HOT-591P
Pentium™ processor
Based AGP MAIN BOARD
User's Manual

FCC Notice:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy. If not installed and used properly, in strict accordance with the manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures :

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/television technician for help and for additional suggestions.

The user may find the following booklet prepared by the Federal Communications Commission helpful "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office. Washington, DC 20402, Stock 004-000-00345-4

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the users authority to operate this equipment.

Note : In order for an installation of this product to maintain compliance with the limits for a Class B device, shielded cables and power cord must be used.

CE Notice:

Following standards were applied to this product, in order to achieve compliance with the electromagnetic compatibility :

- Immunity in accordance with EN 50082-1: 1992
- Emissions in accordance with EN 55022: 1987 Class B.

NOTICE

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Manual Ver 1.0

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PREFACE

HOT-591P is a high performace, cost effective, and energy efficient mainboard for the implementation of AGP, PCI, and ISA in desktop personal computer systems from 60MHz to 100MHz based on 64-bit Socket-7 super-scalar processors.

HOT-591P mainboard is a highly integrated IBM PC/AT compatible AT form-factor system board designed to meet the industry's most demanding desktop applications. Based on the VIA's MVP3 chipset.

HOT-591P accept AMD K6-3D, K6, K5, Intel Pentium P54C, Pentium MMX, IDT-C6 and Cyrix/IBM 6x86, 6x86L, 6x86MX processors and also features high-performance pipelined burst secondary cache memory support with size of 512KB. The memory subsystem is designed supports standard Fast Page Mode (FPM), EDO, SDRAM, and 100MHz SDRAM.

HOT-591P complies with the Accelerated Graphics Port Specification 1.0 and features support for 60/75/83/100MHz CPU bus frequencies and the 66MHz AGP bus frequency.

HOT-591P provides a new level of I/O integration. VIA MVP3 chipset provides increased integration and improved performance over other chipset designs.

The VIA's MVP3 chipset provides an integrated Bus Mastering IDE controller with two high performance Ultra 33 DMA IDE interfaces for up to four IDE devices.

The onboard I/O controller provides the standard PC I/O functions: floppy interface, two FIFO serial ports, an IrDA device port and a SPP/EPP/ECP capable parallel port.

Up to three PCI local bus slots provide a high bandwidth data path for data-movement intensive functions such as graphics, and up to three ISA slots complete the I/O function.

HOT-591P provides the foundation for cost effective, high performance, highly expandable platforms, which deliver the latest in Pentium processor and I/O standard.

HOT-591P Mainboard is carefully designed for the demanding PC user who wants high performance and many intelligent features in a compact package:

1 FEATURES

Chipset

Features VIA's 82C598AT MVP3 Chipset with I/O subsystems

Main Processor

AMD-K6 3D, AMD-K6 166~300 MHz, K5 PR90~PR166,
Intel Pentium (P54C) 90~200 MHz, Pentium MMX (P55C) 166~233 MHz,
Cyrix/IBM 6x86 P150+~P200+, 6x86L P200+, 6x86MX PR166~PR233,
IDT-C6 150~200MHz

Secondary Cache

Onboard 512KB Pipelined Burst Cache

Versatile Memory Supports

Equipped with two SIMM and two DIMM sockets for (8, 16, 32, 64 or 128MB) 72-pin EDO or FPM and 168-pin 66MHz or 100MHz PC SDRAM memory modules up to 256 MB

Expansion Slots

One AGP slot
Three PCI slot
Three ISA slot

AGP (Accelerated Graphics Port)

AGP Specification 1.0
HOT-591P main board equipped with an AGP slot for an AGP VGA card that supports 133MHz 2X mode for texture mapping z-buffering and alpha blending. AGP allows 3D applications to run faster and smoothly.

Onboard I/O Chip

One Floppy port
One PS/2 mouse and Keyboard connector
Two high-speed UART compatible serial port
Serial Port 2 can also be directed from COM2 to the Infrared Module for wireless connections One parallel port with ECP and EPP capabilities

Onboard PCI Bus Master IDE Controller

Two Ultra DMA/33 Bus Master IDE Ports supports four IDE devices up to 33 MB/sec IDE transfers and supports Enhanced PIO Modes 3 and 4 and Bus Master IDE DMA Mode 2 devices

Onboard 12-pin AT and 20-pin ATX Power Supply

ATX power supports soft-on/off function

System BIOS

Licensed BIOS with additional feature:

* Flash EEPROM (128KB) for BIOS update
* ISA Plug & Play extension
* Power management
* Support DMI (Desktop Management Interface) function

ACPI:

Support ACPI (Advanced Configuration and Power Interface) function. ACPI provide more Energy Saving Features for the future operating system supporting OS Direct Power Management (OSPM) functionality.

Board Size:

AT form factor size 220mm x 220mm.

ACCESSORIES OF HOT-591P

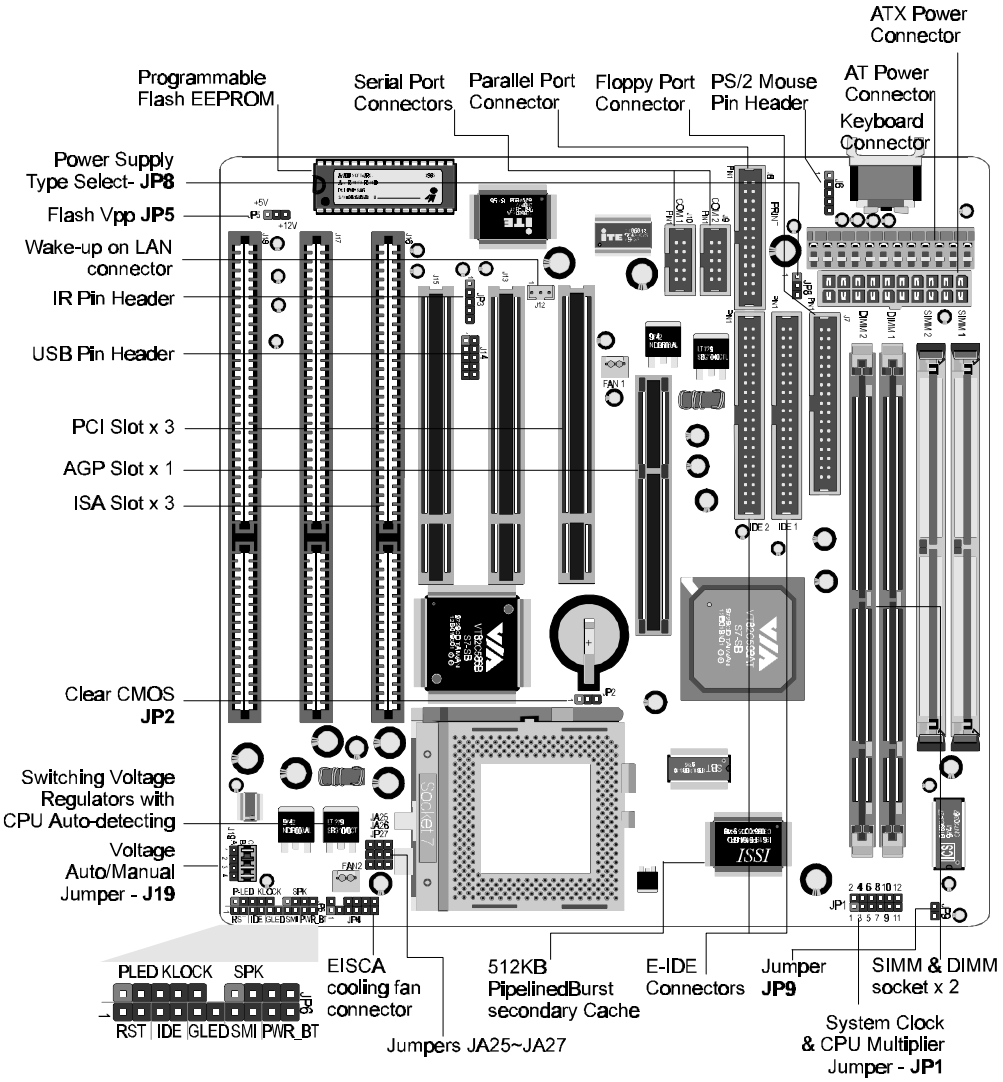


Figure 1 : Accessories of HOT-591P

2 Hardware Configuration

This chapter is designed for explaining how to configure the HOT-591P's hardware. After you install the main board, you can set jumpers, install memory on the main board, and make case connectors. Refer to this chapter whenever you upgrades or reconfigure your system.

Jumper Setting

This section describe the necessary procedures and proper jumper settings to configure the HOT-591P main board.

Jumper pin headers show on right side are used to configure system clock, CPU multiplier voltages and SDRAM clock speed.

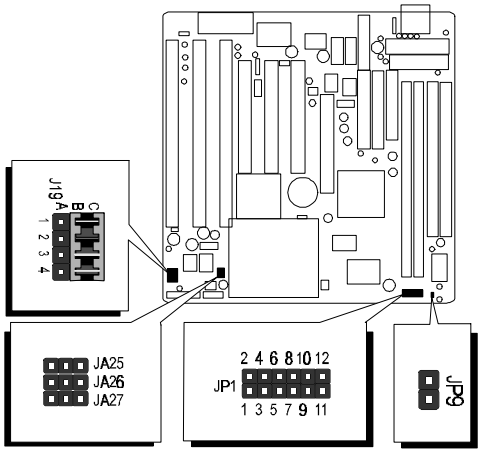


Figure 2-1 : J19, JP1, JA25~JA27 & JP9 location

System Clock - Pin Header 1~6 of Jumper JP1, and JA26, JA27

Pin header 1~6 of JP1, JA26 and JA27 are used to adjust System Clock from 60MHz to 100 MHz.

CPU Multiplier - Pin Header 7~12 of Jumper JP1

Pin header 7~12 of JP1 are used to adjust CPU core multiplier from 1.5X to 5.5X.

SDRAM Clock Speed - Jumper JA25 and JP9

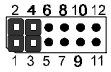
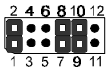
HOT-591P support 100MHz external clock speed AMD 266MHz and 300MHz K6-3D, and which allows the user to use 66MHz normal SDRAM DIMM or 100MHz PC/100 SDRAM DIMM. Jumpers JA25 and JP9 are used to set SDRAM DIMM clock speed synchronous with System Clock (CPU External Clock) or synchronous with AGP Clock.

CPU Voltages Auto/Manual Jumper- J19

HOT-591P automatically detects and adjusts the voltage to the processor.
Jumper block J19 is used to set Automatically or Manually adjust onboard voltages output from switching type regulators to CPU by inserting or removing mini jumper from pin headers. (please refer to page 16)

Those hardware settings are made through the use of jumper caps to connect jumper pins on the main board.

The following examples show the conventions used in this chapter.

	Insert mini jumpers on pin 1-2, 3-4 of JP1		Insert a jumper pack on JP19 Row B-C to set CPU voltage auto-detecting
	Insert mini jumpers on pin 1-2, 7-8 and 9-10 of JP1		Remove jumper pack from JP19 and insert mini on pin 1, 3, 4 on Row A-B to set voltage on 3.3V

CPU Configuration Table

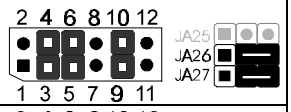
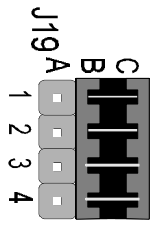
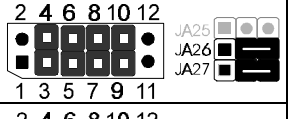
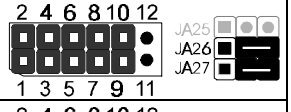
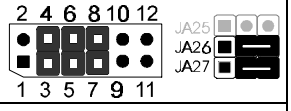
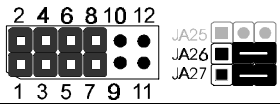
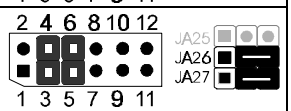
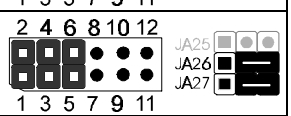
Processor	Speed	System Clock	Multiplier	Processor	Speed	System Clock	Multiplier	Processor	Speed	System Clock	Multiplier
Intel Pentium P55C MMX	233 MHz	66 MHz	3.5 x	AMD-K6	300 MHz	66 MHz	4.5 x	Cyrix/IBM 6x86MX	PR266	66 MHz	3.5 x
	200 MHz	66 MHz	3 x		266 MHz	66 MHz	4 x		PR266	75 MHz	3 x
	166 MHz	66 MHz	2.5 x		233 MHz	66 MHz	3.5 x		PR233	75 MHz	2.5 x
Intel Pentium P54C	200 MHz	66 MHz	3 x		200 MHz	66 MHz	3 x		PR233	66 MHz	3 x
	166 MHz	66 MHz	2.5 x		166 MHz	66 MHz	2.5 x		PR200	75 MHz	2 x
	150 MHz	60 MHz	2.5 x	AMD-K5	PR166	66 MHz	2.5 x		PR200	66 MHz	2.5 x
	133 MHz	66 MHz	2 x		PR133	66 MHz	1.5 x		PR166	60 MHz	2.5 x
	120 MHz	60 MHz	2 x		PR120	60 MHz	1.5 x	Cyrix/IBM 6x86L	P200+	75 MHz	2 x
	100 MHz	66 MHz	1.5 x		PR100	66 MHz	1.5 x		P166+	66 MHz	2 x
	90 MHz	60 MHz	1.5 x		PR90	60 MHz	1.5 x		P150+	60 MHz	2 x
IDT-C6	200MHz	66 MHz	3 x	AMD-K6 3D	300MHz	100 MHz	3 x	Cyrix/IBM 6x86	P200+	75 MHz	2 x
	180MHz	60 MHz	3 x		266MHz	100 MHz	2.5 x		P166+	66 MHz	2 x
	150MHz	60 MHz	2.5 x		250MHz	100 MHz	2.5 x		P150+	60 MHz	2 x

CPU Configuration - JP1, JA26, JA27 & J19

JP1, JA26, JA27 and J19 are the Jumpers that you need to set your CPU on HOT-591P. Make sure that you know the type of CPU that you are installing and refer to the proper settings which are listed below. Normally, CPU voltage is auto-detected on HOT-591P and is set to Auto-detected when HOT-591P is delivered. If you have a higher frequency CPU or you want to set CPU frequency and voltage manually, please refer to next two sections.

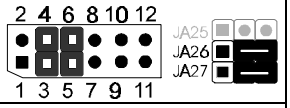
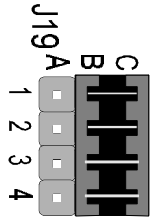
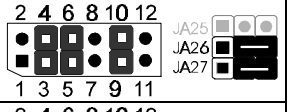
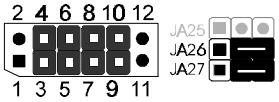
Intel Pentium (P54C) Series Settings

Table 2-1

Processor	Speed	Frequency Setting JP1, JA26, JA27	Jumper Block J19 Vcore/Vio Auto-detect
Intel Pentium (P54C)	200 MHz 66MHzx3		 3.3V/3.3V
	166 MHz 66MHzx2.5		
	150 MHz 60MHzx2.5		
	133 MHz 66MHzx2		
	120 MHz 60MHzx2		
	100 MHz 66MHzx1.5		
	90 MHz 60MHzx1.5		

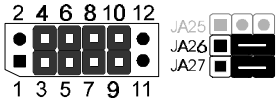
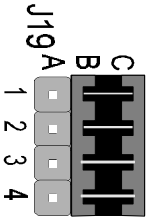
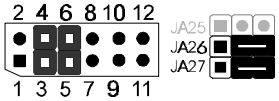
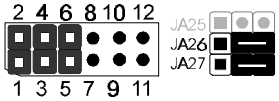
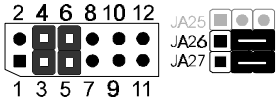
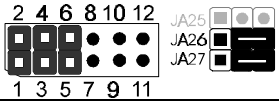
Intel Pentium MMX (P55C) Series CPUs Settings

Table 2-2

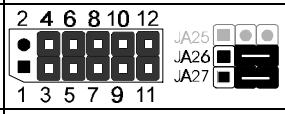
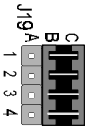
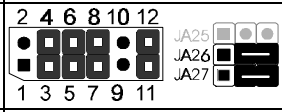
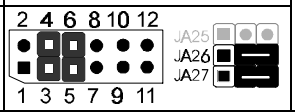
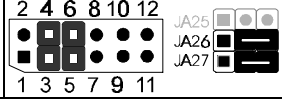
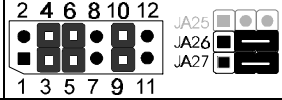
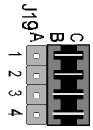
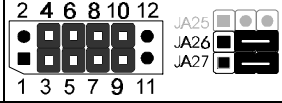
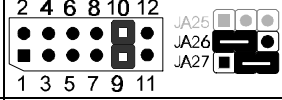
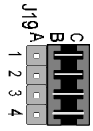
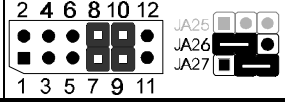
Processor	Speed	Frequency Setting JP1, JA26, JA27	Jumper Block J19 Vcore/Vio Auto-detect
Intel Pentium MMX(P55C)	233 MHz 66MHzx3.5		 2.8V/3.3V
	200 MHz 66MHzx3		
	166 MHz 66MHzx2.5		

AMD-K5 Series CPUs Settings

Table 2-3

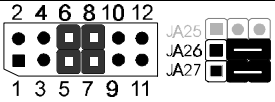
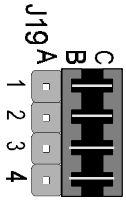
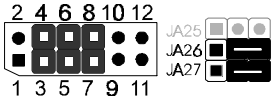
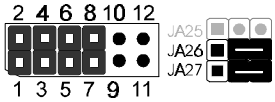
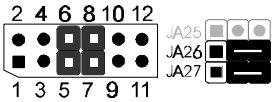
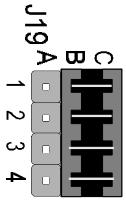
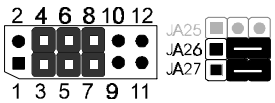
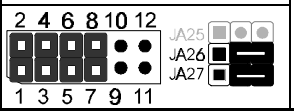
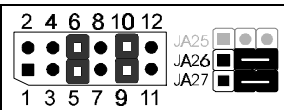
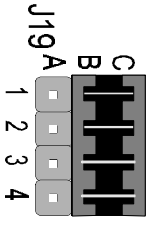
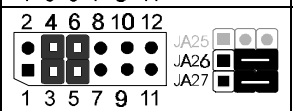
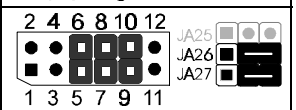
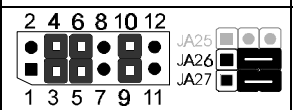
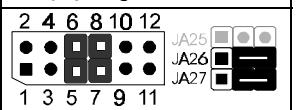
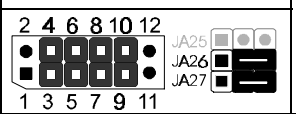
Processor	Speed	Frequency Setting JP1, JA26, JA27	Jumper Block J19 Vcore/Vio Auto-detect
AMD-K5	PR166 66MHzx2.5		 3.52V/3.52V
	PR133 66MHzx1.5		
	PR120 60MHzx1.5		
	PR100 66MHzx1.5		
	PR90 60MHzx1.5		

AMD-K6 Series CPUs Settings Table 2-4

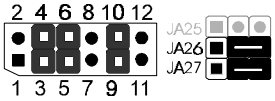
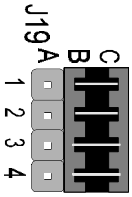
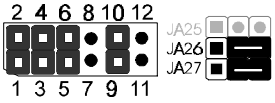
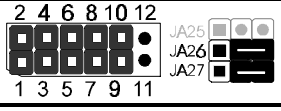
Processor	Speed	Frequency Setting JP1, JA26, JP27	Jumper Block J19 Vcore/Vio Auto-detect
AMD-K6	300 MHz 66MHzx4.5		 2.2V/3.3V
	266 MHz 66MHzx4		
	233 MHz 66MHzx3.5		
	233 MHz 66MHzx3.5		3.2V/3.3V
	200 MHz 66MHzx3		 2.9V/3.3V
	166 MHz 66MHzx2.5		
AMD K6-3D	300 MHz 100MHzx3		 2.2V/3.3V
	266 MHz 100MHzx2.5		

Note :The voltage of AMD-K6 233MHz may vary from market and CPU core. Please ask your CPU provider for detail.

Cyrix/IBM 6x86/6x86L/6x86MX Series CPUs Settings Table 2-5

Processor	Speed	Frequency Setting JP1, JA26, JA27	Jumper Block J19 Vcore/Vio Auto-detect
Cyrix/IBM 6x86L	P200+ 75MHzx2		 2.8V/3.3V
	P166+ 66MHzx2		
	P150+ 60MHzx2		
Cyrix/IBM 6x86	P200+ 75MHzx2		 3.52V/3.52V
	P166+ 66MHzx2		
	P150+ 60MHzx2		
Cyrix/IBM 6x86MX	PR266 75MHz x 3		 2.9V/3.3V
	PR266 66MHzx3.5		
	PR233 75MHzx2.5		
	PR233 66MHzx3		
	PR200 75MHzx2		
	PR200 66MHzx2.5		

IDT-C6 Series CPUs Settings Table 2-6

Processor	Speed	Frequency Setting JP1, JA26, JA27	Jumper Block J19 Vcore/Vio Auto-detect
IDT-C6	200 MHz 66MHzx3		 3.52V/3.52V
	180 MHz 60MHzx3		
	150 MHz 60MHzx2.5		

System Clock and CPU Multiplier Manual Setting - JP1, JA26 & JA27

For whom like to set up system manually, listed tables show all the System Clock and CPU Multiplier that HOT-591P can offer. Pin header 1~6 of JP1 and JA26, JA27 are used to adjust System Clock from 60MHz to 100 MHz. Pin header 7~12 of JP1 are used to adjust CPU core multiplier from 1.5X to 5.5X.

Table 2-7 shows the System Clock from 60 MHz to 100 MHz.

Table 2-8 shows CPU Multiplier from 1.5X to 5.5X.

Table 2-7

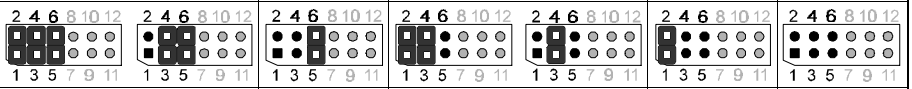
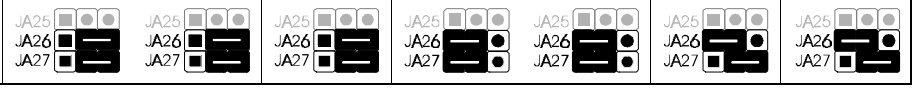
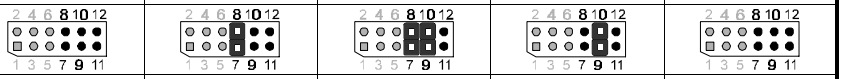
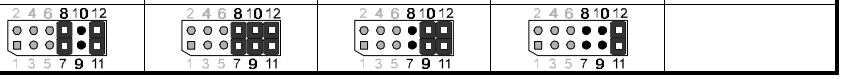
System Clock	60MHz	66MHz	75MHz	75MHz	83MHz	90MHz	100MHz
AGP Clock	60MHz	66MHz	75MHz	60MHz	66MHz	60MHz	66MHz
PCI Clock	30MHz	33MHz	37.5MHz	30MHz	33MHz	30MHz	33MHz
JP1 P1 ~ P6							
JA26 JA27							

Table 2-8

Multiplier	1.5 X	2 X	2.5 X	3 X	3.5 X
JP1 P7 ~ P12					
Multiplier	4 X	4.5 X	5 X	5.5 X	
JP1 P7 ~ P12					

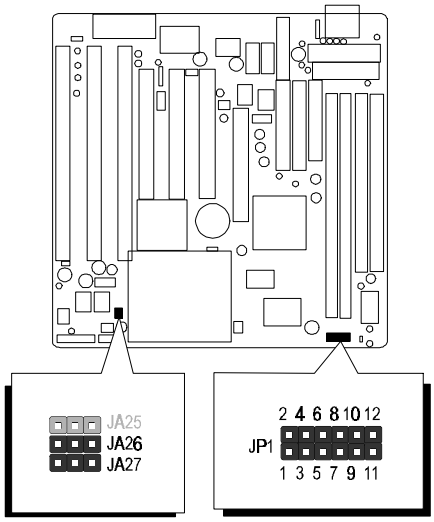


Figure 2-2 : Jumper JP1, JA26 and JA27 location

SDRAM Frequency Setting - JA25 & JP9

HOT-591P support 100MHz external frequency AMD-K6 3D, and which allows the user to use 66MHz normal SDRAM DIMM or 100MHz PC/100 SDRAM DIMM. Jumpers JA25 and JP9 are used to set SDRAM frequency which synchronous with System Clock (CPU External Clock) or synchronous with AGP External Clock.

This feature allows the user to use normal SDRAM with AMD-K6 3D processor.

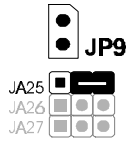
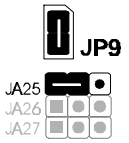
SDRAM Frequency Setting JA25, JP9	
Synchronous with System Clock (CPU External Clock)	Synchronous with AGP Clock
	

Table 2-10

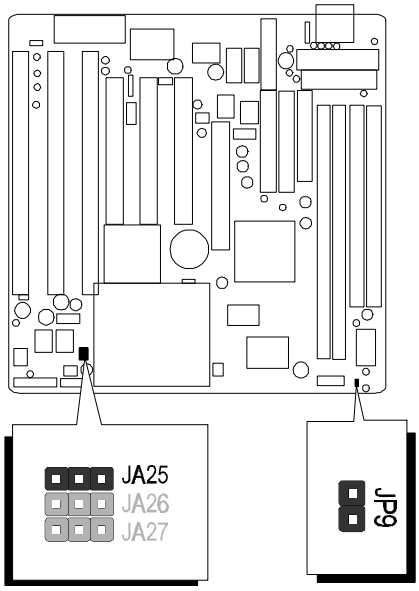


Figure 2-4: JA25 & JP9 location

CPU Voltage Manual Setting - J19

HOT-591P automatically detects and adjusts the voltage to the proper voltage.
Jumper block J19 is used to set Automatically or Manually adjust onboard voltages output from Switching type regulators to CPU by inserting or removing mini jumper from pin headers.

The voltage settings are made through the use of jumper caps to connect jumper pins on the pin set 1~4 of Jumper block J19.

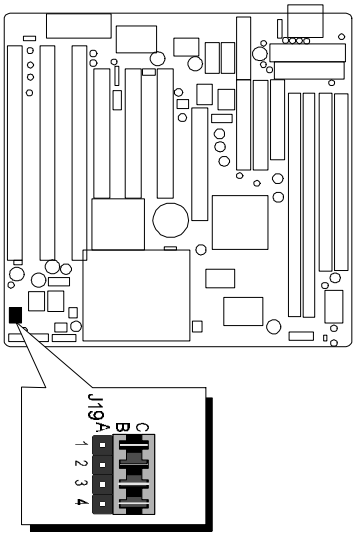


Figure 2-3 : J19 Jumper Block location

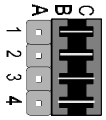
Voltage	J19	Voltage	J19
Auto -setting		2.8 V	
		2.7 V	
3.52 V		2.6 V	
3.4 V		2.5 V	
3.3 V		2.4 V	
3.2 V		2.3 V	
3.1 V		2.2 V	
3.0 V		2.1 V	
2.9 V		2.0 V	

Table 2-9

Power Supply Type Jumper - JP8

Due to different designs, there are two Power Supply Type : 12-pin AT Power Supply and 20-pin ATX Power Supply. HOT-591P support both type of Power Supply. Select the correct type according to the Power Supply you are using.

JP8	AT/ATX Power Selection
1 2 3	12-Pin AT Power Supply
1 2 3	20-Pin ATX Power Supply

Table 2-11

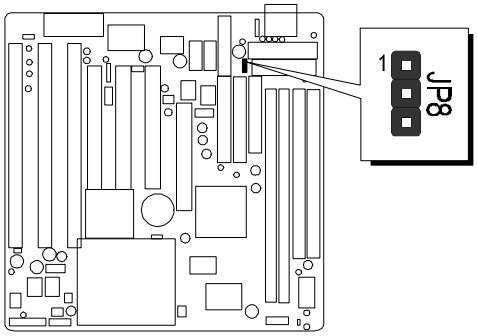


Figure 2-5: JP8 AT/ATX Power Jumper location

Flash EEPROM Vpp - JP5

HOT-591P mainboard supports two types of Flash EEPROM:
5 volt and 12 volt. By setting up jumper JP5, the main board can use both 5V or 12V flash EEPROM with new system BIOS files as they come available.

JP5 Pin 2-3 Close for 12V Flash EEPROM
JP5 Pin 1-2 Close for 5V Flash EEPROM

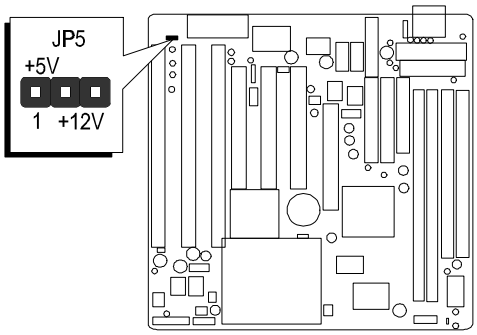


Figure 2-6: Flash Type Jumper JP5 location

CMOS Clear - JP2

HOT-591P mainboard supports jumper JP2 for discharging mainboard's CMOS memory.

This jumper can clear the CMOS data stored in the subsystem chip. To clear the CMOS data please follow listed steps:

1) Turn off the PC,

2) Remove the jumper cap from JP2 pin 1-2,

3) Insert the jumper cap to JP2 pin 2-3 for a brief while,

4) Remove the jumper cap from JP2 pin 2-3,

5) Reinsert the jumper cap to JP2 pin 1-2,

6) Turn on the PC.

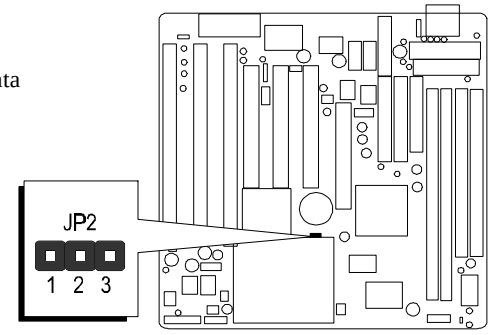


Figure 2-7: Clear CMOS Jumper JP2 location

Connectors

Front Panel Connectors (JP6)

Hardware Reset Connector - RST

Attach 2-pin hardware reset switch to it. Closing the reset switch restarts the system.

KeyLock Connector - PW-LED Key-Lock

KeyLock & Power LED connector is a 5-pin connector for a lock that may be installed on the system case for enabling or disabling the keyboard. It also attached to the case's Power LED. Pin 1 and 3 are for power LED and pin 4 and 5 are for keylock, pin 2 is useless.

Speaker Connector - Speaker

PC speaker connector may attach a 4-pin PC speaker cable from the case to this connector.

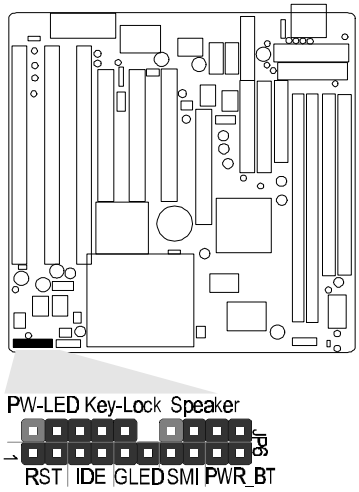


Figure 2-8: Front Panel Connector location

SMI Connector - SMI

Hardware System Management Interface connector may attach a 2-pin momentary switch to it. When push it will force system get into power saving mode, and the system will resume when switch is pushed again.

GLED Connector - GLED

Attach a 2-pin Green LED cable to it. The Green LED lights when the system get into power saving mode. The Green LED off when the system resume back to normal mode.

HD LED Connector - IDE

Attach a 2-pin IDE drive LED cable to this connector. The LED lights when an IDE device is active.

ATX Power On/Off Switch Connector - PWR_BT

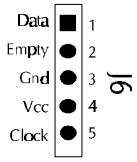
Attach a 2-pin momentary type switch to this connector for turning on or off your ATX power supply.

Back Panel Connectors

COM1/COM2 Connectors - J9/J10

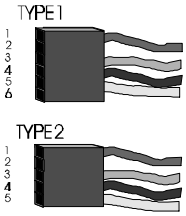
Attach COM1/COM2 connector cables to these connectors.

PS/2 Mouse Connector - J6



The main board provides a 5 pins PS/2 mouse connector for an optional PS/2 mouse cable. Diagram on the right side indicates the pinout of pin header.

HOT-591P mainboard supplies two types of optional PS/2 mouse adapter cable, type 1 have 6-holes plug with hole 2 and hole 6 wireless; type 2 have 5 holes plug with hole 2 wireless.

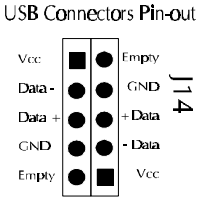


Caution : When a PS/2 mouse is used, make sure connect PS/2 mouse adapter cable hole 1 to the pin 1 of onboard PS/2 connector (J6). Reversed connecting may cause damage to your PS/2 mouse.

Parallel Port Connector - J8

A 26-pin male pin header is located at the rear of the main board. Plug the parallel port connector cable into this connector.

USB1/USB2 Port Connectors - J14



The USB pin headers located at the rear of the board. Plug the USB connector cable into this connector.

Other Connectors

ATX Power Supply Connector - J3

It is a twenty-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin 1 is in its position. The main board requires a power supply with at least 200 watts and "power good signal.

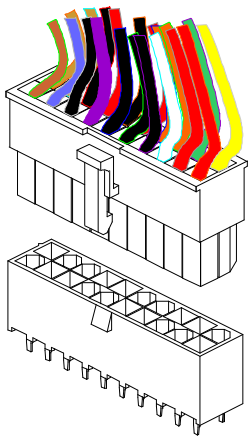


Figure 2-9: ATX Power Supply Connector

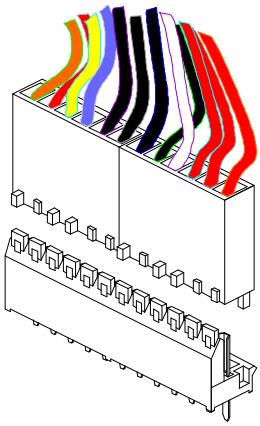


Figure 2-10: AT Power Supply Connector

AT Power Supply Connectors - J2

It is a twelve-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin 1 is in its position. The main board requires a power supply with at least 200 watts and "power good signal.

IR Connector - JP3

Infrared device connector may attach a 5-pin infrared device cable to this connector for enabling the infrared transfer function. This mainboard meets the specification of ASKIR and HPSIR.

CPU, Chassis(or AGP) cooling Fan connectors - Fan1 & 2

The main board provides two onboard 12V cooling fan power connectors for CPU (Fan 2), AGP device (Fan 1) cooling fan. Depending on the fan maker, the wiring and plug may be different. The red wire should be connected to +12V and black wire should be connected to ground (GND)

Wake-On-LAN Connectors - J12

Attach a 3-pin connector from the LAN card which supports the Wake-On-LAN (WOL) function. This function lets users wake up the connected system through the LAN card.
(***Note: Recently, only Intel LAN card support Wake-On-LAN function***)

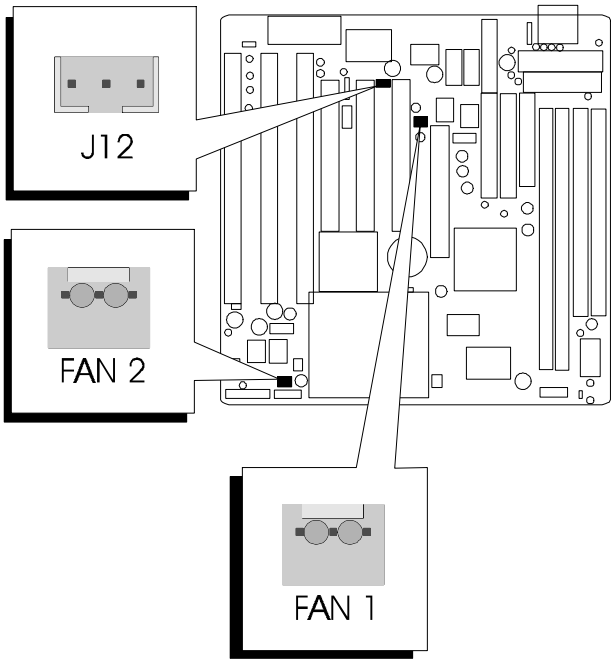


Figure 2-11: FAN 1, FAN 2 & WOL (J12) location

3 Memory Configuration

The HOT-591P mainboard provides two 72-pin SIMM sockets and two 168-pin DIMM sockets that make it possible to install up to 256MB of RAM. The SIMM socket support 4MB, 8MB, 16MB, 32MB, 64MB and 128MB 5V single- or double-side fast page or EDO DRAM modules, and DIMM socket support 8MB, 16MB, 32MB, 64MB, and 128MB 3.3V single- or double-side SDRAM, fast page, or EDO modules.

The two SIMM sockets are arranged in a single bank, the two DIMM sockets are arranged in two banks of one socket each. Each bank provides a 64/72-bit wide data path.

Note:

- **Maximum memory size is 256MB total for all SIMM or DIMM sockets.**
- **If using SIMM modules, each bank must be filled with a pair of same modules.**
- **The user should not populate both 5V SIMM modules & 3.3V DIMM modules at the same time.**

The memory configuration tables on next page list the SIMMs and DIMMs memory configuration.

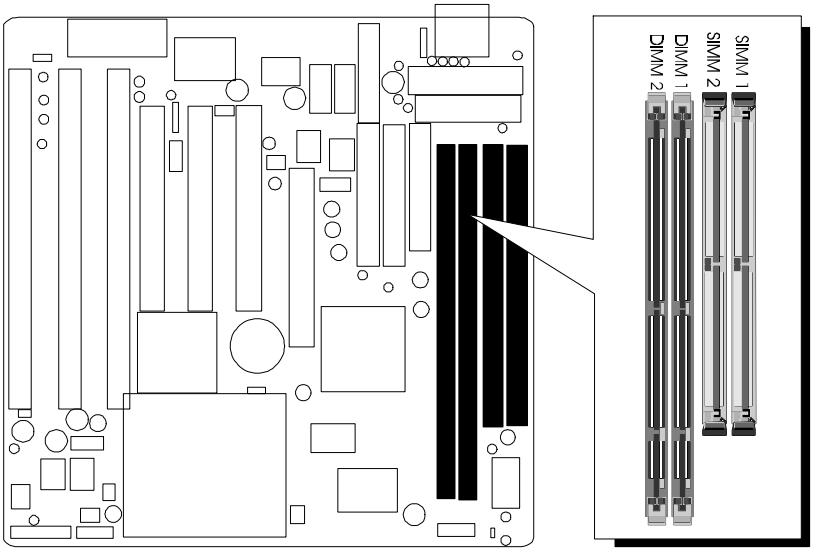


Figure 2-12: SIMMs & DIMMs socket location

SIMM 1	SIMM 2	DIMM 1	DIMM 2	TOTAL
4 MB	4 MB	——	——	8 MB
8 MB	8 MB	——	——	16 MB
16 MB	16 MB	——	——	32 MB
32 MB	32 MB	——	——	64 MB
64 MB	64 MB	——	——	128 MB
128 MB	128 MB	——	——	256 MB
——	——	8 MB	——	8 MB
——	——	8 MB	8 MB	16 MB
——	——	16 MB	——	16 MB
——	——	16 MB	16 MB	32 MB
——	——	32 MB	——	32 MB
——	——	32 MB	32 MB	64 MB
——	——	64 MB	——	64 MB
——	——	64 MB	64 MB	128 MB
——	——	128 MB	——	128 MB
——	——	128 MB	128 MB	256 MB
——	——	8 MB	16 MB	24 MB
——	——	8 MB	32 MB	40 MB
——	——	8 MB	64 MB	72 MB
——	——	8 MB	128 MB	136 MB
——	——	16 MB	32 MB	48 MB
——	——	16 MB	64 MB	80 MB
——	——	32 MB	64 MB	96 MB
——	——	32 MB	128 MB	160 MB
——	——	64 MB	128 MB	192 MB

Table 2-12

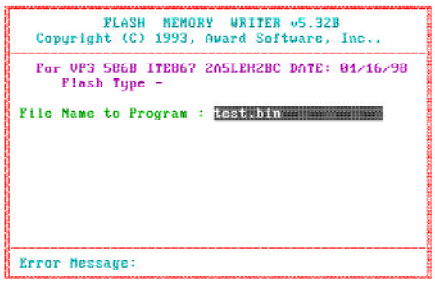
4 Flash Utility

This chapter briefly discusses Award Flash utility provides instructions to guide you through updating your old BIOS. The file name we use to program here is test.bin, and the file name to save old BIOS is 591P.OLD. Please note that those file names are not absolute. They are only examples to let you have a more clear understanding of the updating process.

How to Begin

1. Please type "awdflash" and press the **ENTER** key to begin the updating process.
2. Once you enter, you will see a main menu displaying:
3. Move the cursor to "File Name to Program:"
4. Type the program name "test.bin", and then press the ENTER key.
5. At the bottom of the menu, you will be requested to answer:

"Do You Want to Save BIOS (Y/N)? "



The following manual is intended to guide you through the process of both "No" and "Yes" cases respectively.

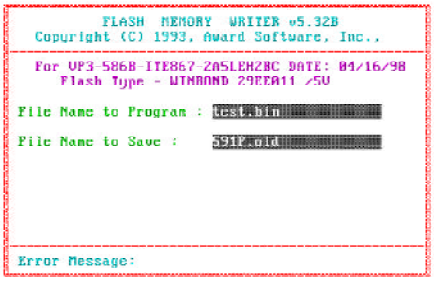
If "No"

If you do not wish to save the old BIOS:

1. Please type "N", and then press the ENTER key.
2. Then you will be requested to answer:

   "Are You Sure to Program? "

3. Answer "No" if you do not want to program, and then it will exit.



If "Yes"

To save the old BIOS:

1. Please respond "Y", and then press the ENTER key.
2. Move the cursor to "File Name to Save: "
3. Type file name "591P.OLD", and then press the ENTER key. (Your old BIOS will be saved in the file name you create. In this case, the old BIOS is saved in the file name, 591P.OLD).
4. Then you will be requested to answer:

   "Are You Sure to Program (Y/N)? "
5. Type "Y" to begin programming, and press the ENTER key.
6. When the programming is finished, the showing message will appear:
7. Once you see the showing message "Power Off or Reset System", please restart your system.
8. When you power on the computer again, you will find your old BIOS has already been successfully updated.

To view a complete usage of FLASH utility, please type "awdflash /?" and press the ENTER key.

Notes About Award Flash Utility

Please note that Award Flash Utility cannot run under EMM386 or QEMM. Thus, when executing the command "awdflash", an error message will appear:

"Error Message: Failure Due to EMM386 or QEMM !"

5 VIA VxD AGP Driver Installation

This section describe the installation of VIA VxD Driver which supports Accelerated Graphics Port (AGP) functionalists.

System Requirements

This driver should be installed on a system with the HOT-591P main board which based on VIA AGP chipset VT82C598AT MVP3, and others' main board will not be supported.
The VIA VGART Driver is only supported by Windows 95 OSR 2.1 (4.00.950 B) or later version.
You may find the VGART Driver on attached CD-ROM in \Driver\VGART directory.

For Win95 users, you will need to

1. Get "USBSUPP.EXE" from Microsoft, which includes the USB supplement and a new memory manager (VMM32.VxD) needed for the AGP DIME (Direct Memory Execute) feature.
2. Get DirectX 5.0 from Microsoft. DirectX 5.0 is the first DirectX version that supports AGP's DIME.
3. Get AGP Master (i.e., AGP VGA) Driver from VGA Supplier.
4. Install "VIAGART.VXD", VIA Graphics Address Remapping Table Driver from attached CD-ROM.

For WinNT 4.0 users, you need to install Microsoft Windows NT Service Pack 3.0 before install AGP Masster Driver, or you will have to wait until WinNT 5.0 is released.

Installation Instructions

Run program "SETUP.EXE" in the directory of \Driver\VGART\VIA on attached CD-ROM, and it will install the VIA VGART Driver automatically onto your Windows 95 system.

6 BIOS Setup

HOT-591P BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Entering Setup

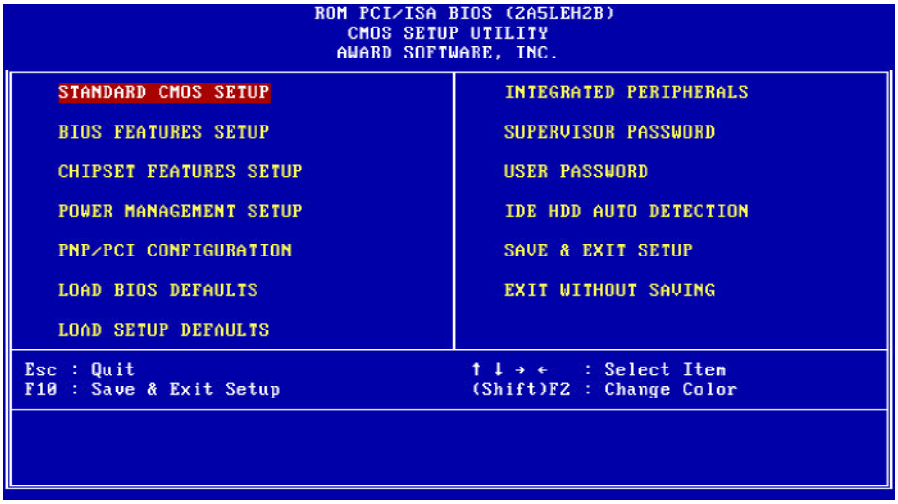
Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appear briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>,<Alt>, and <Esc> keys.

"Press DEL to enter SETUP"

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF the ON or pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>,<Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

"Press F1 to Continue, DEL To Enter Setup"

Main Menu



Standard CMOS setup

This setup page includes all items in a standard compatible BIOS.

BIOS features setup

This setup page includes all items of Award special enhanced features.

Chipset features setup

This setup page includes all items of chipset features.

Power Management Setup

This setup page includes all items of Power Management features.

PnP/PCI Configuration

This item specifies the value (in units of PCI bus blocks) of the latency timer for the PCI bus master and the IRQ level for PCI device. Power-on with BIOS defaults

Load BIOS Defaults

BIOS defaults loads the values required by the System for the maximum performance. However, you can change the parameter through each Setup Menu.

Load Setup Defaults

Setup defaults loads the values required by the system for the O.K. performance. However, you can change the parameter through each Setup Menu.

Integrated Peripherals

This setup page includes all items of peripheral features.

Supervisor Password

Change, set, or disable supervisor password. It allows you to limit access to the system and Setup, or just to Setup.

User Password

Change, set, or disable user password. It allows you to limit access to the system and Setup, or just to Setup.

IDE HDD auto detection

Automatically configure IDE hard disk drive parameters.

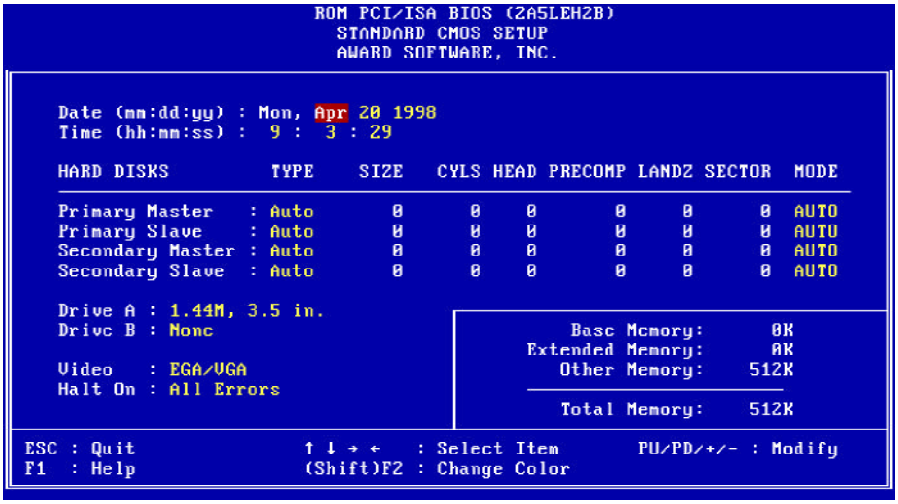
Save & Exit setup

Save CMOS value change to CMOS and exit setup

Exit without saving

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup



Date

The date format is <day>, <month> <date> <year>. Press <F3> to show the calendar.

Time

The time format is <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example. 5 p.m. is 17:00:00.

Hard Disks Type

This item identify the types of hard disk drives that has been installed in the computer. There are 46 predefined types and a user definable type.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. 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 item. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select Type User, related information is asked to be entered to the following items. Enter the information directly from the keyboard and press <Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

The user may also set those items to AUTO to auto configure hard disk drives parameter when system power-on.

If a hard disk drive has not been installed select NONE and press <Enter>.

Drive A type/Drive B type

This item specifies the types of floppy disk drive A or drive B that has been installed in the system.

Video

This item selects the type of adapter used for the primary system monitor that must matches your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

Error halt

This item determines if the system will stop, when an error is detected during power up.

Memory

This item is display-only. It is automatically detected by POST (Power On Self Test) of the BIOS.

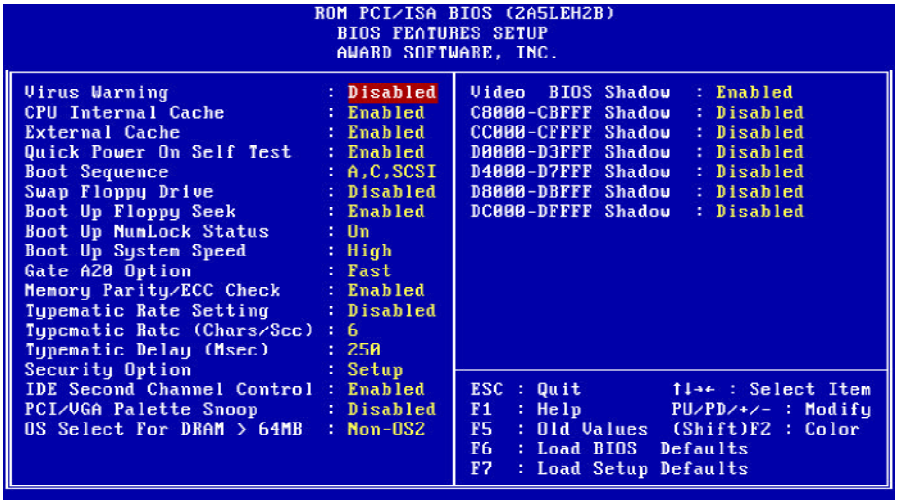
Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mainboard, or 640K for systems with 640K or more memory installed on the mainboard.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1MB in the CPU's memory address map.

BIOS Features Setup



Virus Warning

When this item is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive for any attempt at modification. If an attempt it made, the BIOS will halt the system and the following error message will appear. Afterwards, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

!WARNING!
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.

CPU Internal/External Cache

This item enables CPU internal cache and external cache to speed up memory access.

Quick Power On Self Test

This item speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enabled, BIOS will shorten or skip some check items during POST.

Boot Sequence

This item determines which drive computer searches first for the disk operating system. Default setting is A, C, SCSI.

BIOS also support system boot from CD-ROM drive or SCSI hard disk drive.

Swap Floppy Drive

When this item enables, the BIOS will swap floppy drive assignments so that Drive A: will function as Drive B: and Drive B: as Drive A:.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks.

Boot Up NumLock Status

When this option enables, BIOS turns on ***Num Lock*** when system is powered on.

Boot Up System Speed

This option sets the speed of CPU at system boot time. The settings are High or Low.

Gate A20 Option

This entry allows you to select how the gate A20 is handled. The gate A20 is a device used to address memory above 1 Mbytes. Initially, the gate A20 was handled via a pin on the keyboard. Today, while keyboards still provide this support, it is more common, and much faster, set to ***Fast*** for the system chipset to provide support for gate A20.

Memory Parity/ECC Check

This item allows you to set memory error checking, Enabled or Disabled.

Typematic Rate Setting/Typematic Rate/Typematic Delay

This determines if the typematic rate and typematic delay are to be used. When the typematic rate setting is enabled, **typematic rate** allows you select the rate at which the keys are accelerated and **typematic delay** allows you to select the delay between when the key was first depressed and when the acceleration begins.

Security Option

This item allows you to limit access to the System and Setup, or just to Setup. When ***System*** is selected, the System will not boot and access to Setup will be denied if the correct password is not entered at the prompt.

When ***Setup*** is selected, the System will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI / VGA Palette Snoop

This item must be set to enabled if there is a MPEG ISA card installed in the system, and disabled if there is no MPEG ISA card installed in the system.

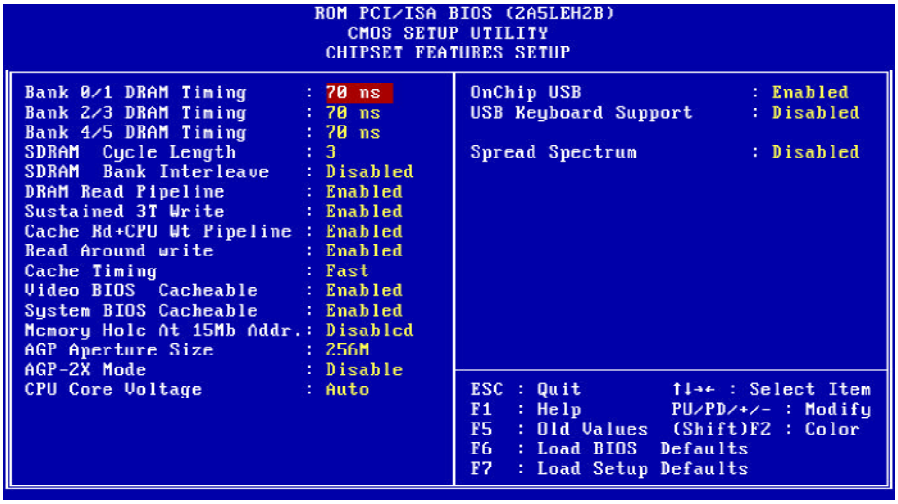
OS Select For DRAM > 64MB

This item allows you to access the memory that over 64 MB in OS/2.

Video BIOS Shadow/XXXXX-XXXXX Shadow

These items determine whether Video BIOS or optional ROM will be copied to RAM.

Chipset Features Setup



Bank x/x DRAM Timing

This value in this field is set by the system board manufacturer, depending on whether the board has paged DRAMs or EDO DRAMS.
The choice: 70ns, 60ns.

SDRAM Cycle Length

This field allows you to set the SDRAM latency timer.
The Choice: 2, 3.

SDRAM Bank Interleave

This item allows you to set how many banks of SDRAM support in your mainboard.
The Choice: 2 Bank, 4 Bank, Disabled.

DRAM Read Pipeline

This item allows you to set DRAM Read Pipeline function Enabled or Disabled.

Sustained 3T Write

This item allow you to enable or disable direct map write back / write through secondary cache.
The Choice: Enabled, Disabled.

Cache Rd+CPU Wt Pipeline

This item allows you to enable/disable the cache timing.
The Choice: Enabled, Disabled.

Read Around Write

This item allows you enable/disable the read around write function (system performance timing)
The Choice: Enabled, Disabled.

Cache Timing

This item allows the user to set the cache timing. The options are Fast and Fastest.

Video BIOS Cacheable

When enabled. The Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled.
The Choice: Enabled, Disabled.

System BIOS Cacheable

As with caching the Video BIOS above, enabling this selection allows accesses to the system BIOS ROM addressed at F0000H ~ FFFFFH to be cached, provided that the cache controller is enabled.
The Choice: Enabled, Disabled.

Memory Hole At 15MB Addr

In order to improve performance, some space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.
This Choice: Disabled, 15M-16M.

AGP Aperture Size

Select the size of Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.
See www.apgforum.org for AGP information.
The Choice: 4M, 8M, 16M, 32M, 64M, 128M, 256M

AGP-2x Mode

This item allows you to enable/disable AGP-2x function. See www.apgforum.org for AGP information.
The Choice: Enabled, Disabled.

CPU Core Voltage

Since the mainboard support CPU voltage auto-detecting and setting, this item allows the user to enable this function when set to Auto. The user can also set CPU core voltage manually in BIOS from 2.1V to 3.5V.

OnChip USB

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB peripheral.
The Choice: Enabled, Disabled.

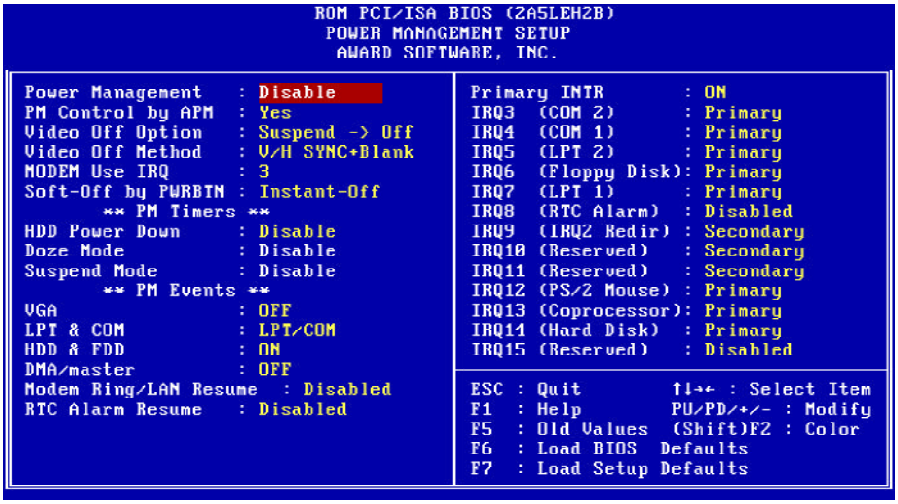
USB Keyboard Support

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB Keyboard.
The Choice: Enabled, Disabled.

Spread Spectrum Modulated

This item allows the user to enable Spread Spectrum Modulated to reduce the EMI.
The Choice: 1.5%(NTR), 0.6%(CNTR), 1.5%(Down), 0.6%(Down) and Disabled.

Power Management Setup



Power Management

This item determines the options of the power management function. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is the same as *Max Saving* except the time of the system inactivity period is longer; Disabled disables the power saving feature; *User Defined* allows you to set power saving options according to your preference.

PM Control by APM

When enabled, and Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting *Yes* give better power savings.
If the Max. Power Saving is not enabled, this will be preset to *No*.

Video Off Option

When enabled, this features allows the VGA adapter to operate in a power saving mode.

Always On : Monitor will remain on during power saving modes.

Suspend-->Off : Monitor blanked when the systems enters the Suspend mode.

Susp, Stby-->Off : Monitor blanked when the system enters either Suspend or Standby modes.

All Modes-->Off : Monitor blanked when the system enters any power saving mode.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen This option only writes blanks to the video buffer.

DPMS Allows the BIOS to control the video display card if it supports the DPMS feature.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.
The choice: 3, 4, 5, 7, 9, 10, 11, NA.

Soft-Off by PWRBTN

When Enabled, turning the system off with the on/off button places the system in a very low-power-usage state, with only enough circuitry receiving power to detect power button activity or Resume by Ring activity.

The choice: Delay 4 Sec, Instant Off.

HDD Power Down

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode, Suspend Mode

These items set the period of time after which each of these mode activate, the periods are from 10sec to 1 hour.

Doze Mode When enabled and after the set time of system inactivity, CPU clock will run at slower speed while all other devices still operate at full speed.

Suspend Mode When enabled and after the set time of system inactivity, all devices except CPU will be shut off.

**** PM Events ****

PM events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything occurs to a device which is configured as *On*, even when the system is a power down mode.

VGA

When set to *On* (default), any event occurring at a VGA port will awaken a system which has been powered down.

LPT & COM

When set to *LPT/COM* (default), any event occurring at a COM (Serial)/LPT port will awaken a system which has been powered down.

HDD & FDD

When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.

DMA/master

When set to *On* (default), any event occurring to the DMA controller will awaken a system which has been powered down.

Modem Ring /LAN Resume

When set to *Enabled*, any event occurring Modem Ring/activity of LAN will awaken a system which has been powered down.
Note : The mainboard support Wake-ON-LAN function with Intel LAN card only.

RTC Alarm Resume

When set to *Enabled RTC Alarm Resume*, you could set the date (of month) and timer (hh:mm:ss), any event occurring at RTC will awaken system which has been powered down.

Primary INTR

When set to *On* (default), any event occurring at will awaken a system which has been powered down.

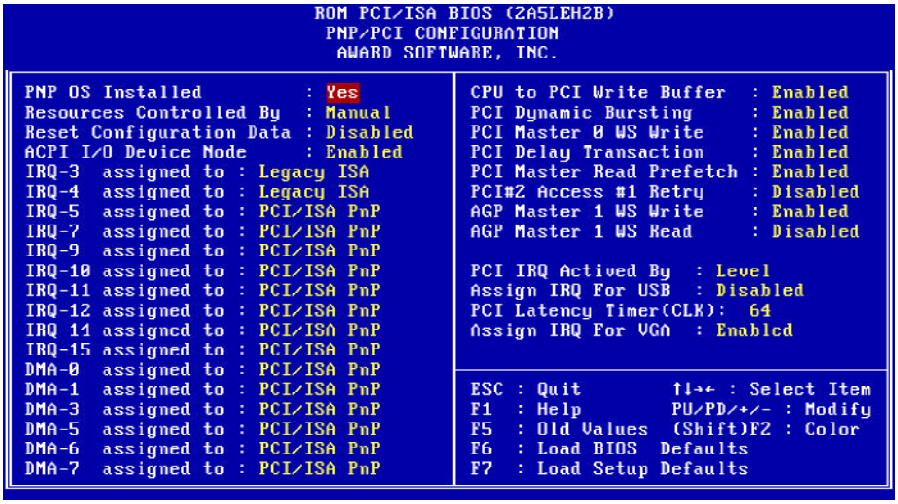
The following is a list of IRQ, Interrupt ReQuests, which can be exampled much as the COM ports and LPT port above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*.

When set On, activity will neither prevent the system from going into a power management mode nor awaken it.

- IRQ3 (COM 2)
- IRQ4 (COM 1)
- IRQ5 (LPT 2)
- IRQ6 (Floppy Disk)
- IRQ7 (LPT 1)
- IRQ8 (RTC Alarm)
- IRQ9 (IRQ2 Redir)
- IRQ10 (Reserved)
- IRQ11 (Reserved)
- IRQ12 (PS/2 Mouse)
- IRQ13 (Coprocessor)
- IRQ14 (Hard Disk)
- IRQ15 (Reserved)

PCI Configuration Setup



PNP OS Installed

When this item is set to *Yes*, it will allow the PnP OS(Windows 95) control the system resources except PCI devices and PnP boot devices.
The Choice: Yes and No.

Resources Controlled By

The Award Plug and Play BIOS has the capability 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 as Windows 95.
The Choice: Auto and Manual.

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 Choice: Enabled and Disabled.

ACPI I/O Device Node

This item allows the user to set ACPI I/O Device Node Enabled or Disabled.

IRQ 3/4/5/7/9/10/11/12/14/15, assigned to

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The Choice: Legacy ISA and PCI/ISA PnP.

DMA 0/1/3/5/6/7 assigned to

When resources are controlled manually, assign each system DMA as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The Choice: Legacy ISA and PCI/ISA PnP.

These items allow you to determine the DMA assigned to the ISA bus and is not available for PCI slot.

The Choice: Legacy ISA and PCI/ISA PnP.

CPU to PCI Write Buffer

When enabled, up to four Dwords of data can be written to the PCI bus without interrupting the CPU. When disabled, a write buffer is not used and the CPU read cycle will not be completed until the PCI bus signals that it is ready to receive the data.
The choice: Enabled, Disabled.

PCI Dynamic Bursting

When Enabled, data transfers on the PCI bus, where possible, make use of the high-performance PCI burst protocol, in which greater amounts of data are transferred at a single command.
The choice: Enabled, Disabled.

PCI Master 0 WS Write

When Enabled, writes to the PCI bus are command with zero wait states.
The choice: Enabled, Disabled.

PCI Delay Transaction

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

PCI Master Read Prefetch

This item allows you enable/disable the PCI Master Read Prefetch.
The choice: Enabled, Disabled.

PCI #2 Access #1 Retry

This item allows you enable/disable the PCI #2 Access #1 Retry.
The choice: Enabled, Disabled.

AGP Master 1 WS Write

This implements a single delay when writing to the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice: Enabled, Disabled.

AGP Master 1 WS Read

This implements a single delay when reading from the AGP Bus. By default, two-wait states are used by the system, allowing for greater stability.
The choice: Enabled, Disabled.

PCI IRQ Activated by

This item sets the method by which the PCI bus recognize that an IRQ service is being requested by a device. You should never change the default configuration unless advised otherwise by your System's manufacturer.
The Choice: Level(default) and Edge.

PCI Latency Timer

The number of clocks programed in the PCI Latency Timer represents the guaranteed time slice allocated to the 82C598AT, after which it must complete the current data transfer phase and surrender the bus as soon as its bus grant is removed.

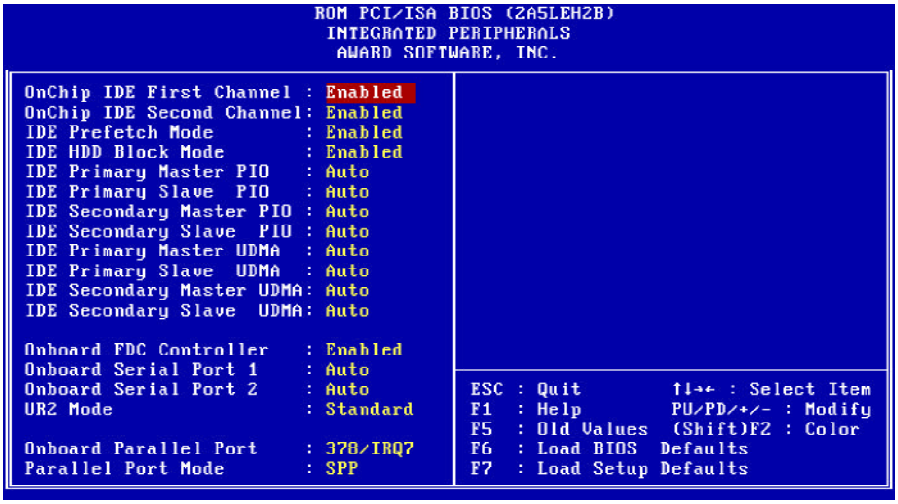
The PCI Latency Timer is used to guarantee to the PCI agents a minimum amount of the system resource.

The default setting is 64 PCI clocks.

Assign IRQ For VGA

This item allows the user to set VGA IRQ Routing table Enabled or Disabled.

Integrated Peripherals



OnChip IDE First Channel

This item is used to defined on chip Primary PCI IDE controller is Enable or Disable setting.

OnChip IDE Second Channel

This item is used to defined on chip secondary PCI IDE controller is Enable or Disable setting.

IDE Prefetch Mode

Enable prefetching for IDE drive interfaces that support its faster drive accesses. If you are getting disk drive errors, change the setting to omit the drive interface where the errors occur. Depending on the configuration of your IDE subsystem, this field may not appear, and it does not appear when the Internal PCI/IDE field, above, is Disabled.

The choice: Enabled, Disabled.

IDE HDD Block Mode

This item is used to set IDE HDD Block Mode. If your IDE Hard Disk supports block mode, then you can enable this function to speed up the HDD access time. If not, please disable this function to avoid HDD access error.

IDE Primary Master PIO

In these items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Primary Master PIO timing.

IDE Primary Slave PIO

In these items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Primary Slave PIO timing.

IDE Secondary Master PIO

In these items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Secondary Master IDE PIO timing.

IDE Secondary Slave PIO

In these items, there are five modes defined in manual mode and one automatic mode. There are 0, 1, 2, 3, 4, and AUTO is the default settings for on board Secondary Slave IDE PIO timing.

IDE Primary Master UDMA

On this mainboard, VIA chipset improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are Disabled and Auto, and Auto is the default settings for on board Primary Master UltraDMA33.

IDE Primary Slave UDMA

On this mainboard, VIA chipset improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are Disabled and Auto, and Auto is the default settings for on board Primary Slave UltraDMA33.

IDE Secondary Master UDMA

On this mainboard, VIA chipset improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are Disabled and Auto, and Auto is the default settings for on board Secondary Master UltraDMA33.

IDE Secondary Slave UDMA

On this mainboard, VIA chipset improves IDE transfer rate using Bus Master UltraDMA/33 IDE which can handle data transfer up to 33MB/sec. The options are Disabled and Auto, and Auto is the default settings for on board Secondary Slave UltraDMA33.

Onboard FDC Controller

This item specifies onboard floppy disk drive controller. This setting allows you to connect your floppy disk drives to the onboard floppy connector. Choose the *"Disabled"* settings if you have a separate control card.

Onboard Serial Port 1/2

This item is used to define onboard serial port 1/Port2 to *3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, Auto* or *Disabled.*

UR2 Mode

The main board support IrDA(HPSIR) and Amplitudes Shift Keyed IR(ASKIR) infrared through COM2 port. When IR is enable, the onboard COM2 port will be disabled. This item specifies onboard Infra Red mode to IrDA 1.0, ASKIR, MIR 0.57M, MIR 1.15M, FIR or Standard (Disabled).
Note : FIR is not supported currently.

IR Mode

This item is to select the value required by the IR device connected to the IR port. Full-duplex mode permits simultaneous two-direction transmission. Half-duplex mode permits transmission in one direction only at a time.

Onboard Parallel Port

This item specifies onboard parallel port address to *378H*, *278H*, *3BCH* or *Disabled*.

Parallel Port Mode

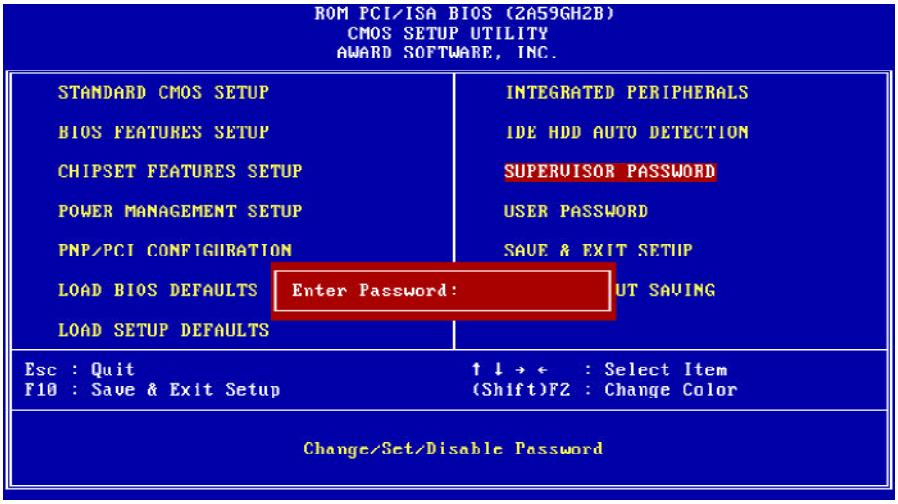
This item specifies onboard parallel port mode. The options are *SPP* (Standard Parallel Port), *EPP* (Enhanced Parallel Port), *ECP* (Extended Capabilities Port), and *EPP+ECP*.

ECP Mode Use DMA

This item specifies *DMA* (Direct Memory Access) channel when ECP device is in use. The options are *DMA 1* and *DMA 3*. This item will not show up when SPP and EPP printer mode is selected.

Password Setting

This section describes the two access modes that can be set using the options found on the Supervisor Password and User Password.



Supervisor Password and User Password

The options on the Password screen menu make it possible to restrict access to the Setup program by enabling you to set passwords for two different access modes: Supervisor mode and User mode.

In general, Supervisor mode has full access to the Setup options, whereas User mode has restricted access to the options. By setting separate Supervisor and User password, a system supervisor can limit who can change critical Setup values.

Enter Password

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

Password Disable

If you select System at Security Option of BIOS Features Setup Menu , you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Warning : Retain a record of your password in a safe place. If you forget the password, the only way to access the system is to clear CMOS memory, please refer to “Clear CMOS”.