

# **5XA5**

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**82430 TX P54C/P55C PCI Mainboard  
User's Guide &  
Technical Reference**



®

**SOYO™**

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## About This Guide

This User's Guide is for assisting system manufacturers and end users in setting up and installing the mainboard. Information in this guide has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. The information in this document is subject to change without notice.

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**5XA5 SERIAL**

**FC** Tested To Comply  
With FCC Standards  
FOR HOME OR OFFICE USE  
**100%** POST CONSUMER  
RECYCLED PAPER

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# 1 Introduction

The 82430 TX PCI mainboard is a high-performance ATX form-factor system board that supports P54C/P55C family CPUs. This mainboard is fully compatible with industry standards, and adds many technical enhancements.

## Key Features

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Processor supported:

- Supports P54C/P55C family CPUs running at 75~233 MHz speeds ; Cyrix 6x86/6x86L/6x86MX CPUs running at PR150~PR200 speeds ; and AMD K5/K6 CPUs running at PR75~PR233
- Supports SOCKET 7 for upgrade
- Supports P54C/P55C series SMM mode and CPU stop clock
- **Supports MMX technology and Smart Detect CPU Voltage function**

L2 Cache Controller

- **On-board 512K pipeline burst SRAMs cache**

DRAM Controller

- Supports FPM/EDO SIMM ( symmetrical/asymmetrical addressing)
- **Supports 3 strips of 168-pin EDO /SDRM Unbuffered DIMM**
- Memory configurations from 8MB to 256MB

BUS Controller:

- Compliant with PCI specification 2.1
- Four 32-bit PCI slots (Masters) and four ISA slots.
- **Supports Universal Serial Bus — USB**

Peripheral Controller:

- System BIOS built-in NCR810 BIOS and “Plug and Play” function
- Onboard PCI Master IDE controller and floppy controller
- Onboard two high speed UARTS (w/i 16550 FIFO), one SPP/EPP/ECP multi-mode parallel port, and one PS/2 mouse port
- **Onboard FLASH Memory for easy upgrades BIOS**
- **Easy installation of Triones E-IDE/ATAPI CD-ROM Bus Master Drivers included**
- **Onboard IR function.**

## Unpacking the Mainboard

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The mainboard package contains:

- The 82430TX Mainboard
- This User's Guide
- One IDE Bus Master driver diskette

*Note:* Do not unpack the mainboard until you are ready to install it.

Follow the precautions below while unpacking the mainboard.

1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

## Electrostatic Discharge Precautions

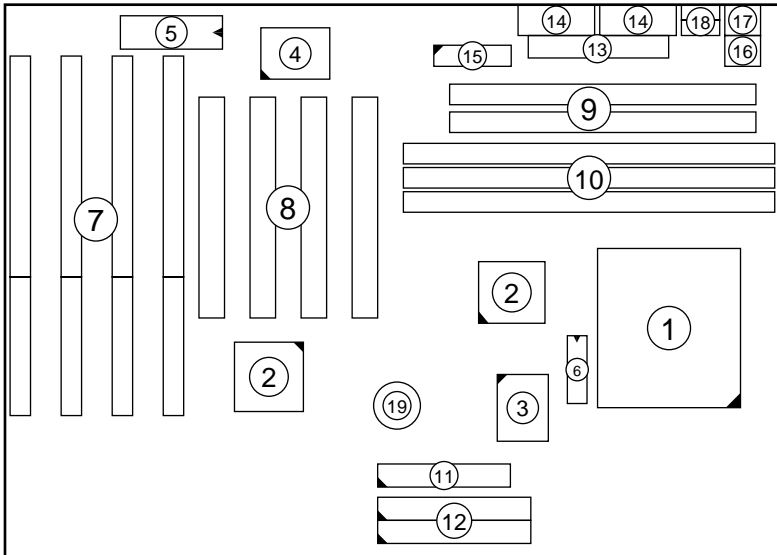
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Make sure you ground yourself before handling the mainboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precaution when handling the mainboard in dry or air-conditioned environments.

Take these precautions to protect your equipment from electrostatic discharge:

- Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.
- Ground yourself before removing any system component from its protective anti-static packaging. To ground yourself grasp the expansion slot covers or other unpainted portions of the computer chassis.
- Frequently ground yourself while working, or use a grounding strap.
- Handle the mainboard by the edges and avoid touching its components.

## Mainboard Layout w/ Default Settings



*Figure 1-1. Mainboard Layout*

- |                                 |   |
|---------------------------------|---|
| 1. ZIF socket 7 (for P54C/P55C) | 11. Floppy Connector                      |
| 2. 82430 TX Chipset             | 12. IDE1/IDE2 Connector                   |
| 3. Pipelined Burst SRAM         | 13. Parallel Port Connector               |
| 4. Ultra I/O Chip               | 14. COM1/COM2 Connector                   |
| 5. PnP FLASH BIOS               | 15. ATX Power Supply Connector            |
| 6. TAG SRAM                     | 16. PS/2 Mouse Connector                  |
| 7. ISA Slots                    | 17. PS/2 KB Connector                     |
| 8. PCI Slots                    | 18. USB port connectors                   |
| 9. SIMM Bank                    | 19. Lithium battery (for CMOS memory, 3V) |
| 10. Unbuffered DIMM Bank        |   |

Default settings are as follows: P54C/P55C 133MHz CPU, 512K Pipe-lined Burst cache , On - board PCI E - IDE Enabled , 2 high speed UA-RTS Enabled (w / 16550 FIFO), 1 EPP/ECP port (ECP + EPP mode),5V DRAM/3.3V DIMM, and ATX power supply.

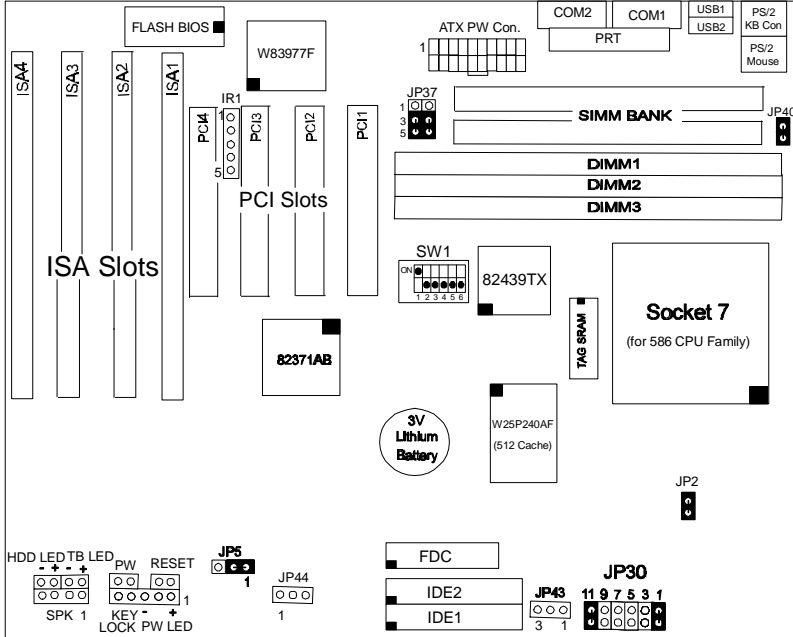


Figure 1-2. Mainboard Default Setting

**Important: Make sure the system is well ventilated to prevent overheating and ensure system stability.**



# 2 Hardware Setup

This chapter explains how to configure the mainboard's hardware. After you install the mainboard, you can set jumpers, install memory on the mainboard, and make case connections. Refer to this chapter whenever you upgrade or reconfigure your system.

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**CAUTION:** *Turn off power to the mainboard, system chassis, and peripheral devices before performing any work on the mainboard or system.*



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## Jumpers

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### JP5: CMOS Clear Jumper

Clear the CMOS memory by momentarily shorting pin 2–3; then shorting pin 1–2 to retain new settings.

CMOS Setting	JP5
Retain CMOS data (default)	
Clear CMOS data	

### JP40: CE Test Jumper Pin

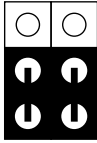
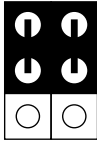
This connector is reserved for the CE test. If you run into problems during the CE test, unplug the jumper pin and try again.

## JP2: Smart Detect CPU Voltage Function Auto/Manual Jumper

This jumper is reserved for few old non-Intel CPUs which can not be detected correctly. If you run into problems while detecting the voltage of old non-Intel CPUs, remove this jumper to correct it.

## JP37: DIMM Voltage Select Jumper

Most of DIMMs in the consumer market is still 3.3V and this jumper is reserved only for upgrading purpose in the near future. If you have 5V SIMM or DIMM which matches the existing 3.3V DIMM socket on this mainboard, then you need to set this jumper to 5V before installing the SIMM or DIMM.

DIMM Voltage	JP37
3.3V (default)	
5V	

*Caution: Do not change this jumper to 5V setting unless you are sure that your DIMMs are 5V. The wrong setting may cause the system malfunction.*

## CPU Type Configuration

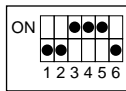
This section shows you how to configure your CPU step by step. Note that you need to check the CPU voltage before installation. This board supports the Intel P54C/P55C/MMX, Cyrix 6x86/6x86L/6x86MX, and AMD 5K86/K5/K6 CPUs. With the MMX technology supported, you should be able to use MMX CPUs and configure these CPUs as normal dual voltage CPUs.

### □ Step 1: Frequency Setting

**P54C/P55C – 75/90/100 CPU Settings (1.5 x clock)**

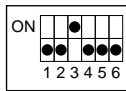
**AMD K5 – PR75/PR90/PR100/PR120/PR133 (1.5 x clock)**

**P54C/P55C – 75/50 MHz  
AMD K5 – PR 75/50 MHz**



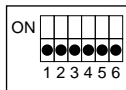
SW1

**P54C/P55C – 90/60 MHz  
AMD K5 – PR 90/60MHz  
AMD K5 – PR 120/60 MHz**



SW1

**P54C/P55C – 100/66 MHz  
AMD K5 – PR 100/66 MHz  
AMD K5 – PR 133/66 MHz**



SW1

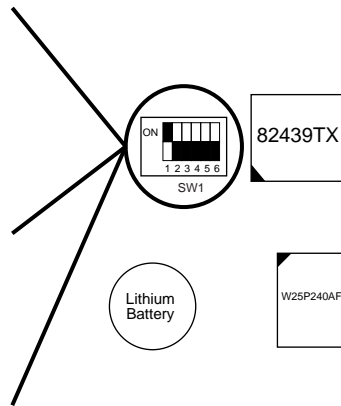


Figure 2–1–1. CPU Jumper Settings

- Note:
1. You must equip the CPU with a fan and heat sink for system stability.
  2. AMD K5–PR90= AMD 5<sub>k</sub>86(SSA5)–P90.

**P54C/P55C - 100/120/133 CPU Settings (2.0 x clock)**  
**Cyrix 6x86/6x686L - PR150+/PR166+/PR200+ CPU Settings**  
**(2.0 x clock)**  
**AMD K5/K6 - PR150 CPU Setting**

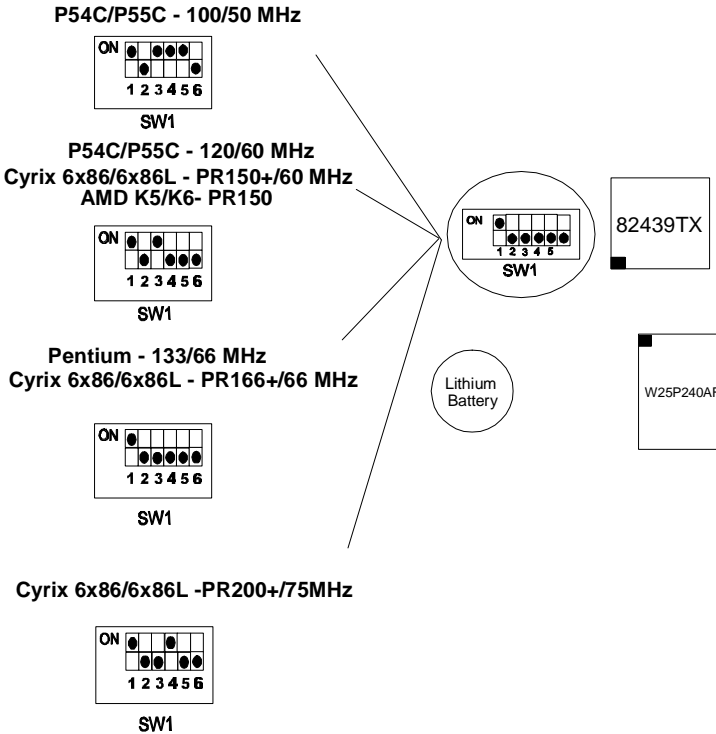
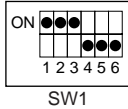


Figure 2-1-2. CPU Jumper Settings

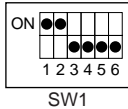
- Note: 1. You must equip the CPU with a fan and heat sink for system stability.
2. The host bus frequency of Cyrix 6x86L-PR200+ CPU is over the standard value, therefore, you need to use higher standard devices to meet the specifications of such CPUs. (i.e., high quality DRAM/VGA card.)

**P54C/P55C– 150/166 CPU Settings (2.5 x clock)**  
**Cyrix 6x86MX – PR166/PR200/PR233 CPU Settings (2.5 x clock)**  
**AMD K5/K6– PR166 CPU Setting**

**P54C/P55C– 150/60 MHz**  
**Cyrix 6x86MX – PR166/60 MHz**



**P54C/P55C– 166/66 MHz**  
**Cyrix 6x86MX – PR200/66 MHz**  
**AMD K5/K6 – PR 166**



**Cyrix 6x86MX – PR233/75 MHz**

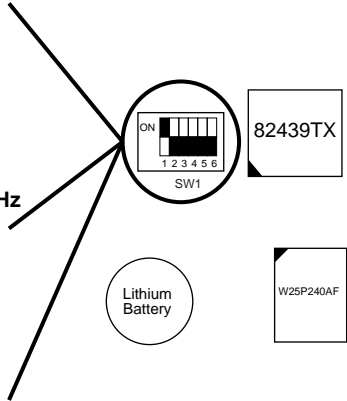
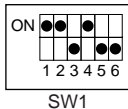
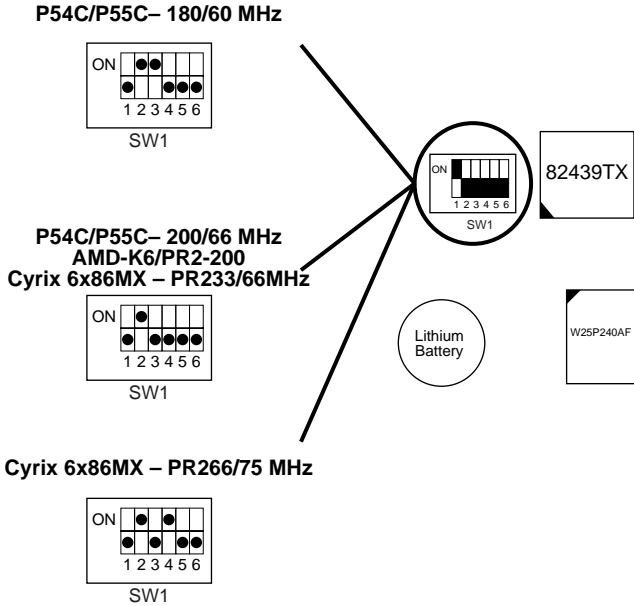


Figure 2–1–3. CPU Jumper Settings

*Note: The host bus frequency of Cyrix 6x86MX–PR233+ CPU is over the standard value, therefore, you need to use higher standard devices to meet the specifications of such CPUs, (i.e., high quality DRAM/VGA card.)*

**P54C/P55C – 180/200 CPU Settings (3.0 x clock)**  
**Cyrix 6x86MX – PR233/PR266 CPU Settings (3.0 x clock)**  
**AMD K6 – PR200 CPU Setting**



*Figure 2–1–4. CPU Jumper Settings*

- Note:*
1. You must equip the CPU with a fan and heat sink for system stability.
  2. The host bus frequency of Cyrix 6x86MX–PR266 CPU is over the standard value, therefore, you need to use higher standard devices to meet the specifications of such CPUs, (i.e., high quality DRAM/VGA card.)

**P54C/P55C – 233 CPU Settings (3.5 x clock)**  
**Cyrix 6x86MX – PR266 Cpu Setting (3.5 x clock)**  
**AMD K6 – PR233 CPU Setting**

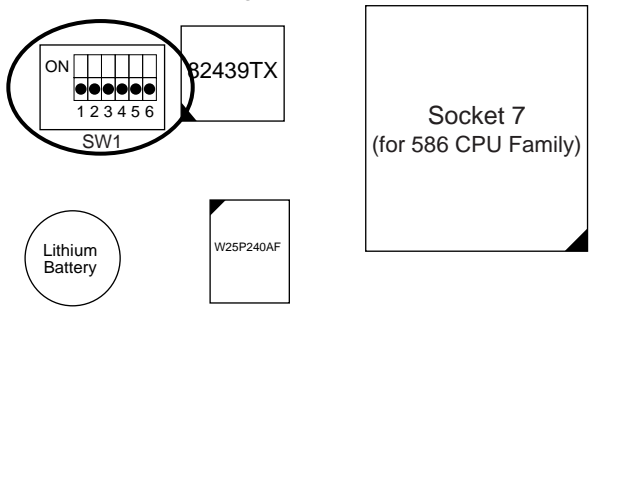


Figure 2-1-5. CPU Jumper Settings

*Note: The host bus frequency of Cyrix 6x86MX-PR266 CPU is over the standard value, therefore, you need to use higher standard devices to meet the specifications of such CPUs, (i.e., high quality DRAM/VGA card.)*

### AMD K6 – PR266 CPU Setting (4.0 x clock)

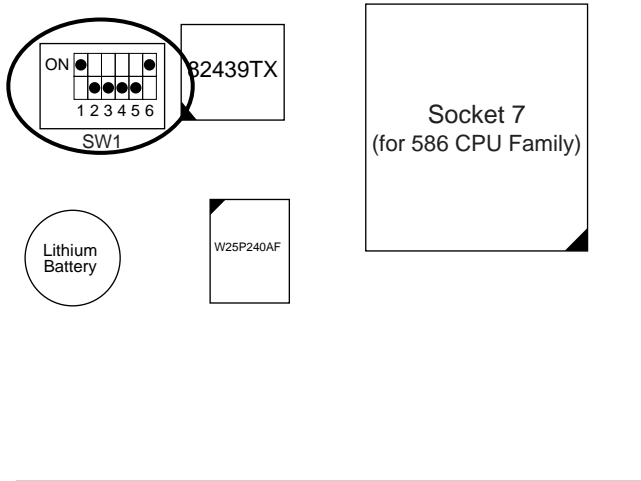


Figure 2–1–6. CPU Jumper Settings

### AMD K6 – PR300 CPU Setting (4.5 x Clock)

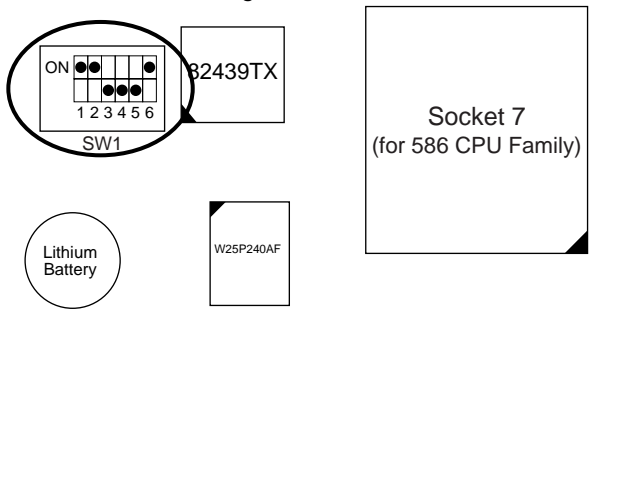


Figure 2–1–7. CPU Jumper Settings

*Note:* You must equip the CPU with a fan and heat sink for system stability.



**❑ Step 2: CPU Single/Dual Voltage Setting**

There are two kinds of CPU input voltages due to various designs of CPUs—single voltage and dual voltage. Set your CPU according to the type that you have.

For Intel P54C/P55C single and dual voltage series CPUs, there is no need to adjust any jumper for CPU voltage due to the **Smart Detect CPU Voltage** function.

**Single Voltage CPU Setting**

Signal voltage CPUs use the same voltage for VIO and VCore and has been used traditionally. The CPUs which fall into this category are Intel P54C series, AMD-K5-PRxxxBx, AMD-K5-PRxxxCx, AMD-K5-PRxxxFx, and Cyrix 6x86. Refer to the following figures to set these CPUs' voltage:

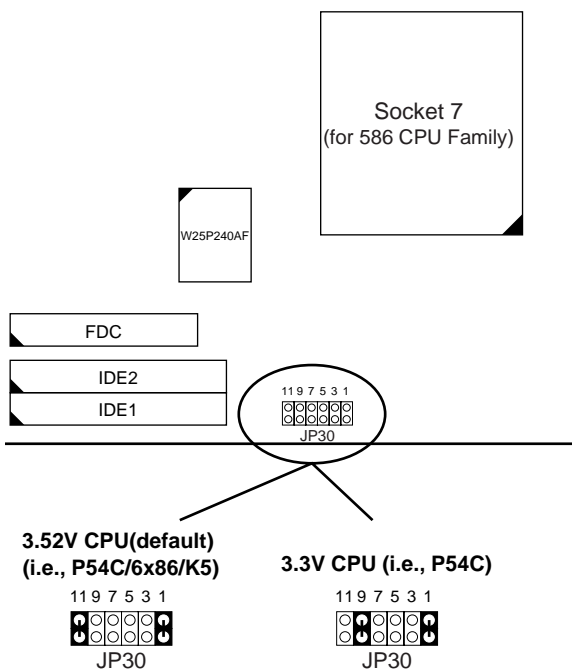


Figure 2–2–1. Single Voltage CPU

*Note:* Please ask your CPU dealer for the exact CPU voltage before you install it.

## Dual Voltage CPU Setting

Dual voltage CPUs are designed to use different voltage for VIO and VCore and they include Intel P55C series, Cyrix 6x86L/MX, AMD K6, and **MMX** technology included CPUs. Refer to the following figures to set these CPUs' voltage:

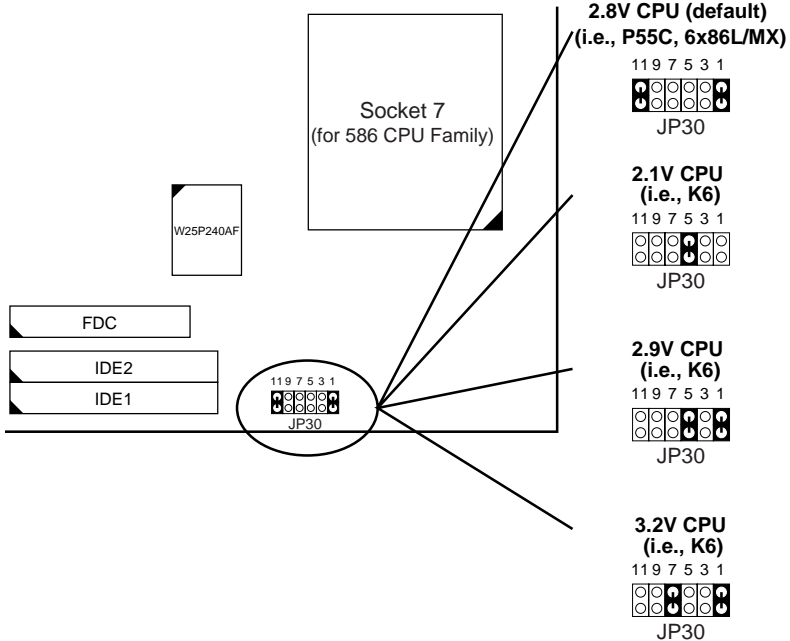


Figure 2-2-2. Dual Voltage CPU

*Note:* Due to various design, please ask your CPU dealer for the exact VIO and VCore voltage before you install it.

## Memory Configuration

The mainboard supports two banks of **72-pin SIMM modules** and **three strips of 168-pin/3.3V Unbuffered DIMM modules**. The mainboard requires SIMM of at least 70ns access time.

The mainboard supports **from 4 to 256 Mbytes** with no other restrictions on memory configurations. You must install two strips of SIMM modules to complete a bank.

## Memory Configuration Table

	SIMM Bank	DIMM Bank		
	Bank 0	DIMM 1	DIMM 2	DIMM 3
RAM Type	FPM/EDO	FPM/EDO/ SDRAM	FPM/EDO/ SDRAM	FPM/EDO/ SDRAM
Single RAM Module Size (MB)	4/8/16/32/64	8/16/32/64	8/16/32/64	8/16/32/64

*Note: Do not install FPM or EDO SIMM/DIMM when you already installed SDRAM type of DIMM.*

### RAM Bank Installation Notice

Due to the RAS line share architecture of TX chipset, do not install SIMM bank with DIMM3. All other combinations are acceptable.

## Cache Configuration

The mainboard has a write-back caching scheme with built-in 512KB Level 2 Pipelined Burst cache onboard to improve the system performance.

### Cache Size and RAM Locations

Cache Size	Cache RAM	TAG RAM	Cacheable Range
<b>512KB</b>	64K x 64 on U5	16K x 8 on U4	64 MB

*Setup*

---

**Multi I/O Port Addresses**

---

Default settings for multi I/O port addresses are shown in the table below.

Port	I/O Address	IRQ	Status
LPT1*	378H	7	ECP + EPP
COM1	3F8H	4	
COM2	2F8H	3	

\* If default I/O port addresses conflict with other I/O card (e.g. sound cards or I/O cards), you must adjust one of the I/O addresses to avoid address conflict. (You can adjust these I/O addresses from the BIOS setup.)

Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.

**Connectors**

---

Attach the mainboard to case devices via connectors on the mainboard. Refer to Figure 1-1 for connector locations and connector pin positions.

**PW – ATX Power Supply On/Off Switch Connector (Momentary type)**

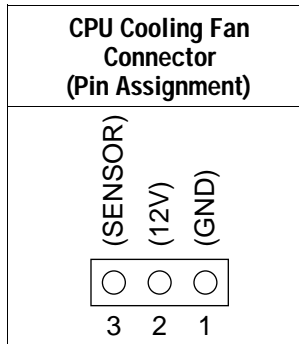
Attach a two-pin switch to this connector for turning the ATX power supply on/off.

**COM1, COM2 – COM1/COM2 Connectors**

Attach COM1/COM2 device to these connectors.

### JP43: CPU Cooling Fan Connector

This 3-pins connector provides 12V power for the CPU cooling fan which matches the pin assignment of this connector. If you enable the Suspend Mode function in BIOS setup, this fan will stop when the system is into the suspend mode.



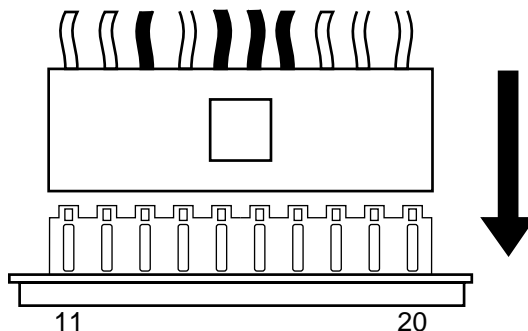
*Note: Make sure the pin assignment of our CPU Cooling Fan is matched with this connector before connecting it, otherwise, you may damage either the mainboard or the cooling fan.*

### FDC — FDC Connector

Attach floppy cable to this connector.

### ATX PW — ATX Power Supply Connectors

The motherboard provides an ATX power supply connector. It is a twenty-pin male header connector. Plug the connector from the power directly onto the board connector while making sure the pin1 is in its position.



**RESET – Hardware Reset Control**

Attach the reset switch to RESET. Closing the RESET switch restarts the system.

**HDD LED – HDD LED Connector**

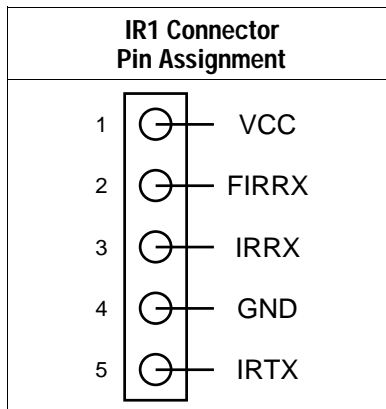
Attach the cable of hard disk drive LEDs to this connector. The LED lights when an HDD is active.

**IDE1/IDE2 – On-board Primary/Secondary IDE HDD Connectors**

Attach cables of hard disk drives to these connectors.

**IR1 – IR Connector**

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.

**Keylock & PW LED – Keylock and Power LED Connector**

It is a connector for a lock that may be installed on the system case for enabling or disabling the keyboard. It also attaches to the case's Power LED. (Pin 1, 3 for power LED and pin 4, 5 for keylock.)

**PS/2 Conn. – Keyboard Connector**

A PS/2 keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

**PS/2 Mouse Conn. – PS/2 Mouse Connector**

Attach 6-pin male PS/2 mouse cable to this connector to enable PS/2 mouse function.

**PRT – Parallel Port Connector**

Attach parallel port cable to this connector.

**SPK — Speaker Connector**

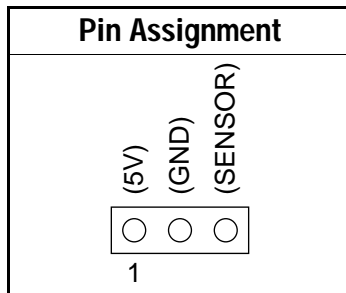
Attach a 4-pin case-mounted speaker to this connector.

**USB1/USB2 – Universal Serial Bus Connectors**

Attach USB device cable to these connectors for external USB device.

**JP44 – Wake-On-LAN (WOL) Header**

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 computer through the LAN card. (The cable should be included with the LAN card.)



# 3 BIOS Setup

The mainboard's BIOS setup program is the ROM PCI/ISA 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, you are asked to press DEL to enter Setup.
2. Press the <DEL> key to enter the Award BIOS program and the main screen appears:

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
LOAD BIOS DEFAULTS	
Esc : Quit	↑ ↓ → ← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard Disk Type...	

3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program.

The Main Menu options of the Award BIOS are described in the sections that follow.



## Standard CMOS Setup

Run the Standard CMOS Setup as follows.

1. Choose “STANDARD CMOS SETUP” from the Main Menu. A screen appears.

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

Date (mm:dd:yy) : Fri, Feb 1 1995							
Time (hh:mm:ss) : 7 : 30 : 33							
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: 3328K Other Memory: 128K <hr/> Total Memory: 4096K			
Drive B : None							
Floppy 3 Mode Support : Disabled							
Video : EGA/VGA							
Halt On : All Errors							
Esc : Quit		↑ ↓ → ← : Select Item		PU/PD/+/- : Modify			
F11 : Help		(Shift) F2 : Change Color		F3 : Toggle Calendar			

2. Use arrow keys to move between items and select values. Modify selected fields using PgUp/PgDn/+/- keys. Some fields let you enter values directly.

**Date (mm/dd/yy)** Type the current date.

**Time (hh:mm:ss)** Type the current time.

**Primary (Secondary)** First, choose the type of hard disk that you already installed:

**Master & Slave**

- Auto – BIOS detects hard disk type automatically (default)
- 1 ~ 46 – Selects standard hard disk type
- User – User defines the type of hard disk.

Next, choose hard disk mode:

- Auto – BIOS detects hard disk mode automatically (default)
- Normal – Normal IDE hard disk (smaller than 528MB)
- LBA – Enhanced-IDE hard disk (larger than 528MB)

<b>Primary (Secondary) Master &amp; Slave (Continued)</b>	Large – Large IDE hard disk (for certain hard disk)  <i>Note: If you have any questions on your hard disk type or mode, ask your hard disk provider or previous user for details.</i>
<b>Drive A &amp; B</b>	Choose 360KB , 5 1/4 in., 1.2MB , 5 1/4 in., 720KB , 3 1/2 in., 1.44M , 3 1/2 in.(default), 2.88 MB, 3 1/2 in. or Not installed
<b>Video</b>	Choose Monochrome, Color 40x25, VGA/EGA (default), Color 80x25
<b>Halt On</b>	Choose halt mode when BIOS detects system errors: All Errors (default)   All, But Diskette No Errors   All, But Keyboard   All, But Disk/Key

3. When you finish, press the <ESC> key to return to the Main Menu.

## BIOS Features Setup

Run the BIOS Features Setup as follows.

1. Choose “BIOS FEATURES SETUP” from the Main Menu and a screen with a list of items appears. (**The screen below shows the BIOS default settings.**)

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 NumLock Status	: On	D8000-DBFFF Shadow	: Disabled
Typematic Rate Setting	: Disabled	DC000-DFFFF Shadow	: Disabled
Typematic Rate (Chars/Sec)	: 6		
Typematic Delay (Msec)	: 250	ESC : Quit	↑ ↓ → ← : Select Item
Security Option	: Setup	F1 : Help	PU/PD/+/- : Modify
PCI/VGA Palette Snoop	: Disabled	F5 : Old Values (Shift)F2 : Color	
OS Select for DRAM >64MB	: Non-OS2	F6 : Load BIOS Defaults	
		F7 : Load Setup Defaults	

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys. <F> keys are explained below:
  - <F1>: “Help” gives options available for each item.
  - Shift <F2>: Change color.
  - <F5>: Get the old values. These values are the values with which the user started the current session.
  - <F6>: Load all options with the BIOS Setup default values.
  - <F7>: Load all options with the Power-On default values.

A short description of screen items follows:

**CPU Internal Cache** This option enables/disables the CPU’s internal cache. (The Default setting is Enabled.)

**External Cache** This option enables/disables the external cache memory. (The Default setting is Enabled.)

**Quick Power On Self Test** Enabled provides a fast POST at boot-up .

- Boot Sequence** Choose the boot device sequence as your need. For example, “A, C, SCSI” means BIOS will look for an operating system first from drive A, drive C, then SCSI device. Options of this function are:  
 A, C, SCSI  
 C, A, SCSI  
 C, CD-ROM, A  
 CD-ROM, C, A  
 D, A, SCSI  
 E, A, SCSI  
 F, A, SCSI  
 SCSI, A, C  
 SCSI, C, A  
 C only.
- Swap Floppy Drive** Enabled changes the sequence of the drive A and drive B to drive B and drive A. (The Default setting is Disabled.)
- Boot Up Num Lock Status** Choose **On** or **Off**. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.
- Typematic Rate Setting** Enable this option to adjust the keystroke repeat rate.
- Typematic Rate (Chars/Sec)** Choose the rate a character keeps repeating.
- Typematic Delay (Msec)** Choose how long after you press a key that a character begins repeating.
- Security Option** Choose **Setup** or **System**. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.
- “System” – Each time the system is booted the password prompt appears.
- “Setup” – If a password is set, the password prompt only appears if you attempt to enter the Setup program.

---

<b>PCI/VGA Palette Snoop</b>	Enabled: The color of the monitor may be incorrect if uses with MPEG card. Enable this option to make the monitor normal.
	Disabled: Disable Snoop function (default).
<b>OS Select for DRAM &gt;64MB</b>	OS2 – Choosing this when you are using OS/2 operation system.
	Non-OS/2 – Choosing this when you are using no-OS/2 operation system.
<b>Video Adapter BIOS Shadow</b>	BIOS shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM. These 16K segments can be shadowed from ROM to RAM. BIOS is shadowed in a 16K segment if it is enabled and it has BIOS present.

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and follow the screen instructions to save or disregard your settings.

## Chipset Features Setup

The Chipset Features Setup option changes the values of the chipset registers. These registers control system options in the computer.

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

Run the Chipset Features Setup as follows.

1. Choose “CHIPSET FEATURES SETUP” from the Main Menu and the following screen appears. (The screen below shows default settings.)

ROM PCI/ISA BIOS CHIPSET FEATURES SETUP AWARD SOFTWARE, INC.	
Auto Configuration	: Enabled
DRAM Timing	: 60 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# Assertion	: 4 CLKs
Fast RAS To CAS Delay	: 3
DRAM Page Idle Timer	: 2 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	: 3
Memory Hole At 15M-16M	: Disabled
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 the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/- keys.

A short description of screen items follows:

**Auto Configuration** Enable this option (strongly recommended) and the system automatically sets all options on the left side of the screen (except cache update mode & BIOS cacheable).

If this option is Enabled you must boot from Turbo mode.

**DRAM Timing** Use the default setting.

**DRAM Leadoff Timing** Use the default setting.

---

<b>DRAM Read Burst (EDO/FP)</b>	Use the default setting.
<b>DRAM Write Burst Timing</b>	Use the default setting.
<b>Fast EDO Lead Off</b>	Use the default setting.
<b>Refresh RAS# Assertion</b>	Use the default setting.
<b>Fast RAS to CAS Delay</b>	Use the default setting.
<b>DRAM Page Idle Timer</b>	Use the default setting.
<b>DRAM Enhanced Paging</b>	Use the default setting.
<b>Fast MA to RAS# Delay</b>	Use the default setting.
<b>SDRAM (CAS Lat/RAS-to-CAS)</b>	Use the default setting.
<b>SDRAM Speculative Read</b>	Use the default setting.
<b>System BIOS Cacheable</b>	Disabled – The ROM area F0000H-FFFFFH is not cached. Enabled – The ROM area F0000H-FFFFFH is cacheable if cache controller is enabled.
<b>Video BIOS Cacheable</b>	Disabled – The video BIOS C0000H-C7FFFH is not cached. Enabled – The video BIOS C0000H-C7FFFH is cacheable if cache controller is enabled.
<b>8Bit I/O Recovery Time</b>	Use the default setting.
<b>16Bit I/O Recovery Time</b>	Use the default setting.

**Memory Hole At 15M-16M** Choose **Enabled** or **Disabled** (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.

3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your settings.

## Power Management Setup

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

Run the Power Management Setup as follows.

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

ROM PCI/ISA BIOS  
CMOS SETUP UTILITY  
POWER MANAGEMENT SETUP

Power Management	: User Define	** Reload global Timer Events **
PM Control by APM	: Yes	IRQ [3-7, 9-15],NMI : Enabled
Video Off Method	: V/H SYNC+Blank	Primary IDE 0 : Disabled
Video Off After	: Standby	Primary IDE 1 : Disabled
		Secondary IDE 0 : Disabled
		Secondary IDE 1 : Disabled
Doze Mode	: Disabled	Floppy Disk : Disabled
Standby Mode	: Disabled	Serial Port : Enabled
Suspend Mode	: Disabled	Parallel Port : Disabled
HDD Power Down	: Disabled	
VGA Active Monitor	: Enabled	
Soft-Off by PWR-BTIN	: Delay 4 Sec.	
CPU Fan Off In Suspend	: Enabled	
Resume by Ring	: Disabled	ESC : Quit           ↑ ↓ → ←: Select Item
Resume by Alarm	: Disabled	F1 : Help            PU/PD/+/- : Modify
		F5 : Old Values (Shift)F2 : Color
** Break Event From Suspend **		F6 : Load BIOS Defaults
IRQ8 Clock Event	: Disabled	F7 : Load Setup Defaults

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.



A short description of selected screen items follows:

<b>Power Management</b>	Options are as follows: User Define – Let's you define the HDD and system power down times (default). Disable – Disables the Green PC Features. Min Saving – Doze timer = 1 Hour Standby timer = 1 Hour Suspend timer = 1 Hour HDD Power Down = 15 Min Max Saving – Doze timer = 1 Min Standby timer = 1 Min Suspend timer = 1 Min HDD Power Down = 1 Min
<b>PM Control by APM</b>	Choose <b>Yes</b> or <b>No</b> (default). APM stands for Advanced Power Management. To use APM, you must run "power.exe" under DOS v6.0 or later version.
<b>Video Off Method</b>	Choose <b>V/H Sync+Blank</b> (default), <b>Blank screen</b> , or <b>DPMS</b> for the selected PM mode.
<b>Video Off After</b>	Choose <b>Standby</b> (default), <b>Suspend</b> , <b>Doze</b> , or <b>N/A mode</b> .
<b>Doze Mode</b>	When the set time has elapsed, the BIOS sends a command to the system to enter doze mode (system clock drops to 33MHz). Time is adjustable from 1 Min to 1 Hour.
<b>Standby Mode</b>	The default is Disabled. Time is adjustable from 1 Min to 1 Hour.
<b>Suspend Mode</b>	The default is Disabled. Only an SL-Enhanced (or SMI) CPU can enter this mode. Time is adjustable from 1 Min to 1 Hour. Under Suspend mode, the CPU stops completely (no instructions are executed.)

---

<b>HDD Power Down</b>	When the set time has elapsed, the BIOS sends a command to the HDD to power down, which turns off the motor. Time is adjustable from 1 to 15 minutes. The default setting is Disabled. Some older model HDDs may not support this advanced function.
<b>VGA Active Monitor</b>	Choose Enabled (default) or Disabled. Enabled – enables the power management timers when a “no activity” event is detected.
<b>Soft-Off by POR-BTTN</b>	Choose <b>Instant-off</b> or <b>Delay 4 Sec</b> (default). <b>Delay 4 Sec</b> turns off the system power 4 seconds after pushing the power button
<b>CPU Fan Off In Suspend</b>	Choose Enabled to stop the CPU fan when the system runs into the suspend mode (refer to Power Management Setup.)
<b>Resume by Ring</b>	Choose <b>Enabled</b> or <b>Disabled</b> (default). This function only works when the computer is powered on. Enabled – The system will resume active when modem is ringing. Disabled – The system will not resume when modem is ringing.
<b>Resume by Alarm</b>	Choose <b>Enabled</b> or <b>Disabled</b> (default). Enabled – Set alarm to wake up the system either by the date (1-31) or time (hh:mm:ss), and if the date is set to 0, it means that the system will wake up by the alarm everyday. Disabled – The system ignores the alarm.
<b>IRQ8 Clock Event</b>	Choose <b>Enabled</b> or <b>Disabled</b> (default). Alarm function will be activated when this function is enabled.
<b>IRQ[3-7,9-15], NMI</b>	Choose <b>Enabled</b> (default) or Disabled. The BIOS monitors these items for activity. If activity occurs from the Enabled item the system wakes up.

- Primary/Secondary IDE 0** Choose **Enabled** or **Disabled** (default).  
Enabled – Enables the power management timers when “no activity” event is detected.
- Primary/Secondary IDE 1** Choose **Enabled** or **Disabled**.  
Enabled – enables the power management timers when “no activity” event is detected.
- Floppy Disk/Serial Port/Parallel Port** Choose **Enabled** or **Disabled**.  
Enabled – enables the power management timers when “no activity” event is detected.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the Main Menu.

## PNP/PCI Configuration Setup

This option sets the mainboard’s PCI Slots. Run this option as follows:

1. Choose “PNP/PCI CONFIGURATION SETUP” from the Main Menu and the following screen appears. (The screen below shows default settings.)

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

<pre>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*</pre>	<pre>PCI IDE IRQ Map To : PCI-AUTO Primary IDE INT# : A Secondary IDE INT# : B  Used MEM Base Addr : N/A  ESC : Quit           ↑ ↓ → ← : Select Item F1  : Help           PU/PD/+/- : Modify F5  : Old Values (Shift) F2 : Color F6  : Load BIOS Defaults F7  : Load Setup Defaults</pre>
---	---

\*: These items will disappear when Resource Controlled. is Auto.

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/- keys.

A short description of screen items follows:

**Resources Controlled By** Manual – BIOS doesn't manage PCI/ISA PnP card (i.e., IRQ) automatically.

Auto – BIOS auto manage PCI and ISA PnP card (recommended).

**Reset Configuration Data** Disabled – Retain PnP configuration data in BIOS.

Enabled – Reset PnP configuration data in BIOS.

**IRQX and DMAX assigned to** Choose **PCI/ISA PnP** or **Legacy ISA**. If the first item is set to **Manual**, you could choose IRQX and DMAX assigned to PCI/ISA PnP card or ISA card.

**PCI IRQ Activated By** Choose **Edge** or **Level**. Most PCI trigger signals are Level. This setting must match the PCI card.

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

**Primary IDE INT#** Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTA#.

**Secondary IDE INT#** Choose INTA#, INTB#, INTC#, or INTD#. The default setting is INTB#.

**Used MEM Base Addr** Choose C800, CC00, D000, D400, D800, or DC00 for setting the I/O address of your add-on card. You should ask your add-on card dealer for the exactly I/O address. Use this function only when problems occur while using the add-on card.

3. After you have finished with the PCI Slot Configuration, press the <ESC> key and follow the screen instructions to save or disregard your settings.

## Load Setup Defaults

---

This item loads the system values you have previously saved. Choose this item and the following message appears:

“Load SETUP Defaults (Y/N)? N”

To use the SETUP defaults, change the prompt to “Y” and press <Enter>. This item is recommended if you need to reset the system setup.

*Note: The SETUP Defaults are optimized for the most stabilized performance.*

## Load BIOS Defaults

---

Choose this item and the following message appears:

“Load BIOS Defaults (Y/N)?N”

To use the BIOS defaults, change the prompt to “Y” and press <Enter>.

*Note: BIOS DEFAULTS values are adjusted for high performance. If you run into any problems after loading BIOS DEFAULTS, please load the SETUP DEFAULTS for the stable performance.*

## Integrated Peripherals

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

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

Run the Integrated Peripherals as follows.

1. Choose “Integrated Peripherals” from the Main Menu and the following screen appears. (The screen below shows default settings:)

ROM PCI/ISA BIOS INTEGRATED PERIPHERALS AWARD SOFTWARE, INC.			
IDE HDD Block Mode	: Enabled	IR Transmission Delay	: Enabled
IDE Primary Master PIO	: Auto	IR IRQ Select	: IRQ4
IDE Primary Slave PIO	: Auto	(FIR Mode Use DMA	: 0)
IDE Secondary Master PIO	: Auto	Onboard Parallel Port	: 378/IRQ7
IDE Secondary Slave PIO	: Auto	Parallel Port Mode	: ECP+EPP
IDE Primary Master UDMA	: Auto	ECP Mode Use DMA	: 3
IDE Primary Slave UDMA	: Auto	EPP Mode Select	: EPP1.9
IDE Secondary Master UDMA	: Auto		
IDE Secondary Slave UDMA	: Auto		
On-Chip Primary PCI IDE	: Enabled		
On-Chip Secondary PCI IDE	: Enabled		
PCI Slot IDE 2nd Channel	: Disabled		
USB Keyboard Support	: Enabled		
Onboard FDC Controller	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
Onboard Serial Port 1	: 3F8/IRQ4	F1 : Help	PU/PD/+/- : Modify
Onboard Serial Port 2	: 2F8/IRQ3	F5 : Old Values (Shift)	F2 : Color
Onboard IR Controller	: Enabled	F6 : Load BIOS Defaults	
IR Address Select	: 2F8H	F7 : Load Setup Defaults	
IR Mode	: IrDA		

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/- keys.

A short description of screen items follows:

**IDE HDD Block Mode** Choose **Enabled** (default) or **Disabled**. Enabled invokes multi-sector transfer instead of one sector per transfer. Not all HDDs support this function.

**IDE Primary Master PIO/  
IDE Primary Slave PIO/  
IDE Secondary Master  
PIO/  
IDE Secondary Slave PIO** Choose **Auto** (default) or **mode 0~4**. Mode 0 is the slowest speed, and HDD mode 4 is the fastest speed. For better performance and stability, we suggest you use the Auto setting to set the HDD control timing.

---

<b>IDE Primary Master UDMA/</b>	Choose <b>Auto</b> (default) or <b>Disabled</b> . Auto – Supports Ultra DMA mode.
<b>IDE Primary Slave UDMA/</b>	
<b>IDE Secondary Master UDMA/</b>	
<b>IDE Secondary Slave UDMA</b>	
<b>On-chip Primary PCI IDE/</b>	Enabled – Use the on-board IDE (default)
<b>On-chip Secondary PCI IDE</b>	Disabled – Turn off the on-board IDE
<b>USB Keyboard Support</b>	Choose <b>Disabled</b> (default) or <b>Enabled</b> . You need to use the regular keyboard to get in the BIOS Setup to enable this function before using the USB keyboard.
<b>Onboard FDC Controller</b>	Enabled – Use the on-board floppy controller (default). Disabled – Turn off the on-board floppy controller.
<b>Onboard Serial Port 1/ Onboard Serial Port 2</b>	Choose serial port 1 & 2's I/O address. Do not set port 1 & 2 to the same value except for Disabled. IRQ can be released when choose <b>Auto</b> . (??I don't quite understand this sentence??)
<b>Onboard IR Controller</b>	Choose <b>Enabled</b> to use the onboard IR function
<b>IR Address Select</b>	Choose 3F8H, 2F8H, 3E8H, 2E8H, 3E0H, or 2E0H to decide your IR address.
<b>IR Mode</b>	Choose IrDA, ASK2R, FIR, or CIR. Contact with your IR device provider for choosing the right mode.

- 
- |                              |   |
|------------------------------|---|
| <b>IR Transmission Delay</b> | Choose <b>Enabled</b> (default) or <b>Disabled</b> . Due to the various design of IR devices, transmission delay has to be added on for different protocol. |
| <b>IR IRQ Select</b>         | Choose IRQ3, IRQ4 (default), IRQ10, or IRQ11. If you have IRQ conflict problem during using the IR device, select another IRQ then try again.               |
| <b>FIR Mode Use DMA</b>      | Choose Disabled, 0, 1, or 3. When you choose <b>FIR</b> in <b>IR Mode</b> , you need to select a DMA channel to make the FIR transmission work.             |
| <b>Onboard Parallel Port</b> | Choose the parallel port I/O address: 378H/IRQ7 (default), 3BCH/IRQ7, 278H/IRQ5, or Disabled to disable this port.  |
| <b>Parallel Port Mode</b>    | Choose <b>ECP+EPP</b> (default), <b>SPP</b> , <b>EPP</b> , or <b>ECP</b> . The mode depends on your external device that connects to this port.             |
| <b>ECP Mode Use DMA</b>      | Choose <b>DMA3</b> (default) or <b>DMA1</b> . This setting only works when the Onboard Printer Mode is set at the ECP mode.                                 |
| <b>EPP Mode Select</b>       | Choose EPP1.9 (default) or EPP1.7. Check with your parallel port device provider to select the right mode.  |
3. After you have finished with the Integrated Peripherals, press the <ESC> key and follow the screen instructions to save or disregard your settings.



---

## Supervisor Password

---

Based on the setting you made in the “Security Option” of the “BIOS FEATURES SETUP”, this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose “SUPERVISOR PASSWORD” in the Main Menu and press <Enter>. The following message appears:

**“Enter Password:”**

2. Enter a password and press <Enter>. (If you do not wish to use the password function, you can just press <Enter> and a “Password disabled” message appears.)
3. After you enter your password, the following message appears prompting you to confirm the new password:

**“Confirm Password:”**

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

***Important: If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.***

## User Password

---

Based on the setting you made in the “Security Option” of the “BIOS FEATURES SETUP”, this Main Menu item lets you configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program. Change the password as follows:

1. Choose “USER PASSWORD” in the Main Menu and press <Enter>. The following message appears:

**“Enter Password:”**

2. Enter a password and press <Enter>. (If you do not wish to use the password function, you can just press <Enter> and a “Password disabled” message appears. )
3. After you enter your password, the following message appears prompting you to confirm the new password:

**“Confirm Password:”**

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.
5. You are not allowed to change any setting in “CMOS SETUP UTILITY” except change user’s password.

***Important: If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.***

## IDE HDD Auto Detection

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

*Note: This function is only valid for IDE hard disks.*

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

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Primary Master	: None	0	0	0	0	0	0	----
Primary Slave	: None	0	0	0	0	0	0	----
Secondary Master	: None	0	0	0	0	0	0	----
Secondary Slave	: None	0	0	0	0	0	0	----

Do you accept this drive C (Y/N)? N

ESC : Skip

## Appendix : CPU Setting List

### Step 1 : Frequency Setting

Processor Type			Setting for SW1					
Processor	Bus Clock	Multiplier	1-1	1-2	1-3	1-4	1-5	1-6
AMD K5 PR75	50Mhz	1.5X	off	off	on	on	on	off
AMD K5 PR90	60Mhz	1.5X	off	off	on	off	off	off
AMD K5 PR100	66Mhz	1.5X	off	off	off	off	off	off
AMD K5 PR120	60Mhz	1.5X	off	off	on	off	off	off
AMD K5 PR133	66Mhz	1.5X	off	off	off	off	off	off
AMD K5 PR150	60Mhz	2.0X	on	off	on	off	off	off
AMD K5 PR166	66Mhz	2.5X	on	on	off	off	off	off
AMD K6 PR166	66Mhz	2.5X	on	on	off	off	off	off
AMD K6 PR200	66Mhz	3.0X	off	on	off	off	off	off
AMD K6 PR233	66Mhz	3.5X	off	off	off	off	off	off
AMD K6 PR266	66Mhz	4.0X	on	off	off	off	off	on
AMD K6 PR300	66Mhz	4.5X	on	on	off	off	off	on
Cyrix 6x86 P150 <sup>+</sup>	60Mhz	2.0X	on	off	on	off	off	off
Cyrix 6x86 P166 <sup>+</sup>	66Mhz	2.0X	on	off	off	off	off	off

## Frequency Setting Continued

Processor	Bus Clock	Multiplier	1-1	1-2	1-3	1-4	1-5	1-6
Cyrix 6x86 P200 <sup>+</sup>	75Mhz	2.0X	on	off	off	on	off	off
Cyrix MX P166	60Mhz	2.5X	on	on	on	off	off	off
Cyrix MX P200	66Mhz	2.5X	on	on	off	off	off	off
Cyrix MX P233	75Mhz	2.5X	on	on	off	on	off	off
Cyrix MX P233	66Mhz	3X	off	on	off	off	off	off
Cyrix MX P266	75Mhz	3X	off	on	off	on	off	off
Cyrix MX P266	66Mhz	3.5X	off	off	off	off	off	off
P54C P75	50Mhz	1.5X	off	off	on	on	on	off
P54C P90	60Mhz	1.5X	off	off	on	off	off	off
P54C P100	66Mhz	1.5X	off	off	off	off	off	off
P54C P100	50Mhz	2.0X	on	off	on	on	on	off
P54C P120	60Mhz	2.0X	on	off	on	off	off	off
P54C P133	66Mhz	2.0X	on	off	off	off	off	off
P54C/P55C P150	60Mhz	2.5X	on	on	on	off	off	off
P54C/P55C P166	66Mhz	2.5X	on	on	off	off	off	off
P54C/P55C P180	60Mhz	3X	off	on	on	off	off	off
P54C/P55C P200	66Mhz	3X	off	on	off	off	off	off
P55C P233	66Mhz	3.5X	off	off	off	off	off	off

## Step 2 : Voltage Setting

<b>Voltage</b>	<b>1-2</b>	<b>3-4</b>	<b>5-6</b>	<b>7-8</b>	<b>9-10</b>	<b>11-12</b>	<b>Possible CPUs</b>
Single 3.3V	on	off	off	off	on	off	P54C, AMD K5, Cyrix
Single 3.52V (Default)	on	off	off	off	off	on	P54C,P55C, AMD K5, Cyrix
Dual 2.1V	off	off	on	off	off	off	AMD K6
Dual 2.8V (Default)	on	off	off	off	on	off	P55C, Cyrix 6x86L, Cyrix 6x86MX
Dual 2.9V	on	off	on	off	off	off	AMD K6, Cyrix 6x86MX
Dual 3.2V	on	off	off	on	off	off	AMD K6

*Note: The frequency and voltage setting for AMD K6 CPUs will vary from market to market. Please ask your CPU provider for detail information or you may damage your system.*

## Note for Memory Configuration

On TX chipset motherboards, there is a memory limitation when the system has more than 2 DIMM sockets.

The limitations are :

1. Maximum memory size is 256MB total for all RAM socket.
2. DIMM 1 won't support 64MB or 128MB DIMMs with 64Mbit SDRAM cells.
3. If DIMM 2 and/or DIMM3 has 64MB or 128MB DIMM's with 64Mbit SDRAM cells, DIMM 1 must be empty.

Follow the memory combination table below for instruction :

	SIMM Bank	DIMM Bank		
	Bank 0	DIMM 1	DIMM 2	DIMM 3
RAM Type	FPM/EDO	FPM/EDO/ SDRAM	FPM/EDO/ SDRAM	FPM/EDO/ SDRAM
Single RAM Module Size (MB)	4/8/16/32/64	8/16/32	8/16/32/64/128	8/16/32/64/128

You can recognize 64MB or 128MB DIMMs with 64MB SDRAM cells in the following way :

- When a 64MBDIMM only has 8 memory ICs, it's composed of 64Mb cells. (It may have additional glue logic ICs however.)
- A 128MB DIMM is always composed of 64Mb cells.

# Appendix

## New Features In BIOS

For easy management, some new features in “Chipset Feature Setup” under the BIOS can help. Refer to the screen below for reference:

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

Auto Configuration	: Enabled	Spread Spectrum	: Enabled
DRAM Timing	: 60 ns	CPU Warning Temperature	: Disabled
DRAM Leadoff Timing	: 10/6/3	Current CPU Temperature	: 46 <sup>1</sup> / <sub>2</sub> C/114 <sup>1</sup> / <sub>2</sub> F
DRAM Read Burst (EDO/FP)	: x222/x333	Current System Temp.	: 30 <sup>1</sup> / <sub>2</sub> C/86 <sup>1</sup> / <sub>2</sub> F
DRAM Write Bursts Timing	: x222	Current CPUFAN1 Speed	: 5720 RPM
Fast EDO Lead Off	: Enabled	Vcore	: 2.84 V Vio : 3.29V
Refresh RAS# Assertion	: 4 CLKS	+3.3V	: 3.29 V +5V : 4.96V
Fast RAS To CAS Delay	: 3	+12V	: 11.96 V -12V : 12.64V
DRAM Page Idle Timer	: 2 Clks	5V	: -5.16 V
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	ESC : Quit	↑ ↓ → ← : Select Item
Video BIOS Cacheable	: Disabled	F1 : Help	PU/PD/+/- : Modify
8 Bit I/O Recovery Time	: 4	F5 : Old Values (Shift)	F2 : Color
16 Bit I/O Recovery Time	: 4	F6 : Load BIOS Defaults	
Memory Hole At 15M-16M	: Disabled	F7 : Load Setup Defaults	

### Spread Spectrum

**Enabled** it when you want to run the DOC test.

### CPU System Hardware Monitor

These items let you get more detail information about the CPU.