

Notice to End Users

This User's Guide & Technical Reference is for assisting system manufacturers and end users in setting up and installing the mainboard.

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SL-56A2/A5 SERIAL

Contents

Chapter 1: Introduction	1
Features	1
CPU	1
Chipset	1
L2 Cache	1
Main Memory	1
BIOS	2
I/O Function	2
Other Functions	2
Mainboard Setting for Pentium MMX-166	3
Chapter 2: Hardware Setup	4
INTEL Pentium MMX CPUs Settings	4
Intel Pentium MMX-166/200/233	4
AMD K6 CPU Settings	5
AMD K6 – 166/200/233	5
AMD K6 – 266/300/333/366	6
Cyrix 6x86MX (M2) Settings	7
Cyrix 6x86MX (M2) – PR166/200/233	7
Cyrix 6x86L CPUs Setting	8
Intel Pentium CPUs	9
CPU 1.5X Clock Setting (Red Caps)	9
CPU 2.0X Clock Setting (Red Caps)	10
CPU 2.5X Clock Setting (Red Caps)	11
CPU 3.0X Clock Setting (Red Caps)	12
Cyrix 6x86 CPUs	13
CPU 2.0X Clock Setting (Red Caps)	13
AMD K5 1.5x Clock Setting	14
AMD K5 – PR75/PR90/PR100/PR120/PR133 CPUs (Red Caps)	14

AMD K5 2.5x Clock Setting----- 15
 AMD K5 – PR150/PR166 CPUs (Red Caps) ----- 15
 CPU VCore Voltage Setting----- 16
 JP3: CPU VCore Voltage Setting ----- 16
 System Memory Configuration----- 17
 Jumper Settings----- 17
 SW1: Bus Ratio and External Bus Clock Select ----- 17
 JP11: Clear CMOS Data----- 19
 JP19: INTEL FLASH Memory Boot Block Programming -- 19
 Power Connector ----- 20
 IDE LED Activity Light: (J1 pin1–4)----- 21
 Infrared Port Module Connector (J1 pin6–10) ----- 21
 J1 pin12, 13: Power Switch----- 21
 SMI Switch (J1 pin14, 15)----- 21
 Speaker Connector (J2 pin1–4) ----- 21
 Reset Switch (J2 pin5, 6)----- 21
 Power LED and Keylock Switch (J2 pin8–12)----- 21
 Turbo LED (J2 pin14, 15)----- 22
 USB1: USB Connector ----- 23
 J1 Switch Signal Summary ----- 24
 J2 Switch Signal Summary ----- 25

Chapter 3: Award BIOS Setup ----- 26

Standard CMOS Setup ----- 27
 BIOS Features Setup ----- 29
 Chipset Features Setup ----- 32
 Power Management Setup ----- 36
 PnP/PCI Configuration Setup ----- 39
 Load Setup Defaults ----- 41
 Integrated Peripherals ----- 42
 Supervisor/User Password ----- 45
 IDE HDD Auto Detection ----- 46
 Save & Exit Setup ----- 46
 Exit Without Saving ----- 46

Chapter 1

Introduction

Features

CPU

1. Supports Intel Pentium P54C/MMX (P55C) CPUs at 90 ~ 233 MHz
2. Supports Cyrix 6x86(L) CPUs at PR133+ ~ PR200+ MHz and 6x86MX (M2) at PR166 ~ PR266
3. Supports AMD K5: PR90 ~ PR200 and AMD K6: 166 ~ 366
4. Provides SOCKET 7 ZIF Socket
5. Supports CPU voltage auto detect circuit.

Chipset

1. Intel 82430TX chipset
2. PCI Rev 2.1 compliant

L2 Cache

1. Onboard supports 256K/512k write back cache with Pipelined Burst SRAMs

Main Memory

1. Memory range from 4MB (minimum) to 256MB (maximum) with DRAM Table Free configurations
2. Supports Fast Page Mode/EDO/Synchronous DRAM with 60ns/70ns DRAM speed
3. Supports 4 pcs 72pin SIMM sockets and 2 pcs 168pin DIMM sockets (3.3V unbuffered type)

BIOS

1. AWARD Plug and Play BIOS
2. Supports Advanced Power Management Function
3. Flash Memory for easy upgrade

I/O Function

1. Integrated USB (Universal Serial Bus) controller with two USB ports.
2. Supports 2 IDE channels with 4IDE devices (including 120MB IDE floppy)
3. Provides PCI IDE Bus Master function (Ultra DMA 33MB/sec)
4. One floppy port (including 3.5", 1.2MB Mode 3 function)
5. Two high speed 16550 FIFO UART ports
6. One parallel port with EPP/ECP/SPP capabilities
7. PS/2 mouse connector
8. ACPI power management function support
9. Supports Infrared Connector

Other Functions

1. ATX Form Factor with 21.5cm x 30.4cm
2. 4 PCI Master slots and 4 ISA slots
3. Supports SCSI/CD-ROM Boot function
4. Built-in IOMEGA, LS-120 driver

Note:

1. *Make sure that the SDRAM module not only has to be 168 pin DIMM but designed for 3.3V unbuffered SDRAM as well. Double check with the SDRAM supplier before install any SDRAMs. The mainboard manufacturer has no obligation to any damage of the board by using the incorrect specification of SDRAM.*
2. *This mainboard supports CPU voltage autodetect circuit. User only needs to set the CPU working voltage (refer to page 16 for CPU working voltage).*

Mainboard Setting for Pentium MMX-166

The settings of the following figure is for the INTEL Pentium MMX-166/66 with the 256K (or 512K) cache. To get the best cooling effect, make sure that the airflow from the CPU fan is facing the heatsink.

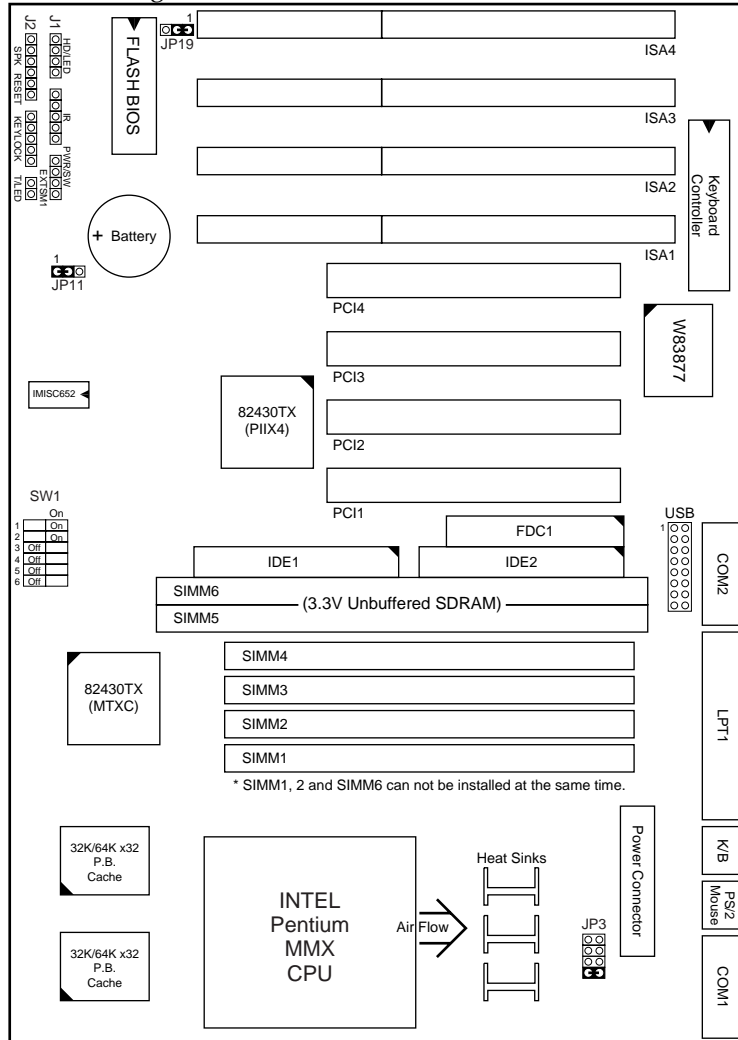


Figure 1-1. SL-56A2/A5 Motherboard Layout

Chapter 2 Hardware Setup

INTEL Pentium MMX CPUs Settings

Intel Pentium MMX-166/200/233

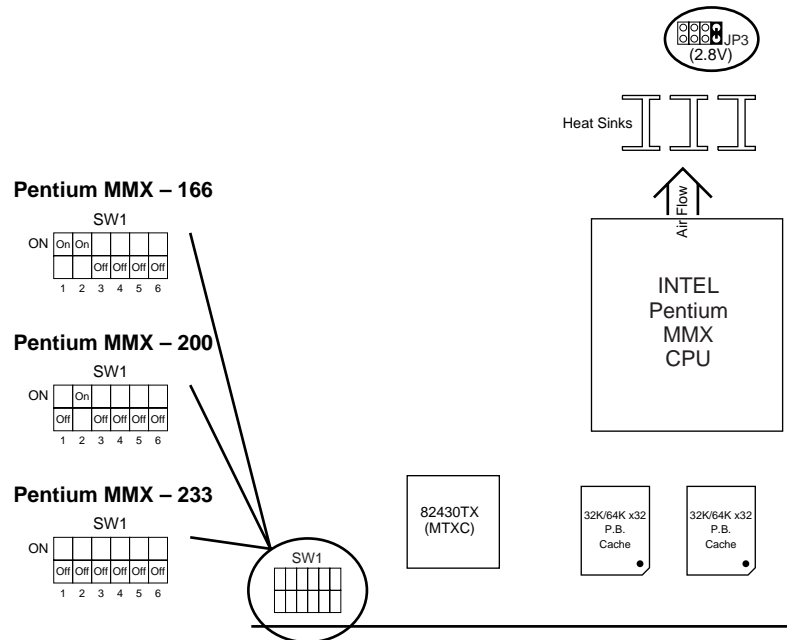


Figure 2-1. CPU Type Configuration

Note: INTEL Pentium MMX (P55C) is a dual voltage CPU. JP3 must be set correctly (refer to page 16). Check with your CPU supplier for CPU voltage specification.

AMD K6 CPU Settings

AMD K6 – 166/200/233

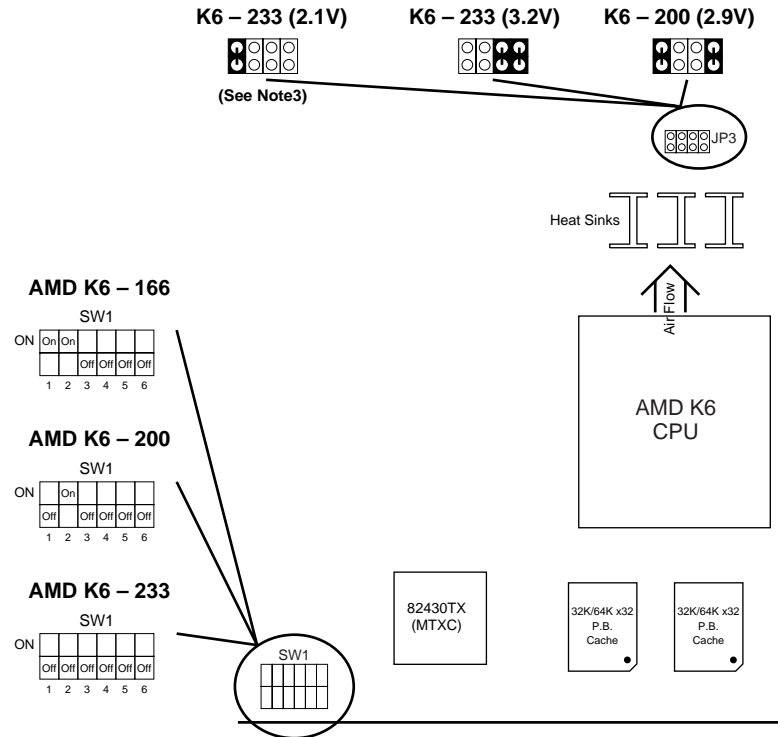


Figure 2-2. CPU Type Configuration

- Note:**
1. AMD K6 is a dual voltage CPU. JP3 must be set correctly (refer to page 16). Check with your CPU supplier for CPU voltage specification.
 2. K6 – 166/200 are 2.9V CPUs.
 3. K6 – 233 (and higher) are 3.2V or 2.1V CPUs, depends on the type of process. Refer to the CPU spec.

AMD K6 – 266/300/333/366

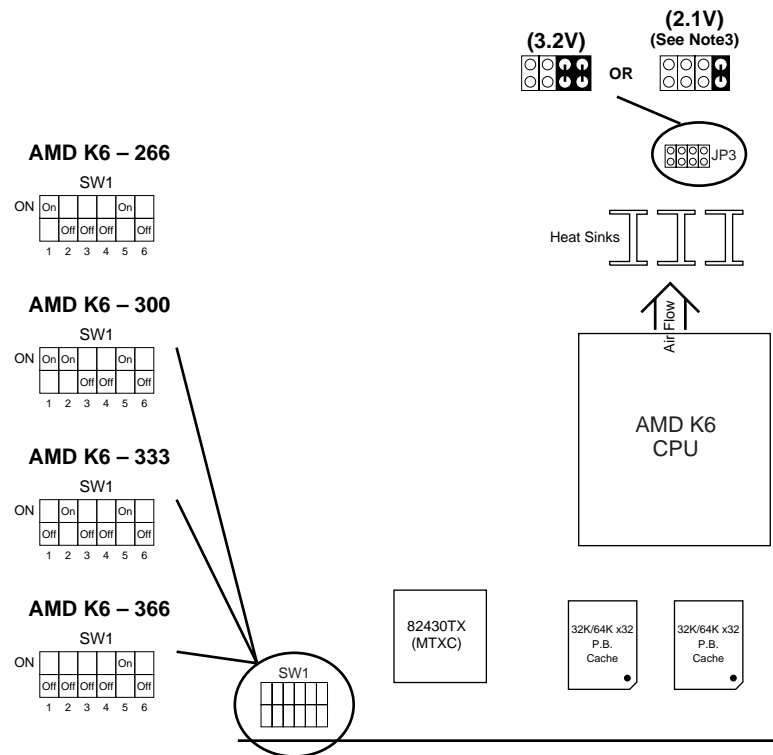


Figure 2–3. CPU Type Configuration

- Note:**
1. AMD K6 is a dual voltage CPU. JP3 must be set correctly (refer to page 16). Check with your CPU supplier for CPU voltage specification.
 2. K6 – 166/200 are 2.9V CPUs.
 3. K6 – 233 (and higher) are 3.2V or 2.1V CPUs, depends on the type of process. Refer to the CPU spec.

Cyrix 6x86MX (M2) Settings

Cyrix 6x86MX (M2) – PR166/200/233

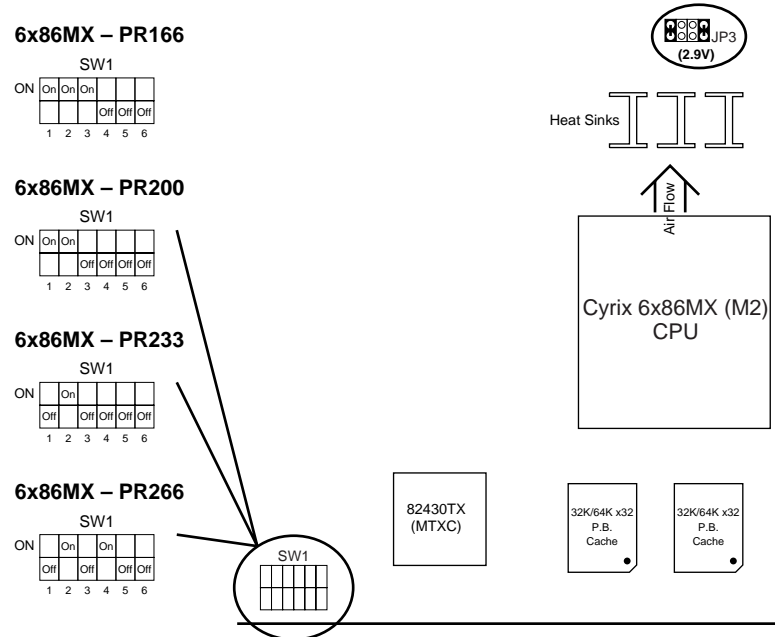


Figure 2-4. CPU Type Configuration

Note: Cyrix 6x86MX (M2) is a dual voltage CPU. JP3 must be set correctly (refer to page 16). Check with your CPU supplier for CPU voltage specification.

Cyrix 6x86L CPUs Setting

Cyrix 6x86L – PR133+/PR150+/PR166+/PR200+ CPUs

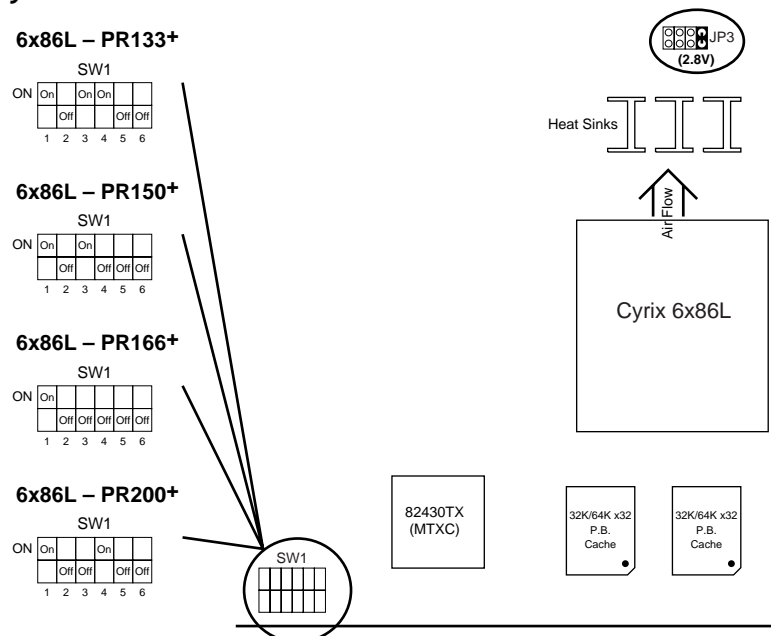


Figure 2-5. CPU Type Configuration

Notes: Cyrix 6x86L is a dual voltage CPU. JP3 must be set correctly (refer to page 16). Check with your CPU supplier for CPU voltage specification.

Intel Pentium CPUs

CPU 1.5X Clock Setting (Red Caps)

Intel Pentium – 90/100 CPUs

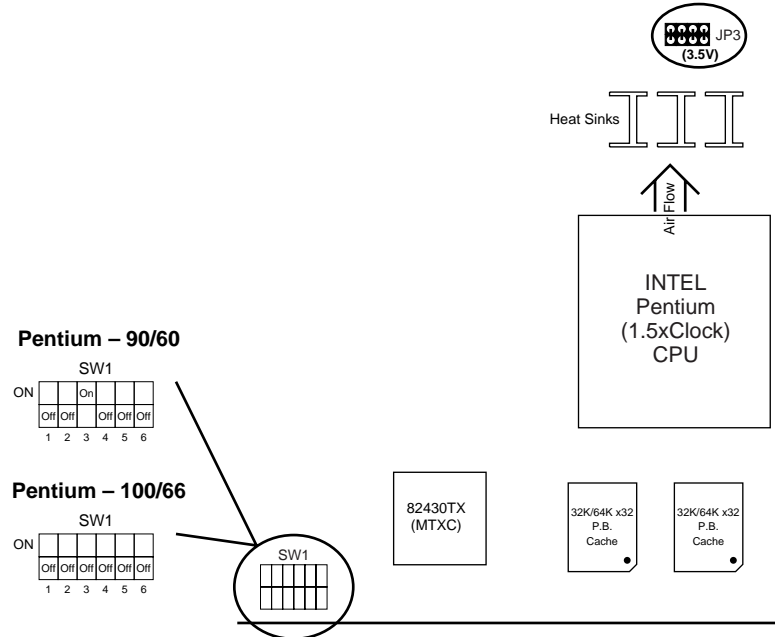


Figure 2-6. CPU Type Configuration

CPU 2.0X Clock Setting (Red Caps)

Intel Pentium – 120/133 CPUs

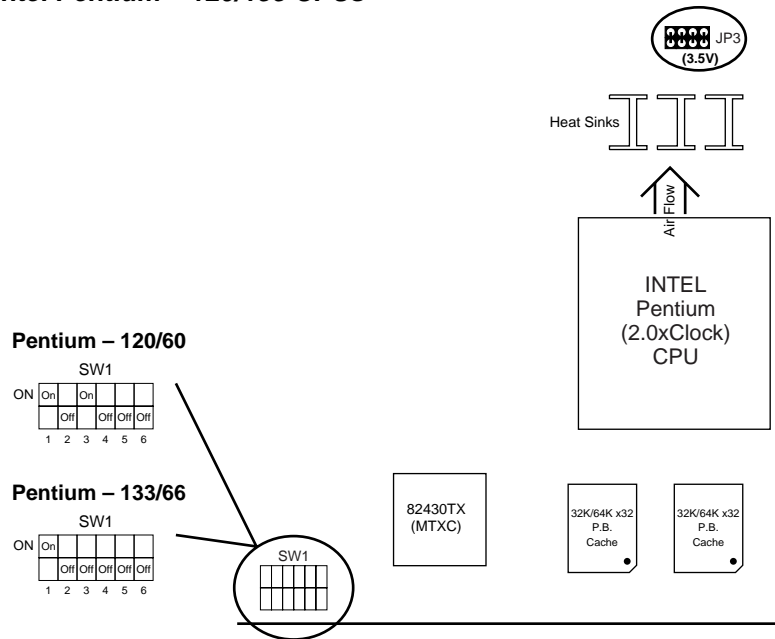


Figure 2-7. CPU Type Configuration

CPU 2.5X Clock Setting (Red Caps)

Intel Pentium – 150/166 CPUs

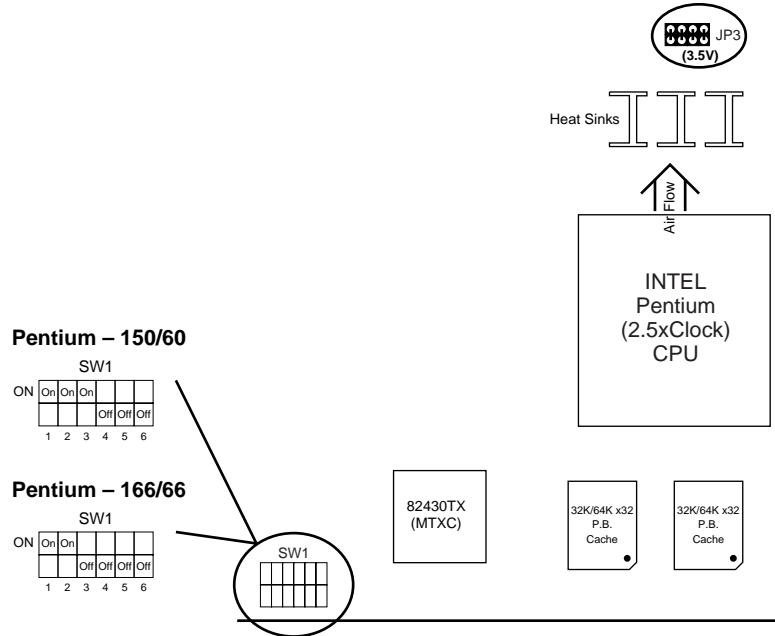


Figure 2-8. CPU Type Configuration

CPU 3.0X Clock Setting (Red Caps)

Intel Pentium – 180/200 CPUs

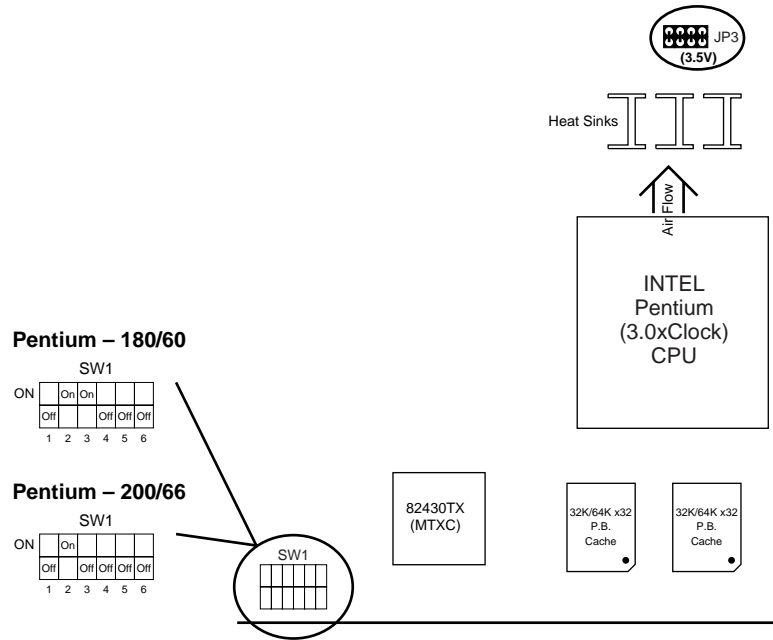


Figure 2-9. CPU Type Configuration

Cyrix 6x86 CPUs

CPU 2.0X Clock Setting (Red Caps)

Cyrix 6x86 – PR133+/PR150+/PR166+/PR200+ CPUs

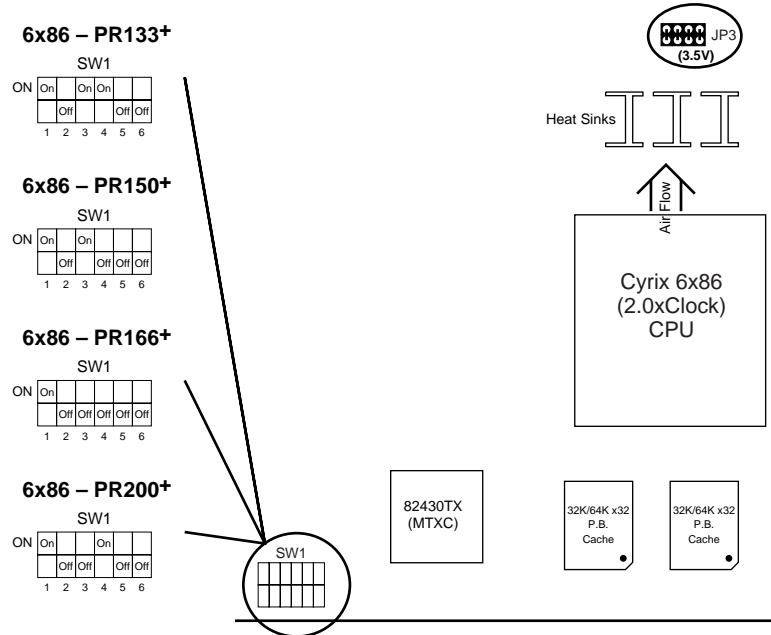


Figure 2-10 CPU Type Configuration

AMD K5 1.5x Clock Setting

AMD K5 – PR75/PR90/PR100/PR120/PR133 CPUs (Red Caps)

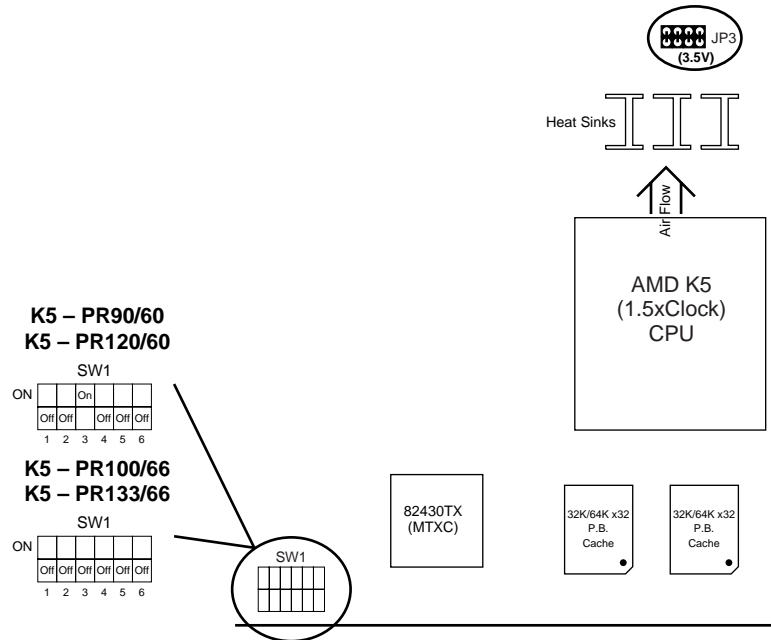


Figure 2-11. CPU Type Configuration

AMD K5 2.5x Clock Setting

AMD K5 – PR150/PR166 CPUs (Red Caps)

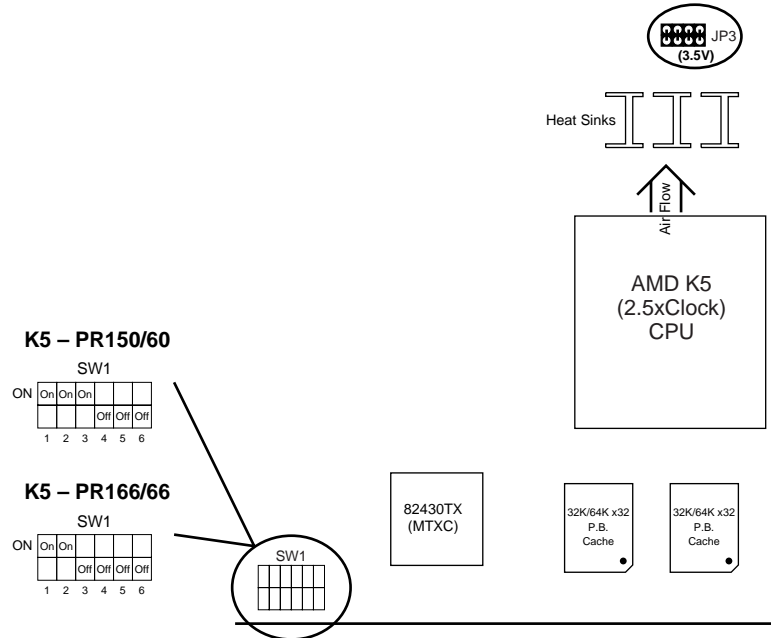


Figure 2-12. CPU Type Configuration

CPU V_{CORE} Voltage Setting

JP3: CPU V_{Core} Voltage Setting

V _{Core} Voltage	JP3	V _{Core} Voltage	JP3	V _{Core} Voltage	JP3	V _{Core} Voltage	JP3
2.0V		2.4V		2.8V MMX 6x86L		3.2V K6-233 (or higher)	
2.1V K6-233 (or higher)		2.5V		2.9V K6-166/200 6x86MX		3.3V	
2.2V		2.6V		3.0V		3.4V	
2.3V		2.7V		3.1V		3.5V Pentium 6x86, K5	

*: Not listed voltage on the motherboard text.

CPU Type	V _{Core}
Pentium (P54C), 6x86, K5	3.3V ~ 3.52V
MMX (P55C)	2.8V
6x86L	2.8V
K6-166/200	2.9V
K6-233 (or higher)	3.2V

- Note:
1. Refer to the table above to choose the correct voltage for the CPU everytime that you install a CPU.
 2. CPU V_{I/O} is fixed on 3.3V.
 3. Make sure that your JP3 is matched with the CPU voltage, otherwise will damage the CPU or make the system unstable.
 4. When the new CPU is announced and is not listed on this manual, please refer to the above table, select the correct voltage setting for it.

System Memory Configuration

This 82430TX motherboard supports 72-pin SIMMs and 168pin DIMM (3.3V unbuffered type) of 4MB, 8MB, 16MB, or 32MB to form a memory size between 4MB to 256MB (total of 6 rows are supported).

The 82430TX chipset supports "Table Free" configuration so that DRAM module can be installed at any capacity except **SIMM1, 2 and SIMM 6 can't be installed at the same time.**

Jumper Settings

SW1: Bus Ratio and External Bus Clock Select

Set the jumper according to your CPU clock. Black area in the following table indicates where the toggle switch should be turned to.

Ratio	Clock	SW1 Setting	External Bus Clock																		
1.5x clock	90 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td></td><td></td><td>On</td><td></td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td></td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>			On				Off	Off		Off	Off	Off	1	2	3	4	5	6	60 MHz
			On																		
Off	Off		Off	Off	Off																
1	2	3	4	5	6																
	100 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>							Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
Off	Off	Off	Off	Off	Off																
1	2	3	4	5	6																
2.0x clock	120 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>On</td><td></td><td>On</td><td></td><td></td><td></td></tr> <tr><td></td><td>Off</td><td></td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On		On					Off		Off	Off	Off	1	2	3	4	5	6	60 MHz
	On		On																		
	Off		Off	Off	Off																
1	2	3	4	5	6																
	133 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>On</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On							Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
On																					
	Off	Off	Off	Off	Off																
1	2	3	4	5	6																
2.5x clock	150 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>On</td><td>On</td><td>On</td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On	On	On							Off	Off	Off	1	2	3	4	5	6	60 MHz
	On	On	On																		
			Off	Off	Off																
1	2	3	4	5	6																
	166 MHz	ON <table border="1" style="display: inline-table; vertical-align: middle;"> <tr><td>On</td><td>On</td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On	On							Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
On	On																				
		Off	Off	Off	Off																
1	2	3	4	5	6																



3.0x clock	180 MHz	ON	<table border="1"> <tr><td>On</td><td>On</td><td></td><td></td><td></td><td></td></tr> <tr><td>Off</td><td></td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On	On					Off		Off	Off	Off	Off	1	2	3	4	5	6	60 MHz
	On	On																				
Off		Off	Off	Off	Off																	
1	2	3	4	5	6																	
200 MHz	ON	<table border="1"> <tr><td>On</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On						Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz	
On																						
Off	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	
3.5x clock*	233 MHz	ON	<table border="1"> <tr><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>							Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
Off	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	
4.0x clock	266 MHz	ON	<table border="1"> <tr><td>On</td><td></td><td></td><td>On</td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On			On			Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
On			On																			
Off	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	
4.5x clock	300 MHz	ON	<table border="1"> <tr><td>On</td><td>On</td><td></td><td>On</td><td></td><td></td></tr> <tr><td></td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On	On		On				Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
On	On		On																			
	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	
5.0x clock	333 MHz	ON	<table border="1"> <tr><td>On</td><td>On</td><td></td><td>On</td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>	On	On		On			Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
On	On		On																			
Off	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	
5.5x clock	366 MHz	ON	<table border="1"> <tr><td></td><td></td><td></td><td>On</td><td></td><td></td></tr> <tr><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td><td>Off</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr> </table>				On			Off	Off	Off	Off	Off	Off	1	2	3	4	5	6	66 MHz
			On																			
Off	Off	Off	Off	Off	Off																	
1	2	3	4	5	6																	

*: For MMX, K6, and M2 CPUs, this is not 1.5X clock but 3.5x clock.

- Note:
1. 6 of SW1 are reserved.
 2. 1, 2 of SW1 determine the clock ratio.
 3. 3, 4 of SW1 determine the bus clock.
 4. 5 of SW1 is only used for AMD K6 CPU.





JP11: Clear CMOS Data

Clear the CMOS memory by shorting this jumper momentarily; then remove the cap to retain new settings.

COMS Data	Clear Data	Retain Data (default)
JP11		

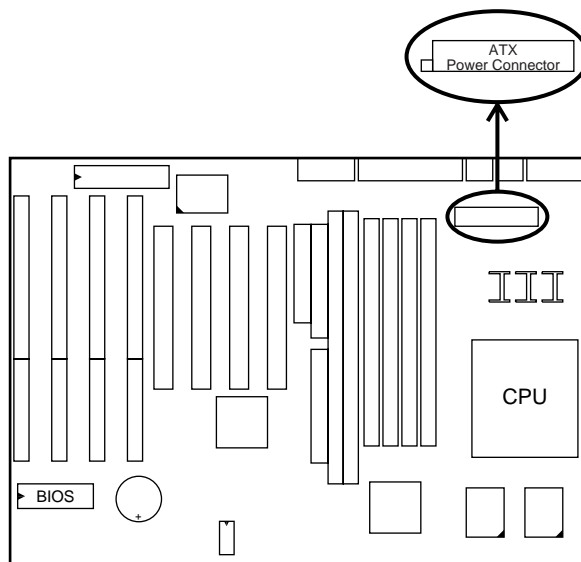
JP19: INTEL FLASH Memory Boot Block Programming

This jumper is used for INTEL FLASH memory only. You need to put a cap on pin2-3 of JP19 before programming and change the cap back to pin1-2 after finishing programming.

FLASH	JP19 Before Programming	JP19 After Programming
Non-INTEL Flash	 1	 1
INTEL Flash	 1	 1

Power Connector

The power connector has two 10-pin male header connectors. Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.



IDE LED Activity Light: (J1 pin1–4)

This connector connects to the hard disk activity indicator light on the case.

Infrared Port Module Connector (J1 pin6–10)

The system board provides a 5-pin infrared connector—IR1 as an optional module for wireless transmitting and receiving. **Pin 6 through 10 are Transmit, GND, Receive (low speed), Receive (high speed), and Vcc, respectively.**

J1 pin12, 13: Power Switch

Connect the ATX power switch to this connector.

SMI Switch (J1 pin14, 15)

Toggle this jumper forces the system to sleep and the system won't wake up until the hardware event is coming. (The BIOS Power Management setting must be Enabled.)

Speaker Connector (J2 pin1–4)

The speaker connector is a 4-pin connector for connecting the system and the speaker. (See the following drawing for jumper position.)

Reset Switch (J2 pin5, 6)

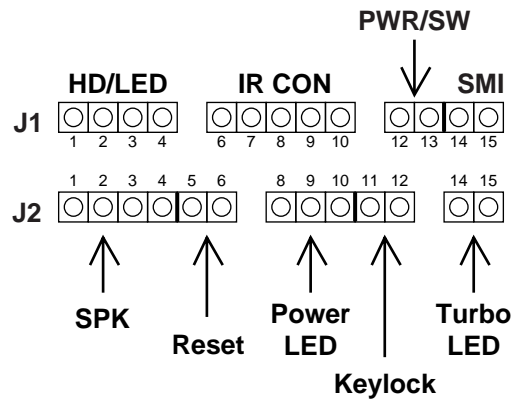
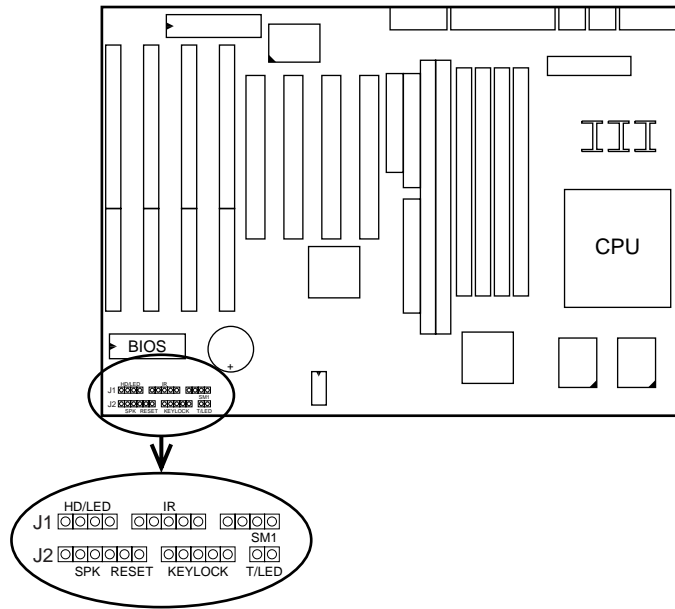
The system board has a 2-pin connector for rebooting your computer without having to turn off your power switch. This prolongs the life of the system's power supply.

Power LED and Keylock Switch (J2 pin8–12)

The keylock switch is a 5-pin connector for locking the keyboard for security purposes. (See the following drawing for jumper position, and pin1~3 is connected to power LED and pin 4~5 is connected to keylock switch.)

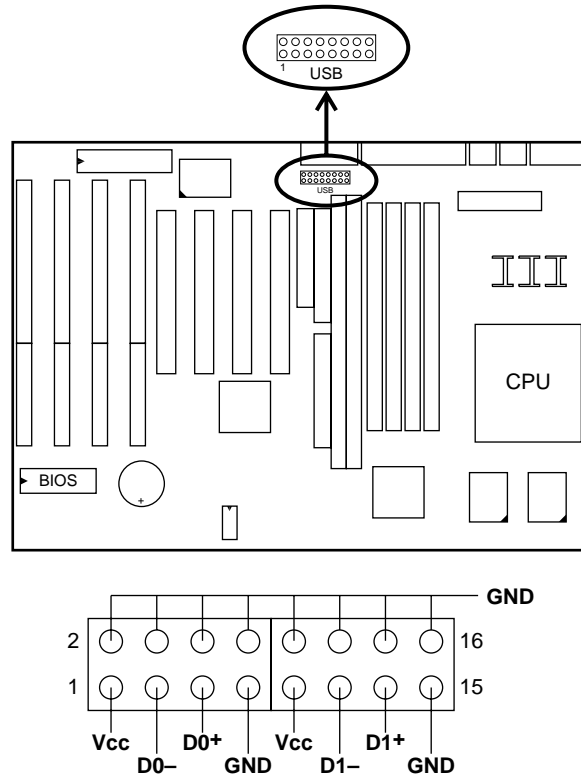
Turbo LED (J2 pin14, 15)

Connect the case's turbo LED to this connector.



USB1: USB Connector

This jumper connects to the USB cable to provide USB device.



J1 Switch Signal Summary

J1	Pin	Signal Description
HDD LED Connector	1	+5V
	2	HDD LED Signal
	3	HDD LED Signal
	4	+5V
N.C.	5	No Connection
Infrared Connector	6	Infrared Transmit Signal
	7	GND
	8	Infrared Receive Signal (low speed)
	9	Infrared Receive Signal (high speed)
	10	+5V
N.C.	11	No Connection
PWR/SW	12	Power Switch
	13	Power Switch
SMI	14	GND
	15	SMI Signal

J2 Switch Signal Summary

J2	Pin	Signal Description
Speaker Connector	1	Speaker Signal
	2	No Connection
	3	Ground
	4	+5V
Reset Switch	5	Reset Signal
	6	Ground
N.C.	7	No Connection
Power LED Connector	8	+5V
	9	No Connection
	10	Ground
Keylock Connector	11	Keylock Signal
	12	GND
N.C.	13	No Connection
Turbo LED Connector	14	Turbo LED Connector
	15	Ground

Chapter 3

Award BIOS Setup

This 82430TX motherboard comes with the AWARD BIOS from AWARD Software Inc. Enter the Award BIOS program's Main Menu as follows:

1. Turn on or reboot the system.

After a series of diagnostic checks, the following message will appear:

PRESS TO ENTER SETUP

2. Press the key and the main program screen appears as in the following page.

ROM PCI/ISA BIOS
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

3. Using one of the arrows on your keyboard to select an option and press <Enter>. Modify the system parameters to reflect the options installed in the system.
4. You may return to the Main Menu anytime by press <ESC>.
5. In the Main Menu, "SAVE AND EXIT SETUP" saves your changes and reboots the system, and "EXIT WITHOUT SAVING" ignores your changes and exits the program.

Standard CMOS Setup

Standard CMOS Setup allows you to record some basic system hardware configuration and set the system clock and error handling. You only need to modify the configuration values of this option when you change your system hardware configuration or the configuration stored in the CMOS memory got lost or damaged.

Run the Standard CMOS Setup as follows:

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of options appears.

```
ROM PCI/ISA BIOS
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.
```

Date (mm:dd:yy) : Thu, May 9 1996	
Time (hh:mm:ss) : 15 : 45 : 10	
HARD DISKS	TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE
Primary Master	: Auto 0 0 0 0 0 0 Auto
Primary Slave	: Auto 0 0 0 0 0 0 Auto
Secondary Master	: Auto 0 0 0 0 0 0 Auto
Secondary Slave	: Auto 0 0 0 0 0 0 Auto
Drive A : 1.44M, 3.5 in.	Base Memory: 640K Extended Memory: 15360K Other Memory: 384K <hr style="width: 50%; margin: 0 auto;"/> Total Memory: 16384K
Drive B : None	
Floppy 3 Mode Support : Disabled	
Video : EGA/VGA	
Halt On : All Errors	
Esc : Quit	↑ ↓ → ← : Select Item
F1 : Help	(Shift) F2 : Change Color
	PU/PD/+/- : Modify

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys.

A short description of screen options follows:

Date (mm:dd:yy) Time (hh:mm:ss)	Set the current date and time.
Primary (Secondary) Master/Slave	This field records the specifications for all non-SCSI hard disk drives installed in your system. Refer to the respective documentation on how to install the drivers.
Drive A/B	Set this field to the types of floppy disk drives installed in your system. The choices are: 360KB, 5.25 in., 1.2MB, 5.25 in., 720KB, 3.5 in., 1.44M, 3.5 in. (default), 2.88MB, 3.5 in., or None 120MB, 3.5in., IDE Floppy Drive (Auto detect).
Floppy 3 Mode Support	Drive A/B, Both: Enabled 3.5-inch, 1.2MB function. Disabled (default): Disabled 3.5-inch, 1.2MB function.
Video	Set this field to the type of video display card installed in the system. The choices are: Monochrome; Color 40x25; VGA/ EGA (default); or Color 80x25
Halt On	Set this field to the type of errors that will cause the system to halt. The choices are: All Errors (default); No Errors; All, But Keyboard; All, But Diskette; or All, But Disk/Key

3. Press <ESC> to return to the Main Menu when you finish setting up in the "Standard CMOS Setup".

BIOS Features Setup

BIOS Features Setup allows you to improve your system performance or set up some system features according to your preference.

Run the BIOS Features Setup as follows:

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of options appears.

```
ROM PCI/ISA BIOS
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.
```

CPU Internal Cache	: Enabled	Video BIOS Shadow	: Enabled
External Cache	: Enabled	C8000-CBFFF Shadow	: Disabled
Quick Power on Self Test	: Enabled	CC000-CFFFF Shadow	: Disabled
Boot Sequence	: A,C, SCSI	D0000-D3FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D4000-D7FFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	D8000-DBFFF Shadow	: Disabled
Boot Up NumLock Status	: On	DC000-DFFFF Shadow	: Disabled
Gate A20 Option	: Fast		
TypeMatic Rate Setting	: Disabled		
TypeMatic Rate (Chars/Sec)	: 6	ESC : Quit	↑ ↓ → ← : Select Item
TypeMatic Delay (Msec)	: 250	F1 : Help	PU/PD/+/- : Modify
Security Option	: Setup	F5 : Old Values (Shift)	F2 : Color
PCI/VGA Palette Snoop	: Disabled	F6 : Load BIOS Defaults	
OS Select for DRAMs>64MB	: Non-OS/2	F7 : Load Setup Defaults	
Virus Warning	: Disabled		

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.

Shift <F2>: Change color.

<F5> : Get the previous values. These values are the values with which the user started the current session.

<F6>: Load all options with the BIOS default values.

<F7>: Load all options with the Setup default values.

A short description of screen options follows:

CPU Internal Cache	Choose Enabled (default) or Disabled. This option allows you to enable or disable the CPU's internal cache.
External Cache	Choose Enabled (default) or Disabled. This option allows you to enable or disable the external cache memory.
Quick Power On Self Test	Choose Enabled (default) or Disabled. This option allows you to speed up the Power On Self Test routine.
Boot Sequence	Default is "A, C, SCSI". This option determines which drive to look for first for an operating system.
Swap Floppy Drive	Choose Enabled or Disabled (default). This option swaps floppy drive assignments when it is enabled.
Boot Up Floppy Seek	<p>Enabled: During POST, BIOS checks the track number of the floppy disk drive to see whether it is 40 or 80 tracks.</p> <p>Disabled (default): During POST, BIOS will not check the track number of the floppy disk drive.</p>
Boot Up NumLock Status	Choose On (default) or Off. This option lets user to activate the NumLock function at boot-up.

Gate A20 Option	Choose Normal or Fast (default). This option allows the RAM to access the memory above 1MB by using the fast gate A20 line.
Typematic Rate Setting	Choose Enabled or Disabled (default). Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Range between 6 (default) and 30 characters per second. This option controls the speed of repeating keystrokes.
Typematic Delay (Msec)	Choose 250 (default), 500, 750, and 1000. This option sets the time interval for displaying the first and the second characters.
Security Option	Choose System or Setup (default). This option is to prevent unauthorized system boot-up or use of BIOS Setup.
PCI/VGA palette Snoop	Choose Enabled or Disabled (default). It determines whether the MPEG ISA cards can work with PCI/VGA or not.
Video BIOS Shadow	Enabled (default): Map the VGA BIOS to system RAM. Disabled: Don't map the VGA BIOS to system RAM.
C8000-CBFFF to DC000-DFFF Shadow	These options are used to shadow other expansion card ROMs.

- Virus Warning**
- Enabled: Activates automatically when the system boots up causing a warning message to appear if there is anything attempts to access the boot sector or hard disk partition table.
- Disabled: No warning message will appear when there is something attempts to access the boot sector or hard disk partition table
- Note: Many diagnostic (or boot manager) programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you disable the virus protection first.*

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

Chipset Features Setup changes the values of the chipset registers. These registers control the system options.

Run the Chipset Features Setup as follows:

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and a screen with a list of options appears.
2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys.

ROM PCI/ISA BIOS
 CHIPSET FEATURES SETUP
 AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	
DRAM Timing	: 70 ns	
DRAM Leadoff Timing	: 10/6/3	
DRAM Read Burst (EDO/FP)	: x222/x333	
DRAM Write Burts Timing	: x222	
Fast EDO Lead off	: Disabled	
Refresh RAS# Assertio	: 4 Clks	
Fast RAS To CAS Delay	: 3	
DRAM Page Idel Timer	: 6 Clks	
DRAM Enhanced Paging	: Enabled	
Fast MA to RAS# Delay	: 2 Clks	
SDRAM (CAS Lat/RAS-to-CAS)	: 3/3	
SDRAM Speculative Read	: Disabled	
System BIOS Cacheable	: Disabled	
Video BIOS Cacheable	: Disabled	
8 Bit I/O Recovery Time	: 3	
16 Bit I/O Recovery Time	: 2	
Memory Hole At 15M-16M	: Disabled	
PCI 2.1 Complicance	: Disabled	

ESC : Quit	↑ ↓ → ← : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values (Shift)	F2 : Color
F6 : Load BIOS Defaults	
F7 : Load Setup Defaults	

A short description of screen options follows:

- Auto Configuration** Choose Enabled (default) or Disabled. The system sets all options on the left side of the screen automatically when choose Enabled.

- DRAM Timing** Choose 60ns or 70ns (default). Do not change this setting unless you know the DRAM access time spec.

- DRAM Leadoff Timing** Use the default setting. This sets the point of time that the CPU is allowed to read and write to DRAM and then perform.

- DRAM Read Burst** Use the default setting. Burst
- DRAM Write Burst** read/write requests are generated
- Timing** by the CPU in four separate parts.
- (EDO/FPM)** The 1st part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing number is, the faster the system memory will be addressed.
- Fast EDO Lead Off** Use the default setting. This function allows you to enhance the performance by selecting the Fast EDO Lead Off.
- Refresh RAS# Assertion** Use the default setting. This function allows you to select the type of DRAM refresh clock delay.
- Fast RAS To CAS Delay** Use the default setting. This setup option allows you to determine the delay time in completing the transition from RAS to CAS.
- DRAM Page Idle Timer** Use the default setting. Choices are 2, 4, 6, or 8 clk.
- DRAM Enhanced Paging** This function allows you to determine either to keep the page open until a page/row missing or to use the additional information to keep the DRAM page open when the host may be right back.
- Fast MA to RAS# Delay** This function allows you to select the DRAM Row Miss timing.

SDRAM (CAS Lat/RAS-to CAS)	Use the default setting (3/3). This setup option allows you to select the CAS# latency for all SDRAM cycles and RAS# to CAS# delay.
SDRAM Speculative Read	Use the default setting. This function allows a DRAM read request to be generated slightly before the address has been fully decoded.
System BIOS Cacheable	Choose Enabled or Disabled (default). When Enabled, the access to the system BIOS ROM addressed at F0000H-FFFFFH is cached.
Video BIOS Cacheable	Choose Enabled or Disabled (default). When Enabled, the access to the VGA BIOS ROM addressed at C0000H-C7FFFH is cached.
8 Bit I/O Recovery Time Select Item	This delay happens when the CPU is running so much faster than the I/O bus that the CPU must be delayed to allow for the completion of the I/O. The choices for 8 bit I/O are NA, 1 to 8 CPU clock. Default is 3. The choices for 16 bit I/O are NA, 1 to 4 CPU clock. Default is 2.
16 Bit I/O Recovery Time Select Item	
Memory Hole At 15M-16M	Choose Enabled or Disabled (default). In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory's space below 16MB.

**PCI 2.1
Compliance**

Enabled: enables the PCI 2.1 features.

Disabled: (default setting) disables these features

Note: Enabled this function will increase the PCI performance but also create the compatibility problems.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Power Management Setup

Power Management Setup sets the system's power saving functions.

1. Choose "POWER MANAGEMENT SETUP" from the Main Menu and a screen with a list of options appears.

ROM PCI/ISA BIOS POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.		
Power Management	: Disabled	** Reload Global Timer Events **
PM Control by APM	: No	IRQ [3-7, 9-15], MNI : Enabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0 : Enabled
Video Off After	: N/A	Primary IDE 1 : Enabled
Doze Mode	: Disabled	Secondary IDE 0 : Enabled
Standby Mode	: Disabled	Secondary IDE 1 : Enabled
Suspend Mode	: Disabled	Floppy Disk : Enabled
HDD Power Down	: Disabled	Serial Port : Enabled
Throttle Duty CYcle	: 62.5%	Parallel Port : Enabled
ZZ Active in Suspend	: Disabled	
VGA Active Monitor	: Enabled	ESC : Quit ↑ ↓ → ←: Select Item
Soft-Off by PWR-BTn	: Instant-Off	F1 : Help PU/PD/+/- : Modify
Resume by Ring	: Disabled	F5 : Old Values (Shift)F2 : Color
IRQ8 Clock Event	: Disabled	F6 : Load BIOS Defaults
		F7 : Load Setup Defaults

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys.

A short description of screen options follows:

Power Management Choose Max. Saving, User Define, Disabled (default), or Min Saving.

PM Control by APM Choose Yes or No (default). You need to choose Yes when the operating system has the APM functions, choose No otherwise.

Video Off Method Choose Blank, DPMS, or V/H Sync+Blank (default). You can choose either DPMS or V/H Sync+Blank when the monitor has the Green function. You need to choose Blank when the monitor does not have the Green function.

Note: Some VGA cards don't allow V/H Sync to be turned off directly.

Video Off After	Choose N/A (default), Doze, Standby, or Suspend. This function determines the timing of the monitor closed down functions.
Doze Mode	This option sets the CPU speed down to 33MHz during this mode.
Standby Mode Suspend Mode	These two options allow you to choose the mode for the different timers. The Standby Mode turns off the VGA monitor, and the Suspend Mode turns off the CPU and saves the energy of the system.
HDD power Down	Time is adjustable from 1 to 15 minutes. When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor.
Throttle Duty Cycle	Choose the duty cycle time: 12.5%, 25%, 37.5%, 50%, 62.5% (default), 75%, or 87.5%. The bigger of the percentage, the more saving power it gets.
ZZ Active in Suspend	<p>Enabled: PB SRAM (cache) still consumes power when entering the power management mode.</p> <p>Disabled: (default) PB SRAM (cache) will not consume power when entering the power management mode.</p>

VGA Active Monitor	<p>Enabled: the system can not enter the power saving mode when monitor is on.</p> <p>Disabled: the system can enter the power saving mode when monitor is on.</p>
Soft-Off by PWR-BTTN	<p>Instant-off: (default) turns off the system power at once after pushing the power button.</p> <p>Delay 4 Sec: turns off the system power 4 seconds after pushing the power button (to meet PC97 spec.)</p>
Resume by Ring	<p>Enabled: (default) wake up the system from ring signal.</p> <p>Disabled: Ring signal can not wake up the system.</p>
IRQ (#), NMI; Primary IDE 0 Primary IDE 1; Secondary IDE 0 Secondary IDE 1; Floppy Disk; Serial Port; Parallel Port	<p>Enabled: (default) The system can not enter the power saving mode when I/O ports or IRQ# is activated.</p> <p>Disabled: The system still can enter the power saving mode when I/O ports or IRQ# is activated.</p> <p><i>Note: These functions can only be activated when the power management option is Enabled.</i></p>

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

PnP/PCI Configuration Setup

PnP/PCI Configuration Setup configures the PCI bus slots.

Run the Chipset Features Setup as follows:

1. Choose “PnP/PCI CONFIGURATION SETUP” from the Main Menu and a screen with a list of options appears.

```
ROM PCI/ISA BIOS
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

PNP OS Installed      : No
Resources Controlled By : Manual
Reset Configuration Data : Disabled

IRQ-3 assigned to : Legacy ISA
IRQ-4 assigned to : Legacy ISA
IRQ-5 assigned to : PCI/ISA PnP
IRQ-7 assigned to : PCI/ISA PnP
IRQ-9 assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : PCI/ISA PnP
IRQ-15 assigned to : PCI/ISA PnP
DMA-0 assigned to : PCI/ISA PnP
DMA-1 assigned to : PCI/ISA PnP
DMA-3 assigned to : PCI/ISA PnP
DMA-5 assigned to : PCI/ISA PnP
DMA-6 assigned to : PCI/ISA PnP
DMA-7 assigned to : PCI/ISA PnP

PCI IDE IRQ Map To : PCI-AUTO
Primary IDE INT# : A
Secondary IDE INT# : B

Used MEM base addr : N/A
Used MEM Length* : 8K

ESC : Quit      ↑ ↓ → ← : Select Item
F1  : Help      PU/PD/+/- : Modify
F5  : Old Values (Shift)F2 : Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys.

A short description of screen options follows:

PNP OS Installed Yes: OS supports Plug and Play function.
No (default): OS doesn't support Plug and Play function.
Note: BIOS will automatically disable all PnP resources except the boot device card when select Yes on Non-PnP OS.

Resources Controlled By Choose Manual (default) or Auto.
The BIOS checks the IRQ/DMA channel number on the ISA and PCI card manually if chose Manual and the IRQ/DMA channel number will be checked automatically if choose Auto.

Reset Configuration Data Choose Enabled or Disabled (default). Disabled means to retain PnP configuration data in BIOS and Enabled means to reset PnP configuration data in BIOS.

IRQ-x assigned to DMA-x assigned to Legacy ISA: Manually assigns IRQ/DMA to device.
PCI/ISA PnP: BIOS assigns IRQ/DMA to device automatically.

PCI IDE IRQ Map To Select PCI-AUTO (default), ISA, or assign a PCI SLOT number (depending on which slot the PCI IDE is inserted). If PCI-AUTO does not work, then assign an individual PCI SLOT number.

Primary/ IDE INT# Choose A (default), B, C, or D.

Secondary IDE INT# Choose A, B (default), C, or D.

Used MEM Base Addr Choose N/A (default) or ISA legacy card requests to have memory start address.

**Used MEM
Length***

Choose 8K, 16K, 32K, or 64K.

With the above two functions, users can define where the used memory address is located and its corresponding length of the legacy area. BIOS will skip the UMB area which is used by the legacy device to avoid memory space conflict.

* This function activates only when the "Used MEM Base Addr" is chosen.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Load Setup Defaults

Load Setup Defaults option loads the default system values to the system configuration fields. If the CMOS is corrupted the defaults are loaded automatically. Choose this option and the following message appears:

```
"Load Setup Defaults (Y/N)? N"
```

To use the Setup defaults, change the prompt to "Y" and press <Enter>.

Integrated Peripherals

Integrated Peripherals option changes the values of the chipset registers. These registers control system options in the computer.

1. Choose "INTEGRATED PERIPHERALS" from the Main Menu and a screen with a list of options appears.

```
ROM PCI/ISA BIOS
INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.
```

IDE HDD Block Mode	: Enabled	ECP Mode Use DMA	: 3*
IDE Primary Master PIO	: Auto	Parallel Port EPP Type	: EPP1.7*
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto		
IDE Primary Master UDMA	: Auto		
IDE Primary Slave UDMA	: Auto		
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
Onboard FDD Controller	: Enabled		
Onboard Serial Port 1	: Auto		
Onboard Serial Port 2	: Auto		
UART2 Mode	: Standard	ESC : Quit	↑ ↓ → ← : Select Item
IR Function Duplex	: Half	F1 : Help	PU/PD/+/- : Modify
RxD, TxD Active	: Lo, Lo+	F5 : Old Values (Shift)	F2 : Color
Onboard Parallel Port	: 378H/IRQ7	F6 : Load BIOS Defaults	
Onboard Parallel Mode	: SPP	F7 : Load Setup Defaults	

2. Use one of the arrow keys to move between options and modify the selected options by using PgUp/PgDn/+/- keys.

A short description of screen options follows:

IDE HDD Block Mode Choose Enabled (default) or Disabled. If your hard disk size is larger than 540MB, choose Enabled, and, if you are using the IDE HDD Auto Detection option, the BIOS will choose this option automatically. (Note: Some old HDD models don't provide this feature.)

IDE Primary Master/Slave PIO	Choose Auto (default) or Mode 0~4. The BIOS will detect the HDD Mode
IDE Secondary Master/Slave PIO	type automatically when you choose Auto. You need to set to a lower mode than Auto when your hard disk becomes unstable.
IDE Primary Master/Slave UDMA	Choose Disabled or Auto (default). Auto: Automatically detects the HDD Ultra DMA
IDE Secondary Master/Slave UDMA	function. Disabled: Disabled the HDD Ultra DMA function.
On-Chip Primary/ Secondary PCI IDE	Enabled (default): Turn on the onboard IDE function. Disabled: Turn off the onboard IDE function.
Onboard FDD Controller	Choose Enabled (default) or Disabled. Choose Disabled when you use an ISA card with FDD function, or , choose Enabled to use the onboard FDD connector.
Onboard Serial Port 1	Choose Auto, 3F8/IRQ4 (default), 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Disabled. Do no set port 1 & 2 to the same value except for Disabled.
Onboard Serial Port 2	Choose Auto (default), 3F8/IRQ4 , 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3, or Disabled.
UART2 Mode	Choose Standard, HPSIR, or ASKIR.

IR Function Duplex Choose Half (default), or Full.
Half: Doesn't transmit and receive activities at the same time.
Full: Transmit and receive activities at the same time.

RxD, TxD Active Choose Hi/Hi, Hi/Lo, Lo/Hi, or Lo/Lo (default).
**: The above 2 options won't work unless UART 2 Mode ASKIR/HPSIR is selected.*

Onboard Parallel Port Choose the printer I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5

Onboard Parallel Mode Choose SPP (default), ECP + EPP, EPP, or ECP mode. The mode depends on your external device that connects to this port.

ECP Mode Use DMA* Choose DMA3 (default) or DMA1. Most sound cards use DMA1. Check with your sound card configuration to make sure that there is no conflict with this function.
**: This option will not be displayed unless the EPP/ECP function is selected..*

Parallel Port EPP Type Choose EPP1.7 (default) or EPP1.9. EPP1.9 supports hardware handshake. This setting is dependent on your EPP device.
Note: The above 2 options will not be displayed unless the EPP/ECP function is selected.

3. Press <ESC> and follow the screen instructions to save or disregard your settings.

Supervisor/User Password

These two options allow you to set your system passwords. Normally, supervisor has a higher right to change the CMOS setup option than the user. The way to set up the passwords for both Supervisor and User are as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

"Enter Password:"

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters.
3. After you enter the password, the following message appears prompting you to confirm the password:

"Confirm Password:"

4. Enter exactly the same password you just typed again to confirm the password and press <Enter>.
5. Move the cursor to Save & Exit Setup to save the password.
6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.
7. Move the cursor to Save & Exit Setup to save the option you did, otherwise the old password will still be there when you turn on your machine next time.
8. Press <ESC> to exit to the Main Menu.

Note: *If you forget or lose the password, the only way to access the system is to clear the CMOS RAM by setting JP11. All setup information will be lost and you need to run the BIOS setup program again.*

IDE HDD Auto Detection

IDE HDD Auto Detection detects the parameters of an IDE hard disk drive and automatically enters them to the Standard CMOS Setup screen.

The screen will ask you to select a specific hard disk for Primary Master after you select this option. If you accept a hard disk detected by the BIOS, you can enter "Y" to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks and you may press the <ESC> after the <Enter> to skip this function and go back to the Main Menu.

Save & Exit Setup

Save & Exit Setup allows you to save all modifications you have specified into the CMOS memory. Highlight this option on the Main Menu and the following message appears:

```
SAVE to CMOS and EXIT (Y/N)? Y
```

Press <Enter> key to save the configuration changes.

Exit Without Saving

Exit Without Saving allows you to exit the Setup utility without saving the modifications that you have specified. Highlight this option on the Main Menu and the following message appears:

```
Quit Without Saving (Y/N)? N
```

You may change the prompt to "Y" and press <Enter> key to leave this option.