

# **5XB5**

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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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**5XB5 SERIAL**

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# 1 Introduction

The 82430 TX PCI mainboard is a high-performance **AT form-factor** system board that supports P54C/P55C family CPUs and 512K external cache memory on the mainboard. The mainboard is fully compatible with industry standards, and adds many technical enhancements.

## Key Features

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- CPU
  - 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
  - Smart Detect CPU Voltage function
- L2 Cache Controller
  - Write Back Cache Modes and Direct Mapped Organization
  - On-board 512K Pipeline Burst SRAMs Cache
- DRAM Controller
  - Supports Fast-Page Mode, EDO , and SDRAM (both symmetrical and asymmetrical addressing)
  - **Supports 3 strips of 8MB/16MB/32MB/64MB Unbuffered DIMMs**
  - On-board memory configurations from **4 to 256 Mbytes**
- BUS Controller
  - Compliant to PCI specifications v2.1
  - Four 32-bit PCI slots (Masters) and four ISA slots, 4-layer PCB
  - **Supports Universal Serial Bus — USB**
- Peripheral Controller
  - System BIOS built-in NCR810 SCSI Card BIOS and “Plug and Play” function
  - On-board built-in PCI Master IDE controller and floppy controller
  - On-board supports for two high speed UARTS (w/i 16550 FIFO), one ECP/EPP/SPP compatible parallel port, and one PS/2 mouse port
  - **On-board supports FLASH Memory for easy upgrade BIOS**
  - **Easy installation of Triones EIDE/ATAPI CD-ROM Bus Master Drivers**

## 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

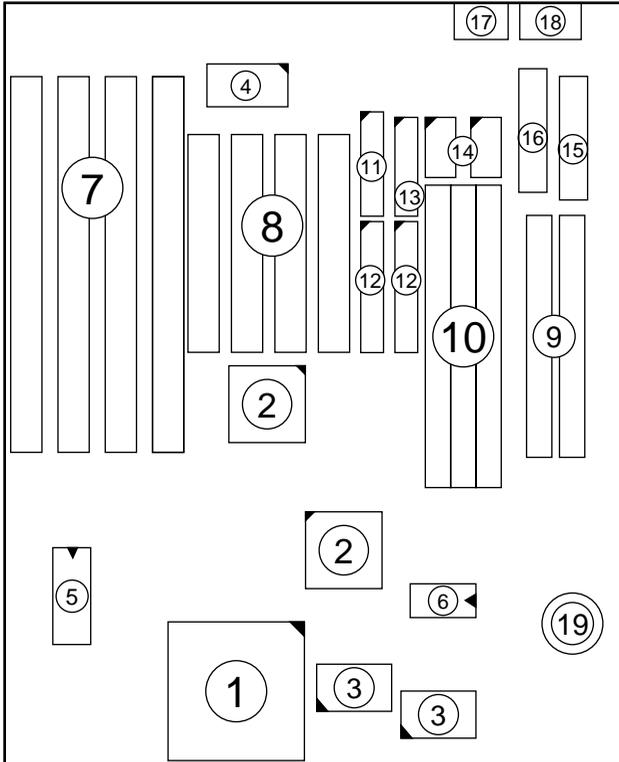


Figure 1-1. Mainboard Layout

- |                                 |   |
|---------------------------------|---|
| 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. AT Power Supply Connector             |
| 6. TAG SRAM                     | 16. ATX Power Supply Connector            |
| 7. ISA Slots                    | 17. PS/2 Mouse Connector                  |
| 8. PCI Slots                    | 18. Keyboard connector                    |
| 9. SIMM Bank                    | 19. Lithium battery (for CMOS memory, 3V) |
| 10. Unbuffered DIMM Bank        |   |

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

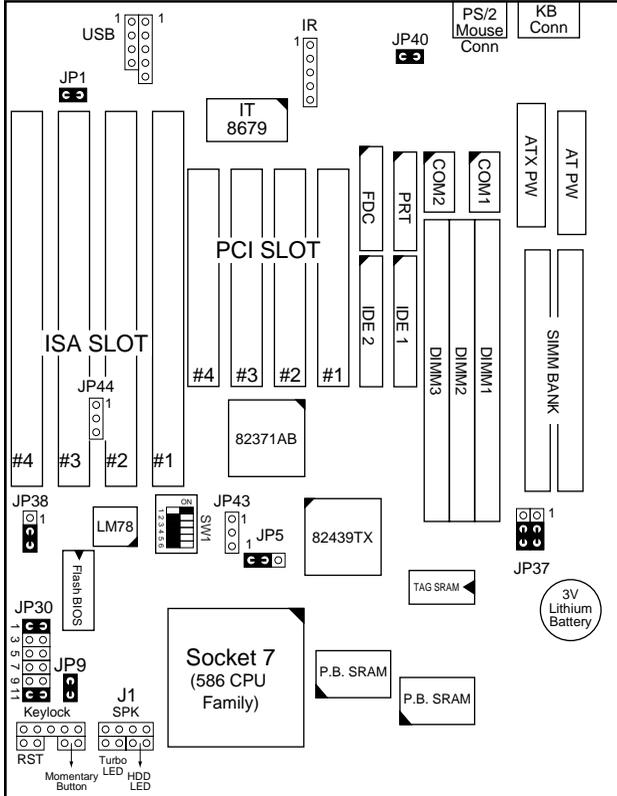


Figure 1-2. Mainboard Default Setting

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

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# 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)	1 
Clear CMOS data	1 

### JP40: CE Test Jumper Pin

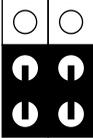
This connector is reserved for the CE test. If you run into problems during the CE test, unplug the jumper pin and try again.

### JP9: 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 DIMM.

DIMM Voltage	JP37
3.3V (default)	1 
5V	1 

*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.*

### JP38: Flash ROM Select Jumper

Flash ROM Brand	JP38
SST, MXIC, WINBON, ATMEL (default)	1 
INTEL	1 

## CPU Type Configuration

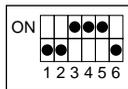
This section shows you how to configure your CPU step by step. Note that you need to check the CPU voltage before installation. This board supports 75MHz host bus frequency for Cyrix CPUs. Beware that 75MHz host bus frequency is over the specification of this chipset. Therefore, you have to use high quality devices to meet the standard of these CPUs, i.e., high quality DRAM and VGA cards.

### □ Step 1: Frequency Setting

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

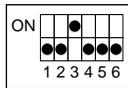
**AMD K5 – PR75/PR90/PR100/PR120/PR133 (1.5 x clock)**

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



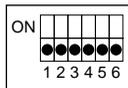
SW1

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



SW1

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



SW1

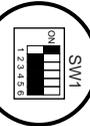
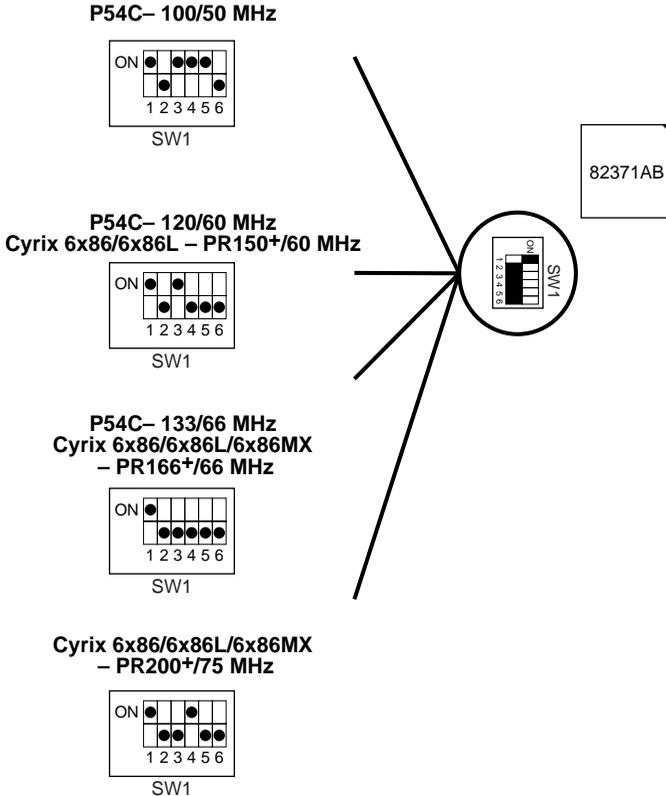


Figure 2–1–1. CPU Jumper Settings

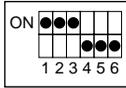
- Note:
1. You must equip the CPU with a fan and heat sink for system stability.
  2. AMD K5–PR90= AMD 5<sub>k</sub>86(SSA5)–P90.

**P54C – 100/120/133 CPU Settings (2.0 x clock)****Cyrix 6x86/6x86L/6x86MX – PR150+/PR166+/PR200+ CPU Settings (2.0 x clock)***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<sup>+</sup> 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.)

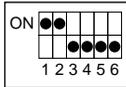
**P54C/P55C – 150/166 CPU Settings (2.5 x clock)**  
**Cyrix 6x86MX – PR166/PR200/PR233 CPU Settings (2.5 x clock)**  
**AMD K5/K6 – PR150/PR166 CPU Settings (2.5 x clock)**

**P54C/P55C – 150/60 MHz**  
**Cyrix 6x86MX – PR166/60 MHz**  
**AMD K5 – PR 150/60 MHz**



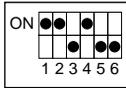
SW1

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



SW1

**Cyrix 6x86MX – PR233/75 MHz**



SW1

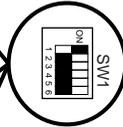
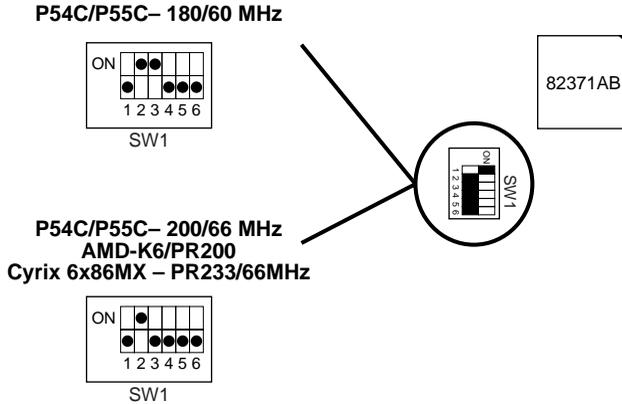


Figure 2-1-3. CPU Jumper Settings

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

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



*Figure 2–1–4. CPU Jumper Settings*

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

**P54C/P55C – 233 CPU Settings (3.5 x clock)  
AMD K6 – PR233 CPU Setting**

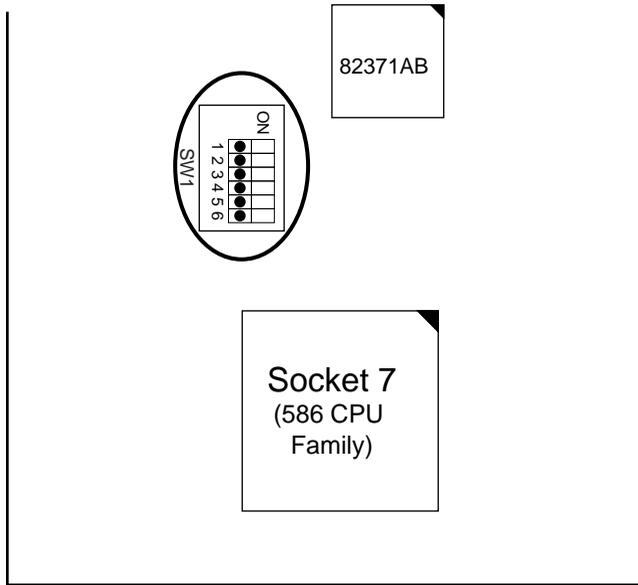


Figure 2-1-5. CPU Jumper Settings

*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:

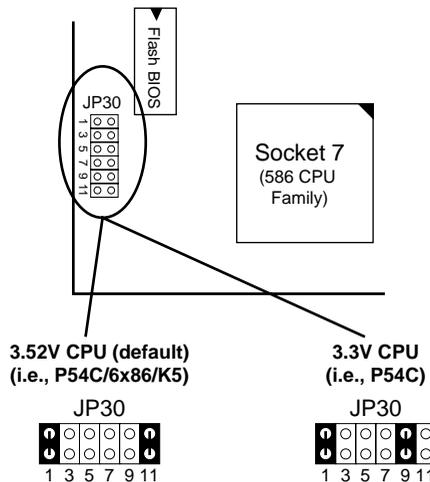


Figure 2–2–1. Single Voltage CPU

*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/6x86MX, AMD K6, and MMX technology included CPUs. Refer to the following figures to set these CPUs' voltage:

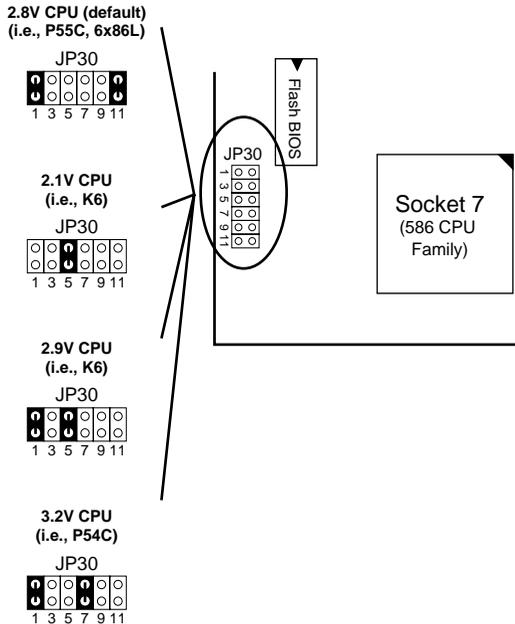


Figure 2–2–2. Dual Voltage CPU

*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 one bank 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 DIMM1. All other combinations are acceptable; but, due to the TX chipset architecture, you will need to use one of the following combination when using DIMM memory above 64MB:

1. Bank0 & DIMM2
2. DIMM1
3. DIMM1 + DIMM2

## 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
512KB	64K x 32 on U3,U4	32K x 8 on U2	64 MB

## 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
<b>LPT1*</b>	378H	7	ECP + EPP
<b>COM1</b>	3F8H	4	
<b>COM2</b>	2F8H	3	

\* If default I/O port addresses conflict with other I/O cards (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.)

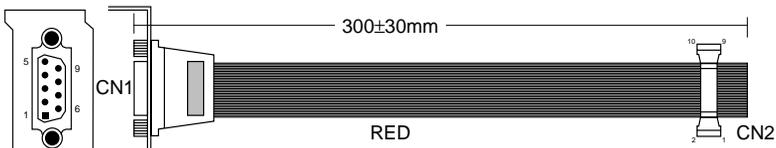
*Note: Some sound cards have a default IRQ setting for IRQ7, which may conflict with printing functions. If this occurs do not use sound card functions at the same time you print.*

## Connectors

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

### COM1, COM2 — COM1/COM2 Connectors

Attach COM1/COM2 device cable to these connectors. Refer to the following drawing for pin assignment:



<b>CN1</b>	1	6	2	7	3	8	4	9	5	NC
<b>CN2</b>	1	2	3	4	5	6	7	8	9	10

### JP1: Power Supply Selection Jumper

This jumper lets you select either the AT or the ATX power supply. Use only one power supply at a time on this mainboard.

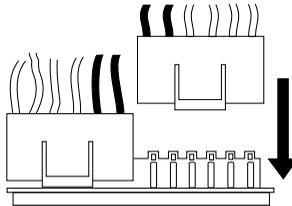
	JP1
AT Power Supply (default)	
ATX Power Supply	

### FDC — FDC Connector

Attach floppy cable to this connector.

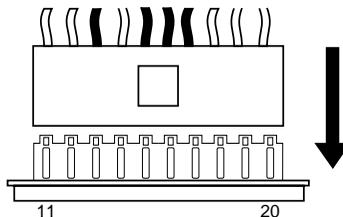
### AT PW — Power Supply Connectors

The mainboard requires a power supply with at least 200 watts and a “power good” signal. AT PW has two 6-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.



### 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.



**KB Conn. – Keyboard Connector**

A 5-pin femal DIN keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

**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.

IR1 Connector Pin Assignment	
1	○ VCC
2	○ Reserve for FIRRX
3	○ IRRX
4	○ GND
5	○ IRTX

**PRT – Parallel Port Connector**

Attach parallel port cable to 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.

PS/2 Mouse Connector Pin Assignment			
GND	DATA	N/A	VCC
CLOCK			N/A

## USB1– Universal Serial Bus Connector

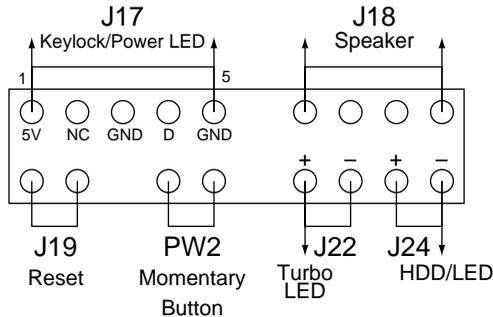
Attach 9-pin USB cable to this connector for external USB device.

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

Attach cables of hard disk drives to these connectors.

## J1 – Front Panel Connectors

This set of connectors includes: J17 (Keylock/Power LED connector), J18 (Speaker connector), J19 (Reset Connector), PW2 (Momentary Button Connector), and J24 (Turbo/HDD LED Connector). The features of each of these connectors is well explained below.



## J17 – Keylock & Power LED Connector

J17 is a connector for a lock that may be installed on the system case for enabling or disabling the keyboard. J17 also attaches to the case's Power LED. (Pin 1, 3 for power LED and pin 4, 5 for keylock.)

## J18 — Speaker Connector

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

## J19 – Hardware Reset Control

Attach the Reset switch to J19. Closing the Reset switch restarts the system.

## **PW2 — 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.

## **J22 – Turbo LED Connector**

Attach the turbo LED to J22. The LED lights when the system is in the Turbo mode.

## **J24 – HDD LED Connectors**

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

## **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.

Pin Assignment	
1	○ (GND)
2	○ (12V)
3	○ (SENSOR)

## **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.)

Pin Assignment	
1	○ (+)
2	○ (GND)
3	○ (SENSOR)

# 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	: 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	----	
Drive A : 1.44M, 3.5 in.					Base Memory: 640K				
Drive B : None					Extended Memory: 3328K				
Floppy 3 Mode Support : Disabled					Other Memory: 128K				
Video : EGA/VGA					Total Memory: 4096K				
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>Floppy 3 Mode Support</b>	Choose Disabled (default) or Enabled. When enables this function, the system will support 720KB/1.25MB/1.44MB 3 different mode floppy diskette.  <i>Note: This function is for a special disk drive which happens to be popular in Japan.</i>
<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 .

<b>Boot Sequence</b>	<p>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:</p> <p>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  LS120, C.</p>
<b>Swap Floppy Drive</b>	<p>Enabled changes the sequence of the drive A and drive B to drive B and drive A. (The Default setting is Disabled.)</p>
<b>Boot Up Num Lock Status</b>	<p>Choose <b>On</b> or <b>Off</b>. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.</p>
<b>Typematic Rate Setting</b>	<p>Enable this option to adjust the keystroke repeat rate.</p>
<b>Typematic Rate (Chars/Sec)</b>	<p>Choose the rate a character keeps repeating.</p>
<b>Typematic Delay (Msec)</b>	<p>Choose how long after you press a key that a character begins repeating.</p>
<b>Security Option</b>	<p>Choose <b>Setup</b> or <b>System</b>. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.</p> <p>“System” – Each time the system is booted the password prompt appears.</p> <p>“Setup” – If a password is set, the password prompt only appears if you attempt to enter the Setup program.</p>

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<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	Mem. Drive Str. (MA/RAS)	: Auto
DRAM Timing	: 60 ns	Spread Spectrum Modulated	: Disabled
DRAM Leadoff Timing	: 10/6/3	CPU Warning Temperature	: Disabled
DRAM Read Bursts (EDO/FP)	: x222/x333	Current CPU Temperature	: 43°C/109°F
DRAM Write Bursts Timing	: x222	Current System Temp.	: 36°C/96°F
Fast EDO Lead off	: Disabled	Current CPUFan1 Speed	: 4821 RPM
Refresh RAS# Assertio	: 4 Clks	Vcore	: 2.82V
Fast RAS To CAS Delay	: 3	+3.3V	: 3.3V    +5V : 5.08V
DRAM Page Idel Timer	: 2 Clks	+12V	: +12.2V    -12V : -12.09V
DRAM Enhanced Paging	: Enabled	-5V	: -5.1V
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	

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.

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<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.

- |   |  |
|---|--|
| <b>Memory Hole At 15M-16M</b>   | Choose <b>Enabled</b> or <b>Disabled</b> (default). Some interface cards will map their ROM address to this area. If this occurs, you should select Enabled, otherwise use Disabled.   |
| <b>Mem. Drive Str. (MA/RAS)</b>   | Default setting is Auto. This item allows you to change the setting to adjust the current memory signals. when you run into problems while using special SDRAM. Do not change this setting if SDRAM is not be used.  |
| <b>Spread Spectrum Modulated</b>  | Choose <b>Disabled</b> (default) or <b>Enabled</b> . Select Enabled when uses Spread Spectrum Modulated 1.5% or 6% for FCC or DOC testing.   |
| <b>CPU Warning Temperature</b>  | Choose <b>Disabled</b> (default) or <b>Enabled</b> . Set CPU temperature from 50°C to 70°C. The system will slow down automatically when CPU temperature goes beyond the pr-set value. CPU will continue to run slow until the CPU temperate returns back within the safe range. |
| <b>Current CPU Temperature;<br/>System Temp and<br/>CPUFAN1 Speed;<br/>Vcore;</b> | Shows the current status of CPU.   |
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

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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	: Disabled	IRQ 8 Break Suspend	: Disabled
PM Control by APM	: Yes	** Reload global Timer Events **	
Video Off Method	: V/H SYNC+Blank	IRQ [3-7, 9-15],NMI	: Enabled
Video Off After	: Standby	Primary IDE 0	: Disabled
Modem Use IRQ	: 3	Primary IDE 1	: Disabled
Doze Mode	: Disabled	Secondary IDE 0	: Disabled
Standby Mode	: Disabled	Secondary IDE 1	: Disabled
Suspend Mode	: Disabled	Floppy Disk	: Disabled
HDD Power Down	: Disabled	Serial Port	: Enabled
Soft-Off by PWR-BTTN	: Instant-Off	Parallel Port	: Disabled
VGA Active Monitor	: Enabled		
CPU Fan Off In Suspend	: Enabled	ESC : Quit	↑ ↓ → ← : Select Item
Resume by Ring	: Disabled	F1 : Help	PU/PD/+/- : Modify
Resume by Alarm	: Disabled	F5 : Old Values (Shift)F2 : Color	
		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.

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>Modem Use IRQ</b>	Choose Modem IRQ Setting.
<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>Soft-Off by PWR-BTTN</b>	Choose <b>Instant-off</b> (default) or <b>Delay 4 Sec</b> . <b>Delay 4 Sec</b> turns off the system power 4 seconds after pushing the power button
<b>VGA Active Monitor</b>	Choose Enabled (default) or Disabled. Enabled – enables the power management timers when a “no activity” event is detected.
<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 Break Suspend</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.
```

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  ESC : Quit                   ↑ ↓ → ← : Select Item F1 : Help                    PU/PD/+/- : Modify F5 : Old Values (Shift) F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
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\*: 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	Onboard Parallel Port	: 378/IRQ7
IDE Primary Master PIO	: Auto	Parallel Port Mode	: ECP+EPP
IDE Primary Slave PIO	: Auto	ECP Mode Use DMA	: 3
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		
USB Keyboard Support	: Disabled		
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	
UR2 Mode	: Standard	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:

**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. Choose Auto for automatic setting for the I/O address and IRQ. COM1/3F8H             COM3/3E8H COM2/2F8H             COM4/2E8H (default)
<b>UR2 Mode</b>	Choose Standard (default), IrDA 1.0, ASKIR, MIR0.57M, MIR 1.15M, or FIR to meet the specification of your Infra Red device.
<b>UR2 Duplex Mode</b>	Choose Half or Full to meet the specification of your Infra Red device. This option appears only when you choose everything but Standard in the UR2 Mode function.

<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.

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.***

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## User Password

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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

Settings	SW1: CPU Frequency								
	Processor	Bus Clock	Multiplier	1-1	1-2	1-3	1-4	1-5	1-6
AMD K5 PR75	50 MHz	1.5X	off	off	on	on	on	on	off
AMD K5 PR90	60 MHz	1.5X	off	off	on	off	off	off	off
AMD K5 PR100	66 MHz	1.5X	off	off	off	off	off	off	off
AMD K5 PR120	60 MHz	1.5X	off	off	on	off	off	off	off
AMD K5 PR133	66 MHz	1.5X	off	off	off	off	off	off	off
AMD K5 PR150	60MHz	2.5X	on	on	on	off	off	off	off
AMD K5/K6 PR166	66 MHz	2.5X	on	on	off	off	off	off	off
AMD K6 PR200	66 MHz	3X	off	on	off	off	off	off	off
AMD K6 PR233	66 MHz	3.5X	off	off	off	off	off	off	off
AMD K6 PR266	66 MHz	4X	on	off	off	off	off	off	on
AMD K6 PR300	66 MHz	4.5X	on	on	off	off	off	off	on
Cyrix 6x86 P150 <sup>+</sup>	60 MHz	2.0X	on	off	on	off	off	off	off
Cyrix 6x86/6x86L/6x86MX P166 <sup>+</sup>	66 MHz	2.0X	on	off	off	off	off	off	off
Cyrix 6x86/6x86L/6x86MX P200 <sup>+</sup>	75 MHz	2.0X	on	off	off	on	off	off	off
Cyrix MX PR166	60 MHz	2.5X	on	on	on	off	off	off	off
Cyrix MX PR200	66 MHz	2.5X	on	on	off	off	off	off	off
Cyrix MX PR233	75 MHz	2.5X	on	on	off	on	off	off	off
Cyrix MX PR233	66MHz	3X	off	on	off	off	off	off	off

## CPU Setting List (Continued)

Settings	SW1: CPU Frequency								
	Processor	Bus Clock	Multiplier	1-1	1-2	1-3	1-4	1-5	1-6
Cyrix MX PR266	75 MHz	3X	off	on	off	on	off	off	off
Cyrix MX PR266	66 MHz	3.5X	off	off	off	off	off	off	off
P54C P75	50 MHz	1.5X	off	off	on	on	on	off	off
P54C P90	60 MHz	1.5X	off	off	on	off	off	off	off
P54C P100	66 MHz	1.5X	off	off	off	off	off	off	off
100	50 MHz	2.0X	on	off	on	on	on	off	off
P54C P120	60 MHz	2.0X	on	off	on	off	off	off	off
P54C P133	66 MHz	2.0X	on	off	off	off	off	off	off
P54C P150	60 MHz	2.5X	on	on	on	off	off	off	off
P54C/P55C P166	66 MHz	2.5X	on	on	off	off	off	off	off
P54C/P55C P180	60 MHz	3X	off	on	on	off	off	off	off
P54C/P55C P200	66 MHz	3X	off	on	off	off	off	off	off
P55C P233	66 MHz	3.5X	off	off	off	off	off	off	off

## Voltage Setting Table (JP30)

Voltage	1-2	3-4	5-6	7-8	9-10	11-12
Single 3.52V	on	off	off	off	off	on
Single 3.3V	on	off	off	off	on	off
Dual 3.2V	on	off	off	on	off	off
Dual 2.9V	on	off	on	off	off	off
Dual 2.8V	on	off	off	off	off	on
Dual 2.1V	off	off	on	off	off	off

## 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 3 won't support 64MB or 128MB DIMMs with 64Mbit SDRAM cells.
3. If DIMM 1 and/or DIMM 2 has 64MB or 128MB DIMM's with 64Mbit SDRAM cells, DIMM 3 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	8/16/32/64/128	8/16/32/64/128	8/16/32

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.