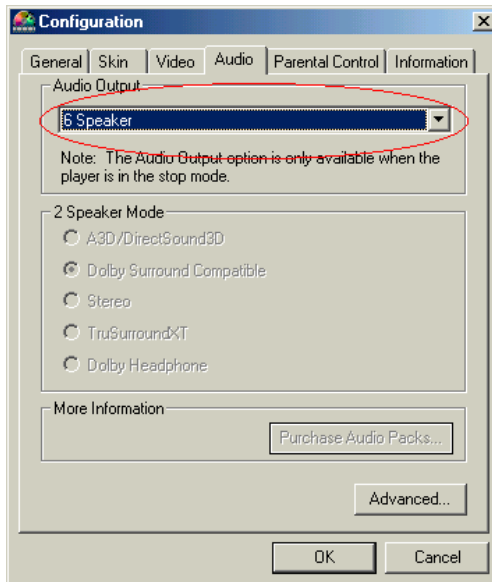
Power-DVD XP v4.0

1. Open the application and click on the [Configuration] icon shown as the picture below.

2. The panel of Configuration appears and select [Audio] tab. Then choose [6 Speaker] in the column of [Audio Output] and click [Ok].

Through the system operation and software settings, users can take advantage of Smart 5.1 6-channel output with ease!

Hyper-Threading Technology

Intel® Hyper-Threading Technology is a type of simultaneous multi-threading technology (SMT). Multiple threads of software applications are able to be run concurrently on one processor. Hyper-Threading Technology makes a single physical processor simulate two logical processors which enhance the executing performance especially in operating systems that handle multiple applications simultaneously. Please note that only Windows 2000 Server, Windows 2000 Professional, and Windows XP Professional support Hyper-Threading Technology. For more details, please visit Microsoft®website. Other operating systems may support this technology but users need to do some further settings to enable this funciton. Please visit http://www.viamainboard.com for more updated details. It is strongly recommended that users enter BIOS settings to disable the function of Hyper -Threading Technology when users are not sure whether software supports the technology or not.