

EC Declaration of Conformity

We

Iwill Corp.

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Park, Taipei, Taiwan R.O.C.

declare under sole responsibility that the

P55XB2 motherboard

meets the intent of Directive 89/336/ECC for Electromagnetic Compatibility.

Compliance was demonstrated to the following specifications as listed in the official Journal of the European Communities:

EN 50081-1 Emissions:

EN 55022 Radiated, Class B

EN 55022 Conducted, Class B

EN 60555-2 Power Harmonics

EN 50082-1 Immunity:

IEC 801-2 Electrostatic Discharge

IEC 801-3 RF Radiat

IEC 801-4 Fast Transient

About This Manual

This manual will guide the user on how this new Ultra ATA (Ultra DMA 33) motherboard was manufactured. All useful informations will be described in later chapters. Keep this manual for your future upgrade or system configuration changed.

The chapter **Quick Installation ---**

This chapter's description is suitable for most user, Just follow step by step in installing the system.

The chapter **Overview ---**

Describe the feature and specificaton of this Ultra DMA 33 motherboard.

The chapter **Hardware Installation ---**

Describes the hardware detail specification and connection.

The chapter **Award BIOS Setup ---**

Detail description of this Ultra DMA 33 motherboard, no need to change the manufacture default unless you have conflict in your system.

The chapter **Appendix ---**

Useful information will be added in this chapter for your reference.

Warning

This motherboard is carefully designed with Intel spec. to fully support Pentium processor with MMX up to 233Mhz . Since Intel is not shiping the new Pentium procesoor with MMX with 233Mhz at the time that we deliver this motherboard so we hold the responsibility on if Intel change any spec. that cause the new processor not function properly in this motherboard.

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CHAPTER 0

Quick Installation

Several easy installation steps will be described in this chapter to help the experienced users for quick installation. If you are new user and need to know more about this motherboard, please start from Chapter 1.

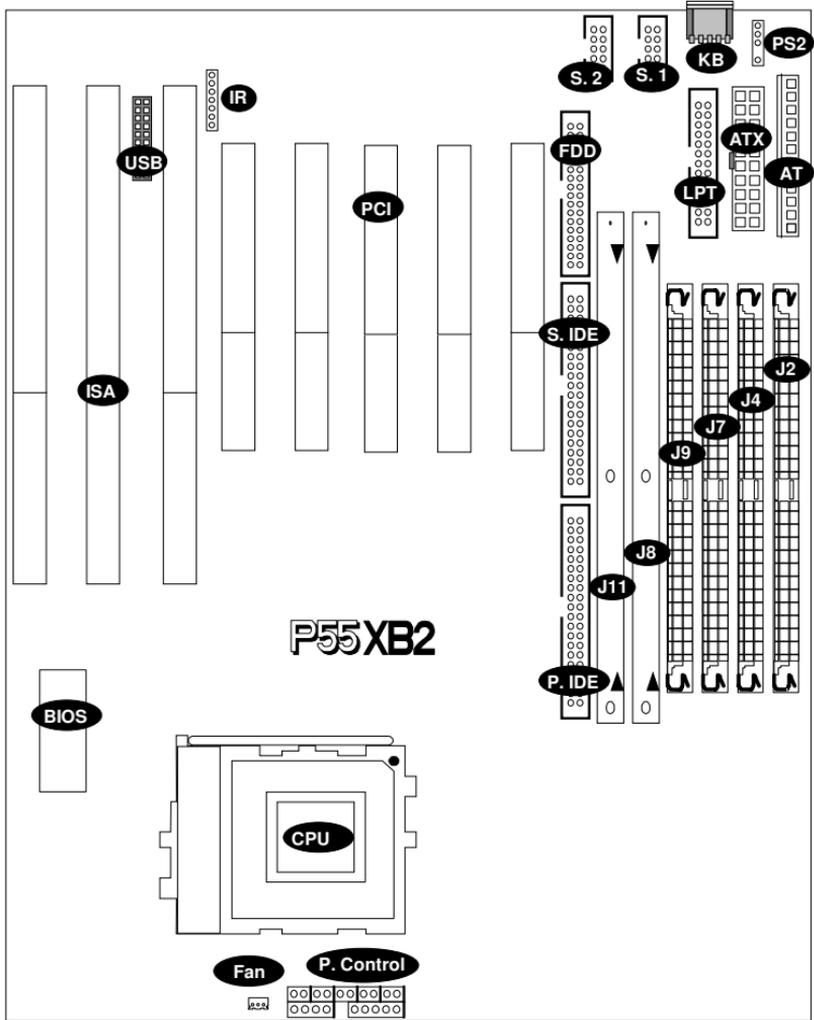


Figure 1:Connectors for P55XB2

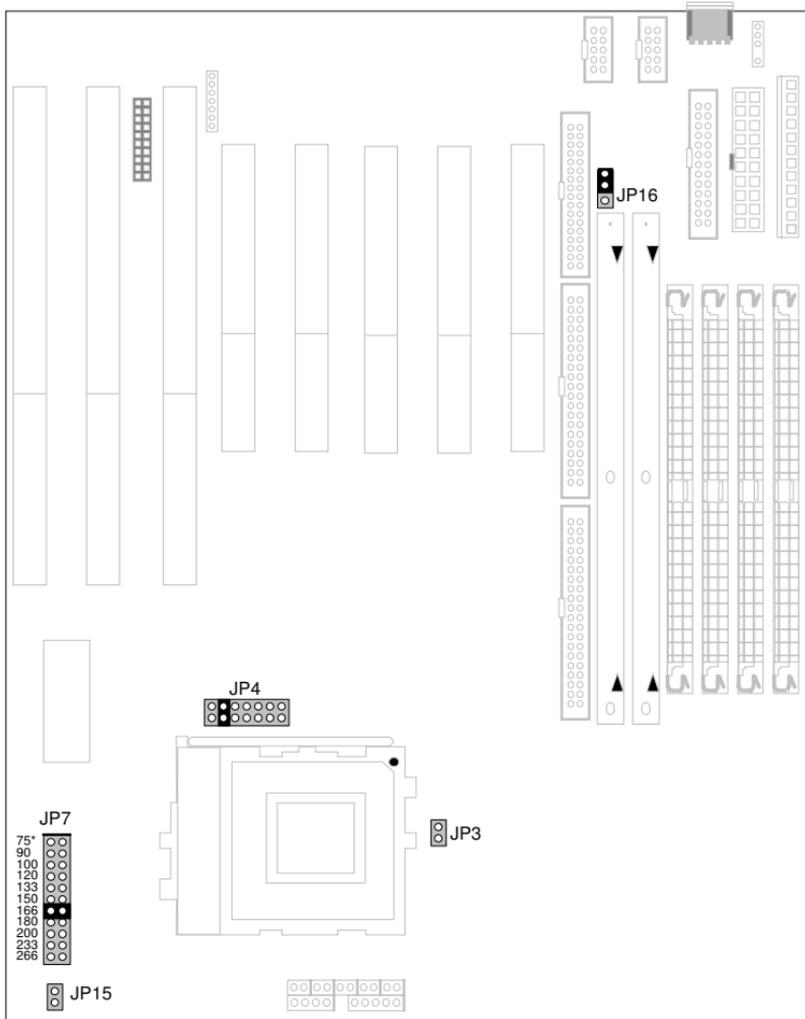


Figure 2 : Jumpers location

Connector Function Description

ATX	20 pin Standard ATX power input connector
AT	12 pin Standard AT power input connector
B1	Bank 1, each bank consist by two SIMM Socket(Single In-line Memory Module)
B2	Bank 2, each bank consist by two SIMM Socket(Single In-line Memory Module)
BIOS	BIOS (Basic Input Output System)
CPU	321 pin Socket 7 CPU socket
D. 1	DIMM1 (Dual In-line Memory Module) Bank 0
D. 2	DIMM2 (Dual In-line Memory Module) Bank 1
Fan	3 pin CPU Cooler fan connector
FDD	34 pin Floppy Disk Drive with key protect connector
LPT	a 2 x 13 pin box header for Parallel port connector
ISA	3 x ISA(Industrial Standard Architecture) 98 pin expansion slot
IR	a 7 pin pin-header for Infrared port connector
KB	5 pin keyboard DIN connector
P. IDE	40 pin box-header for Primary IDE connector
PCI	5 x PCI version 2.1 compliance 120 pin PCI (Peripheral Component Interface)expansion slot
P. Control	Front panel signal control connector
	RST —Reset Switch
	IDE —IDE detect LED
	SMI —System Management Interface switch
	LED —Power-on LED
	Speaker —Speaker connector
	Keylock — Keylock switch connector
PS2	4 pin pin-header for PS2 connector
S. IDE	40 pin box-header for secondary IDE connector
S1	a 2 x 5 pin box-header for Serial 1 port connector
S2	a 2 x 5 pin box-header for Serial 2 port connector
USB	20 pin Universal Serial Bus connector

Jumper Setting

JP4	CPU Voltage Select
JP7	CPU Frequency select
JP3	CPU Voltage Monitor Jumper
JP16	CMOS Clear Jumper
JP15	Remote power switch for ATX Power

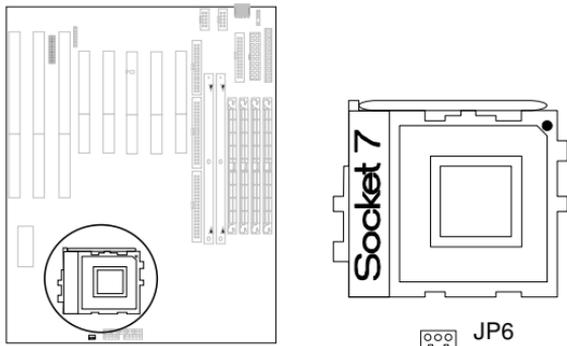
Manufacture Default Setting

CPU Clock	CPU Clock at 166Mhz
CPU Voltage	CPU Voltage at Auto Setting
Cache Size	512K Pipelined Burst Cache on board
Printer Port	DMA3 for ECP Mode, Address=378h at IRQ7
Serial Port	Serial 1 Address=3F8h at IRQ4, Serial 2 Address=2F8h at IRQ3
PS/2 Mouse	PS/2 Mouse at IRQ12
USB	Disabled by BIOS, at PCI INTD (shared IRQ with PCI#4)

Quick Installation

Step 1. Install CPU

Pull up the CPU handle bar, place the CPU into the socket in gentle/ horizontal way then pull down the handle bar back to its original place. Care must be taken for the CPU's direction when was inserted.



Step 2. Install CPU Cooler

Hook the CPU Cooler's metal latch one side to the CPU socket's peg, then press the metal latch again to fit into another side.

Warning: Care must be taken when the CPU Cooler was installed, if not a suitable force might scratch this motherboard.

Step 3. Adjust the CPU Voltage

The manufacture default in jumper 4 is "Auto", this motherboard will detect voltage automatically.

In order to support more and more future Pentium compatible processor Voltage, this motherboard design also reserved user selectable voltage instead of "Auto" function. In case of the new CPU can not be detected on the voltage by this motherboard's BIOS, user need to set the CPU Voltage manually.

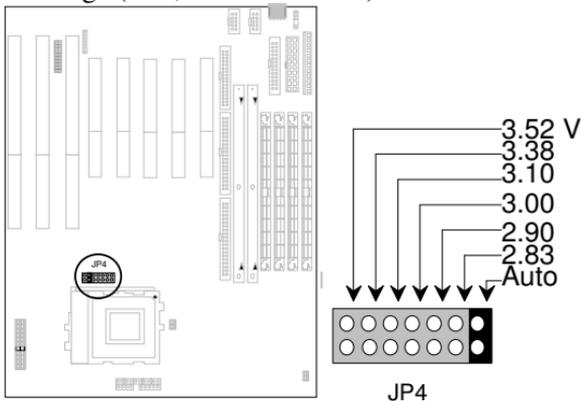
Intel Single Voltage (P54C) CPU set to 3.38V on STD and 3.52V on VRE.
AMD,Cyrix Single Voltage CPU all set to 3.52V

All Intel Dual Voltage (P55C, 166 / 200 / 233Mhz) CPU set to 2.83V.

AMD Dual Voltage (K6, 166 / 200Mhz) CPU set to 2.9V

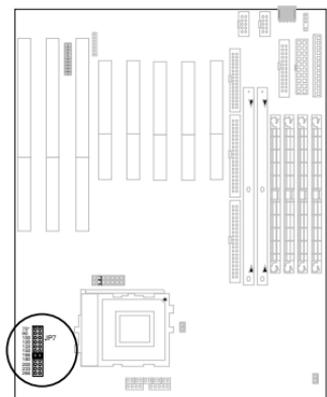
AMD Dual Voltage (K6, 233Mhz) CPU set to 3.2V

Cyrix Dual Voltage (M2, 166 / 200 Mhz) CPU set to 2.83V



Step 4. Adjust the CPU Frequency

The manufacture default at 166Mhz with the special design on this motherboard. Once the jumper cap was inserted, it will automatically caculate the Internal/ External Clock and CLKMUL (Clock Multiplier). Just insert the jumper cap to the CPU real frequency. There are more detail description on Chapter 3.3.3 CPU Clock Select and Appendix A CPU for more information.



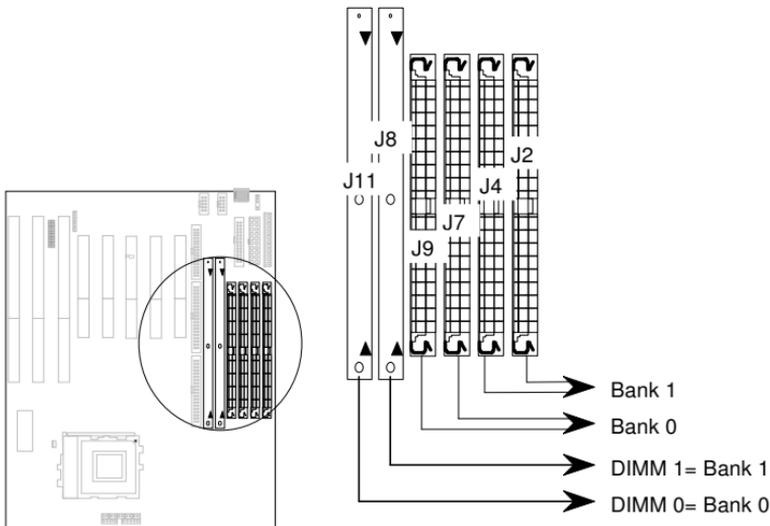
90	○	JP7
100	○	
110	○	
120	○	
133	○	
150	○	
166	●	
200	○	
233	○	
266	○	
Cyrix	○	

Step 5. Install the Memory Module

For at least two pieces 72 pin SIMM(Single In-line Memory Module) or one piece 168 pin DIMM(Dual In-line Memory Module) must inserted in this 64 bit Pentium base motherboard.

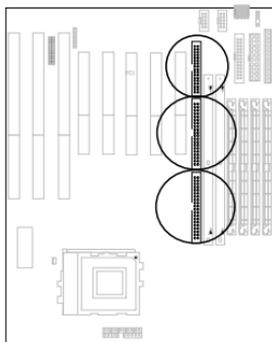
The memory in this motherboard divided into three banks. The right side two pieces of SIMM socket combined as bank 0, the left two pieces of SIMM socket is the same address with the right side of DIMM socket they both occupy bank 1 (memory will not added together if both these socket were all inserted). The left DIMM socket is occupied by bank 2.

The two pieces of the SIMM in the left side are occupy the Bank 0, it is the same address with the DIMM 1. The left side two pieces of the SIMM are occupy Bank 1. The system memory will not added together, if the memory were put into the same bank.



Step 6. Install the Internal Peripherals

The internal peripherals means devices that in the computer chassis like the Floppy Disk Drive, Hard Disk Drive, CD ROM Drive ...etc. With this motherboard package, there are 34, 40, pin flat cable. Use these cables to connect the motherboard and internal devices. All flat cable's connector housing have the key protect, this will guide you the correct direction when you insert.



Step 7. Install the External Peripherals

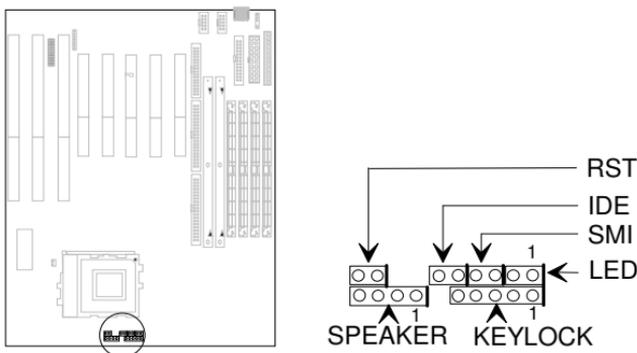
The external device means devices that outside the computer chassis like the Serial mouse, Printer, PS/2 Mouse, External Modem...etc. With this motherboard's package there are two 10 pin cables convert to 9 and 25 pin D-

Sub male connector cable are for Serial port, one 26 pin convert to 25 pin D-Sub female connector cable is for Parallel port, one 5 pin housing but 4 wires into a 6 pin Mini-DIN is for the PS/2 mouse.

Step 8. Connect the SMI (System Management Interrupt) Switch

Some computer chassis provides a SMI switch from front pannel, connect this 2 pin wire to this SMI switch(any direction can function this). This will force the system into a Suspend mode/ Green, to decrease electricity and longer life of component that not in use. Or the user can use chassis that still provides the Turbo switch and functionless on current motherboard.

Once the SMI switch was pushed, this will force the system into the “suspend mode” immediately. Any key strike on the keyboard will wake system up.



Step 9. Connect the Reset switch

Most computer chassis provides a reset switch to front pannel control, this will reboot the system without turn off and on the power switch while the reset switch was pushed. Use the chassis provides a 2 pin housing and connect to this reset switch (any direction can function this).

Step 10. Connect the Keylock (keyboard lock) Switch

Most computer chassis will provides a keylock switch. Normally, connect the marked keylock connector to this motherboard’s keylock connector. This will cause the keyboard out of function once you switch the keylock to “Lock”. This will prevent any un-authorized keyin. The onboard keylock connector was a 5 pin pin-header, connect to the right side two pin will function this. (Reference to the Chapter 3—Hardware Installation for detail pin assignment)

Step 11. Connect the Speaker

Connect the speaker to the motherboard's speaker connector. (Normally the red cable is +5V power) (Reference to the Chapter 3—Hardware Installation for detail pin assignment)

Step 12. Connect the Power LED

Most computer chassis provides a power LED for identify if the system is on or off. Connect the power LED to the 2 pin pin-header motherboard's LED connector. (normally the red cable is +5V power) Or connect to the left side of onboard keylock .(Reference to the Chapter 3—Hardware Installation for detail pin assignment)

Step 13. Connect the Devices LED

Some computer chassis provides device LED(Like HDD LED) for identify if the device is under working or not. Connect the device LED to the motherboard's IDE device LED connector. (normally the red cable is +5V power)

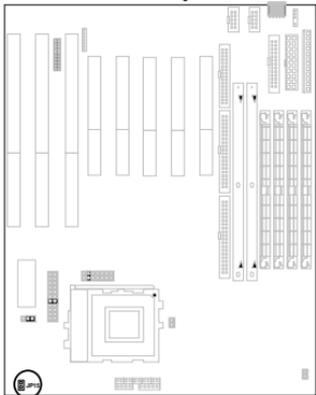
Step 14. Connect the Power Input

This motherboard provides two types of power input; the AT & ATX for different choises.

The AT switching power provides 2 sets cable P8 & P9 (6 pin for each set) and ATX power provides 1 set 20 pin cable for motherboard's power input.

Step 15. Connect the ATX Power Switch

This motherboard provides a 2 pin connector for connecting a momentary switch for the system on/off.



JP15



Step 16. Connect the Keyboard

Follow the keyboard cable's key direction and connect to this motherboard.

Step 17. Plug the Display Card

Finally, follow the display card you have and insert in horizontal direction into the PCI/ISA expansion slot.

Step 18. Power on the system

Once the system was power on, on the lower left corner of the screen will show "Press DEL to enter SETUP, ESC to skip memory test". Then press "DEL" to enter BIOS setup for the first time power on and choose the "LOAD SETUP DEFAULTS" then BIOS will responds "Load SETUP default(Y/N)?", press "Y" and "Enter". Final choose "SAVE to CMOS and EXIT (Y/N)?" by pressing "Y" and "Enter".

CHAPTER 1

Overview

Thank you for purchasing this **P55XB2 Ultra DMA33 Motherboard**. This operation manual will guide you to proper configure and install. It has an overview of the engineering design and feature of this board. Also, this manual provides useful information for your later upgrade or change the configuration. Keep this, for your future reference.

1.1 Features

This P55XB2 Ultra DMA 33 motherboard is your best choice for optimized media rich performance desktop on the Pentium® level processor with the new MMX™ technology. It incorporated with Intel's 430TX PCiset with I/O subsystem that supports for pentium processor from 75 to 233 MHz with one single jumper to set up the frequency and 512Kbyte for 2nd. Level Cache onboard that well prepare to run heavy application.

The concurrent PCI (PCI 2.1) reduces CPU latencies for smoother video and more realistic audio and Universal Serial Bus (USB) technology makes Plug and Play peripheral connections a reality.

Run with faster system memory is another plus on this Pentium EIDE Motherboard to outperform the whole system performance. It equipe 4 of the 72 pin SIMM that support both fast page and EDO DRAM also with two of the 168 pin DIMM memory socket that support the new 3.3V, unbuffered Synchronous DRAM.

The onboard two enhance IDE channels support for UltraDMA/33 that support data transfer to 33 MBytes which this new technology but is compatible with the existing ATA-2 IDE specification.

Fully support plug and play I/O that contain two high speed serial ports, one ECP/EPP printer port, up to 2.88 floppy disk port, keyboard and real time clock is used for users to enjoy the plug and play function. This Pentium EIDE motherboard has designed with AT form factor to improve the easy access memory module, long

add-on card support and some of the new features that traditional AT form factor can not achieved.

This P55XB2 Ultra DMA 33 Motherboard is designed to fit into standard AT form factor based computer case. It is a powerful combination of performance, quality and innovative design to address the need of today's market. With current Intel P54C, Cyrix 6x86, 6x86L, AMD 5k86 and next generation on Intel P55C with MMX technology supported, 512K external Level 2 Pipelined Burst Fast Write-Back Cache, 64 bit Burst Bus DRAM and enhanced IDE with 2 channels and plug and play Ultra I/O, this EIDE Motherboard brings exceptional processing power that could only be achieved by Mini-computer. Incorporating the new emerging industrial standard Peripheral Component interconnect (PCI) Local Bus together with the standard 16-bit Industrial Standard Architecture (ISA), this SCSI Motherboard dramatically boots system I/O through for even the most demanding application in today's market.

■CPU:

CPU socket (socket 7) supports the flexibility of different type of current Cyrix (M1, M2), AMD (K5, K6) and Intel Pentium, Pentium with MMX processor. One easy jumper design to set the CPU frequency while choosing your CPU speed from 75 to 266MHz.

■BIOS:

Award BIOS, on-screen "Plug & Play" setup for Enhanced IDE, and Ultra Multi-IO. Support **Flash ROM** (This ROM provides better upgrade ability for user to update their BIOS data on the system board, user can down-load/update newer version BIOS from Internet or diskette file.

■Cache memories:

High performance write-back 2nd. Level external static RAM cache. This supports 512KB Synchronous Pipelined Burst Cache on-board.

■Memories:

4 X 72-pin SIMM (Single In Line Memory Module)

2 X 168-pin DIMM (Dual In Line Memory Module) (Rev 1.1)

Support system memory up to **256MB** (minimum of 8MB) on board with either fast page mode, EDO under SIMM socket or the new Synchronous DRAM with DIMM socket (3.3V un-buffered type).

■Expansion slots:

This motherboard provides :

3 X 16-bits **ISA** slots, 5 X 32-bits **PCI** slots

■Switching DC/DC Voltage Regulator for CPU:

Efficiently cool down CPU temperature, increase system stability and support future processors.....

The more and more Pentium or compatible processor is releasing and most of them are not using the same voltage for the processor. For example, the current Intel Pentium processor is using 3.52 V single power source and new Intel Pentium with MMX processor is using the 2.83V dual power source. This regulator will automatically detect the CPU type and power. The user no need to care what processor was using. refer to Appendix A for more information

■IDE functions:

Two 40 pin box-header connector on this motherboard provide two connector for IDE devices. Must separate into the Master/ Slave, if two IDE devices were in the same channel, or the two IDE devices can be the same Master but in different channel. Also reference to chapter xxx for connect the IDE activity LED (The LED will light on when the IDE devices were in writing / reading).

- Support UltraDMA/33 data transfer rate
- Built in dual PCI Bus Master EIDE Channels.
- Support ATAPI (AT Attachment Packet Interface)

■USB interface (Universal Serial Bus):

For support this function you need to purchase a USB Riser card in extra. The optional USB Riser card for this motherboard provides two USB connector.

- Plug and Play devices outside the computer box
- Up to 12Mbit
- Easy of use

■Power Connectors:

- Support both AT and ATX power supply connector

■Floppy Interface:

- Support both 3 1/2" and 5 1/4" **floppy disk drives** and **Tape Drive** (360K / 720K / 1.2M / 1.44M / **2.88MB**)
- **Enabled/Disable** selectable from system BIOS
- Non-Burst Mode DMA Option, 16 Byte Data FIFO

■Serial Port:

Two onboard 10 pin box-header connector provide 2 Serial port. Use the two cables that goes with this motherboard to convert to the standard 9 and 25 pins D-Sub connectors.

- Two high speed 16550 UART serial port
- IRQ selectable from BIOS.
- Address changeable form system BIOS
- NS16C550 compatible, Programmable Baud Rate Generator

■Parallel Port

One onboard 26 pin box-header connector provides the Parallel port. Connect this parallel port by one 26 pin and convert to 25 pin D-Sub cable that packs with this motherboard.

- IRQ selectable for IRQ5(278h), IRQ7(378h) from system BIOS.
- **Standard mode**--Compatible with IBM PC/AT Printer port
- **EPP Mode** --Enhanced Parallel Port compatible(EPP) compatible
- **ECP Mode** --Microsoft & Hewlett Packard Extended Capabilities Port (ECP) Compatible
- Incorporates ChiProtect Circuit for protection against damage due to printer power-on

1.2 Specifications

■**Physical Dimensions:**Length: 280mm / Width: 220mm

■**Environmental Requirements:**

Temperature 0-55 degrees C (operating or storage)

5% to 95% non-condensing relative humidity

CHAPTER 2

Hardware Installation

2.1 Preparation and Inspection

This **P55XB2 Ultra DMA 33** Motherboard, like all electronic equipment is static sensitive. Please take the proper precautions when handling this board. You should avoid static up. If possible, You should ground yourself by touching a metal table or your computer frame. Keep the board in its conductive wrapping until it is configured and ready to be installed in your system.

For installation, you may need some or all of the following tools:

- IDE HDD drive/devices and floppy drive manual(s).
- Peripherals that connect to your system's manual(s).
- MS DOS diskettes with FDISK and FORMAT programs.
- Medium size flat blade screwdriver.
- Medium sized Phillips head screwdriver.
- A 3/16 inch nut driver or wrench.

You should find the Following components when open the box :

1. P55XB2 Motherboard.
2. This Operation Manual
3. 40 pins IDE signal cable.
4. 34 pins Floppy Disk Drive signal cable.
5. 26 pins convert to DB25 pin for parallel port cable.
6. 10 pins convert to DB25 pin for serial port cable.
7. 10 pins convert to DB9 pin for serial port cable.
8. 6 pins convert to mini-DIN PS/2 mouse cable.
9. USB Riser Card (optional)
10. High speed printer port software driver (optional).

2.2 Placement

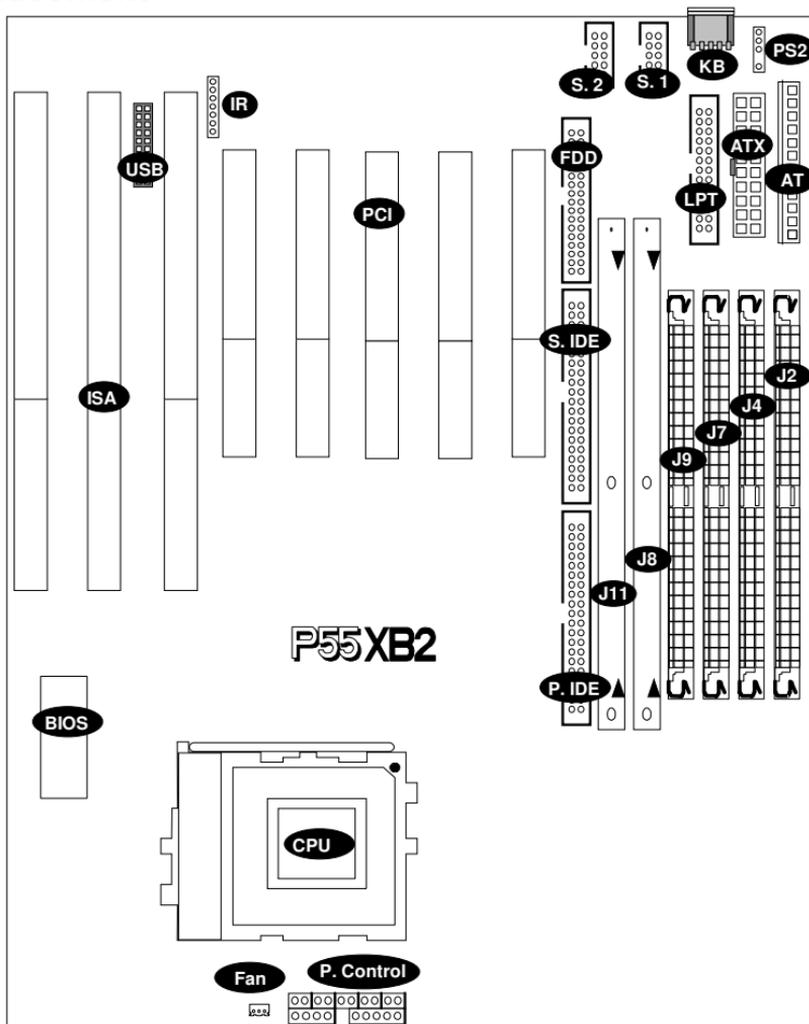


Figure 1:Connectors for P55XB2

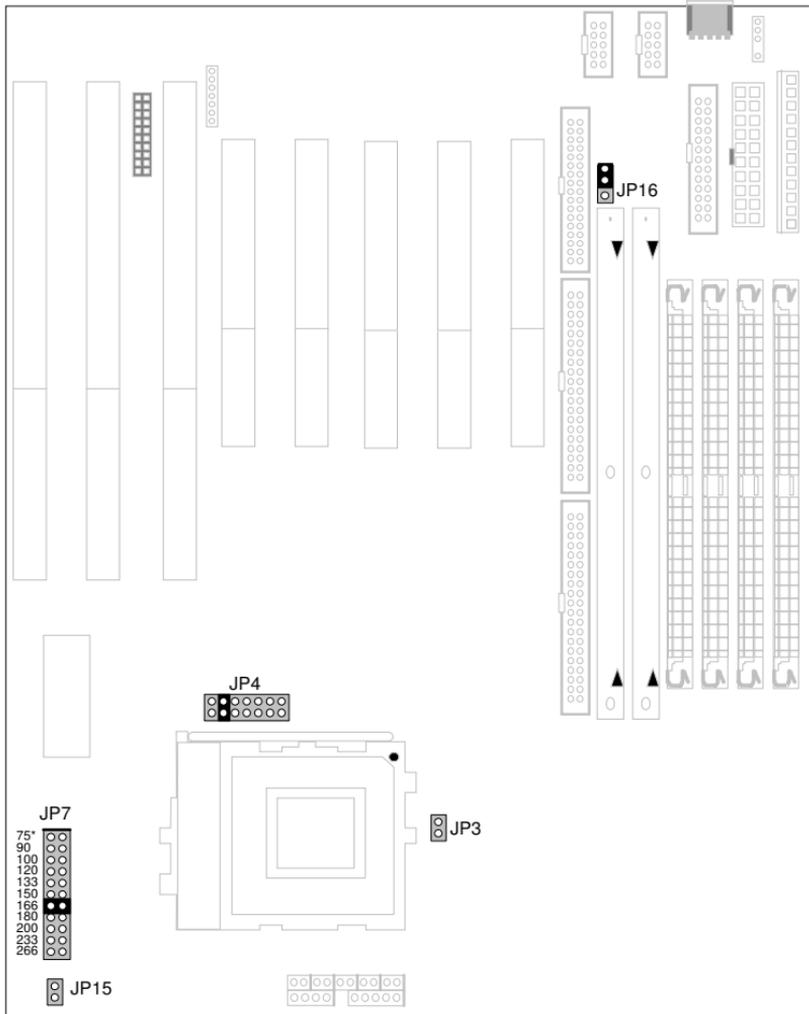
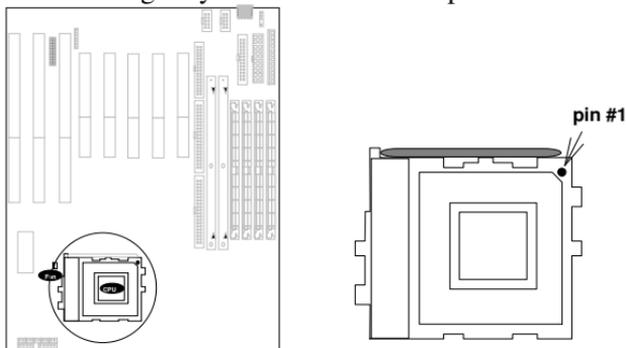


Figure 2 : Jumpers for P55XB2

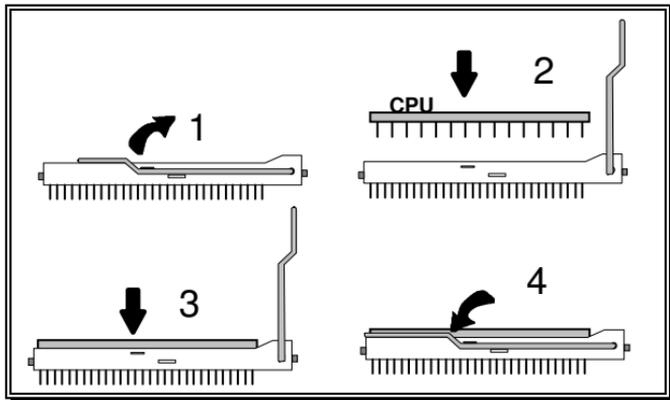
2.3 CPU group

2.3.1 CPU Socket

This CPU socket provides flexibility for Intel Pentium , Pentium OverDrive, Pentium future processors, AMD K5(5k86) and Cyrix M1(6x86) processor. When installing the CPU into the Zero Insertion Force (ZIF) socket should be very carefully. Lift the handle bar of this 321 Pin ZIF socket up carefully and insert the CPU into ZIF socket. And make sure the CPU Pin 1 is with the square base and it goes to particular hole on the ZIF socket. Once you match the hole with Pin 1 then gently insert the CPU and press socket handle down.



How to install CPU



2.3.2 JP6 CPU Cooler Fan Power Connector

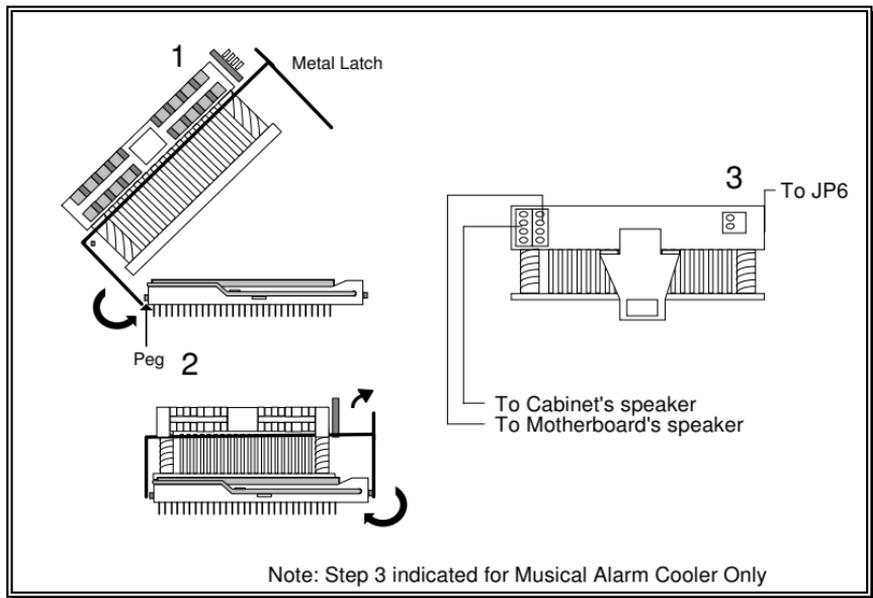
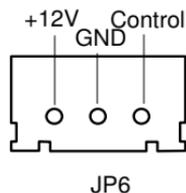
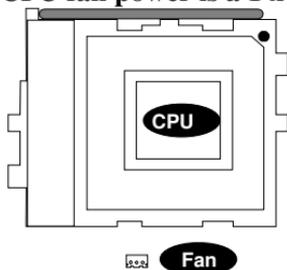
Warning !!!

Warning !!!

Warning !!!

CPU Cooler is required to be placed on top of the CPU all the times to prevent CPU over-heat.

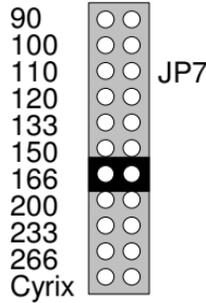
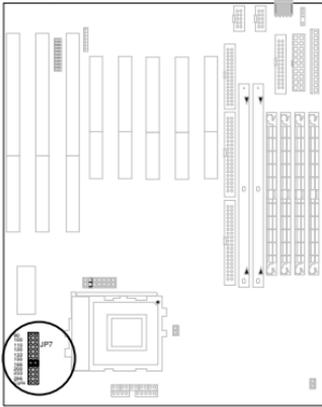
The CPU fan power is a 1 x 3 pin connector.



2.3.3 CPU Clock Select (JP7)

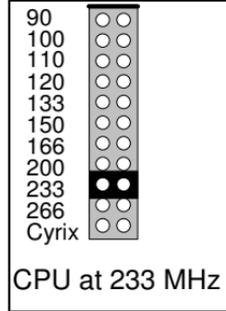
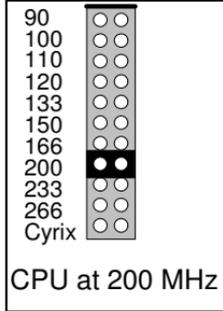
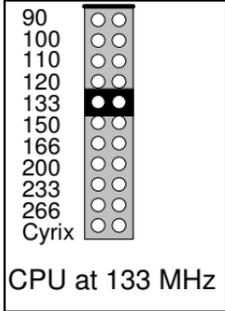
JP7 is a 2 X 11 pin jumper, with one "colored" jumper cap on it. One and only one jumper cap need to be put on this connector for selecting the CPU clock. Just

put the colored yellow jumper cap to the speed your CPU really is (the CPU internal/external clock ratio and ISA clock will be automatically selected by setup the JP7)

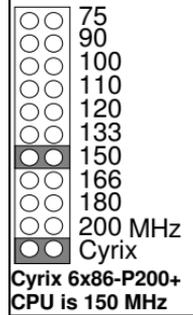
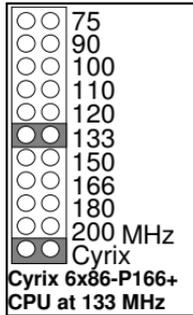
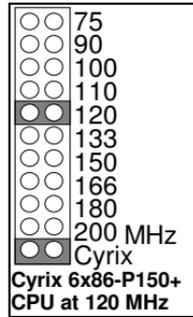
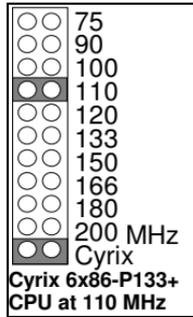
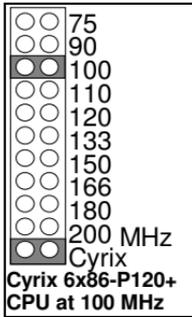


Following figure are for reference:

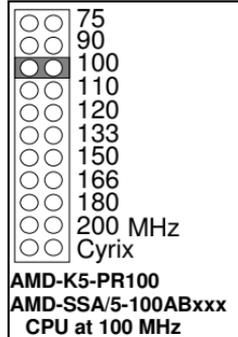
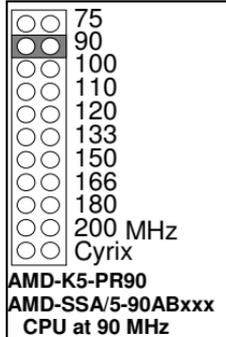
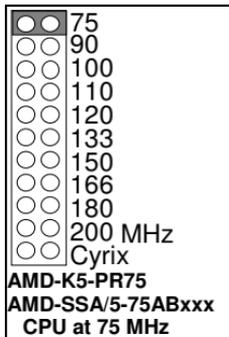
Intel CPU

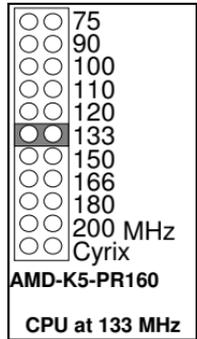
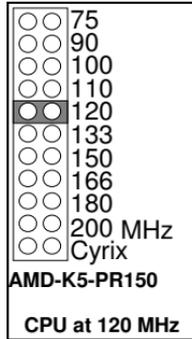
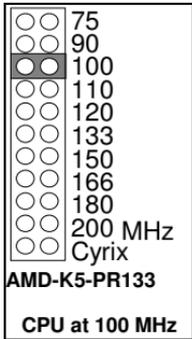
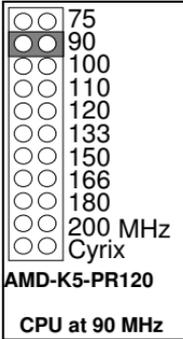


Cyrix CPU (describe for M1,M2)



AMD CPU (K5,K6)



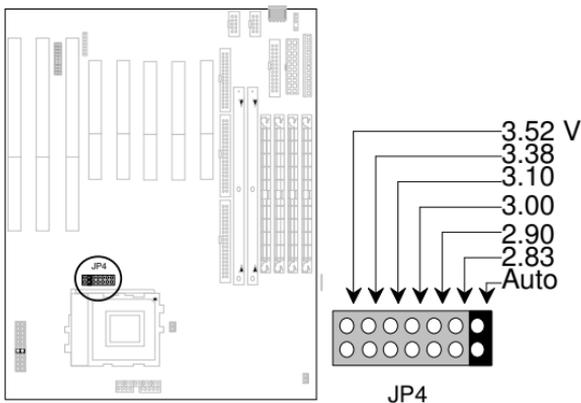


Reference to Appendix A for CPU voltage setting detail.

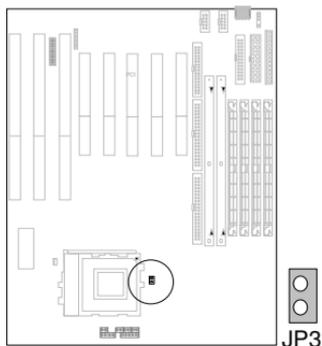
2.3.4 CPU Voltage (JP4)

The manufacture default is “Auto”. This jumper set the voltage for the CPU. For example, the Intel Pentium P54 CPU uses 3.38V(STD)or 3.52V (VRE). The new Pentium with MMX 200MHz CPU uses the dual power source and more “Green” concept at 2.83V. This motherboard provides a jumper for different application purpose or the user choose the “Auto” for automatically detect the processor.

Reference to the Appendix A for more detail description on the CPU. most of them are not using the same voltage for the processor. For example, the current Intel Pentium processor is using 3.52V single power source and new Intel Pentium with MMX processor is using the 2.83V dual power source.



2.3.5 JP3 CPU Voltage Monitor Jumper



The Pentium with MMX , AMD K6 and Cyrix M2 is a dual voltage CPU. one volatge for CPU Core (Vcore), another for CPU input/output single (Vio). The JP3 pin1 is connected to the CPU Vcore and pin2 is connected to the CPU Vio. The motherboard auto voltage function should work with most Processor. In case of the motherboard auto voltage function doesn't work correctly with your CPU or futher CPU. You can use voltage meter to check the Vcore and Vio. *(If the voltage desn't match with the CPU spec. You have to change the JP4 jumper cap manually)*. In few special processor (single voltage CPU) which has two Power Panel (Vcore/Vio) separately , this jumper also can be shorted to connect Vcore and Vio by a jumper cap.

2.4 L2 Cache Memory

The cache memory support pipilined burst SRAM, this will perform much higher perfomrance compare to the traditional asynchronous SRAM. This motherboard uses the new pipelined burst cache technology with 512K size.

2.5 D-RAM Configuration

This motherboard provides six memory socket. For at least two pieces 72 pin SIMM(Single In-line Memory Module) or one piece 168 pin DIMM (Dual In-line Memory Module)must inserted in this 64 bit Pentium base motherboard.

1. Two DIMM (DIMM 0, DIMM 1) socket—support 3.3V Unbuffered Synchronous DRAM (SDRAM).

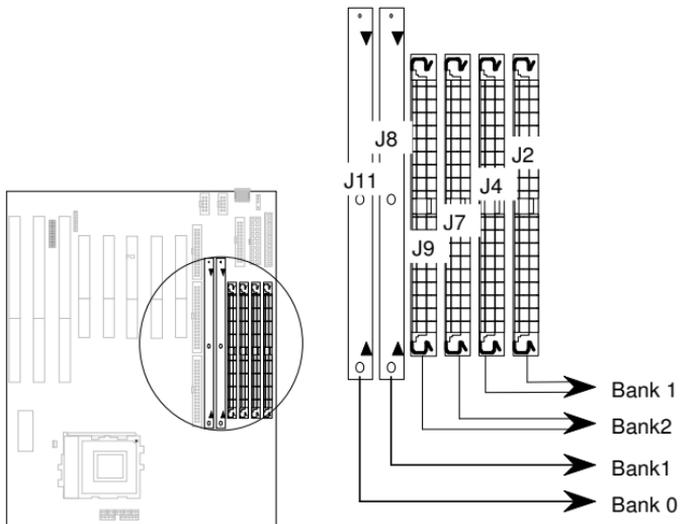
Each DIMM memory size can be 8/16/32/64/128 MByte. The maximum memory is 256 MByte that is the Intel 82430TX chipset maximum support.

2. Four SIMM socket (Bank 0, Bank 1)—support Fast Page and EDO DRAM.

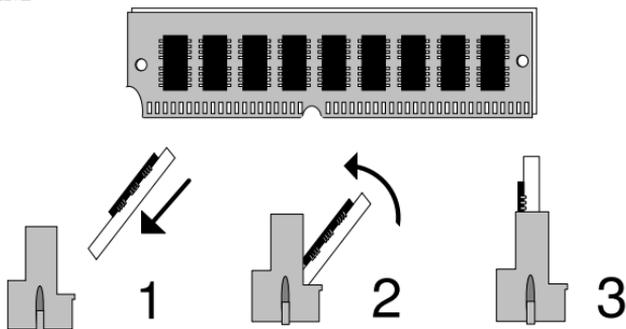
These four SIMM sockets divide into two Bank by each two SIMM socket. Each two SIMM in the same Bank must be the same memory size and type, the Fast Page and EDO DRAM can not be in the same Bank.

Reference to the following installation possibility that user might install. The “√” means memory can be added together, the “×” means the memory can not be added together.

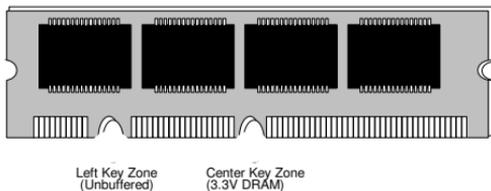
DIMM 0 J11 Bank 0	DIMM 1 J8 Bank 1	SIMM J7, J9 Bank 2	SIMM J2, J4 Bank 1	Status
Empty	Empty	Empty	Occupied	√
Empty	Empty	Occupied	Empty	√
Empty	Empty	Occupied	Occupied	√
Empty	Occupied	Empty	Empty	√
Empty	Occupied	Empty	Occupied	×
Empty	Occupied	Occupied	Empty	√
Empty	Occupied	Occupied	Occupied	×
Occupied	Empty	Empty	Empty	√
Occupied	Empty	Empty	Occupied	√
Occupied	Empty	Occupied	Empty	√
Occupied	Empty	Occupied	Occupied	√
Occupied	Occupied	Empty	Empty	√
Occupied	Occupied	Empty	Occupied	×
Occupied	Occupied	Occupied	Empty	√
Occupied	Occupied	Occupied	Occupied	×

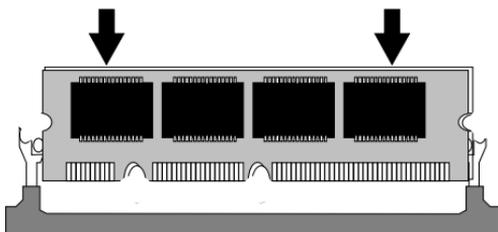


Install the SIMM



Install the DIMM



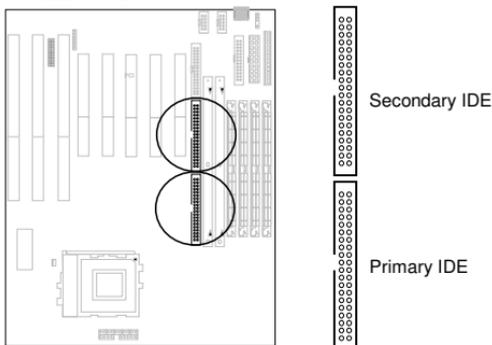
**NOTE:**

1. The 70 ns Fast Page Mode or 60 ns EDO DRAM is recommended.
2. DIMM specification: 3.3V/ Unbuffered, this motherboard will not supports the 5V or Buffered DIMM.
3. This motherboard supports 4 Clock for each DIMM Socket

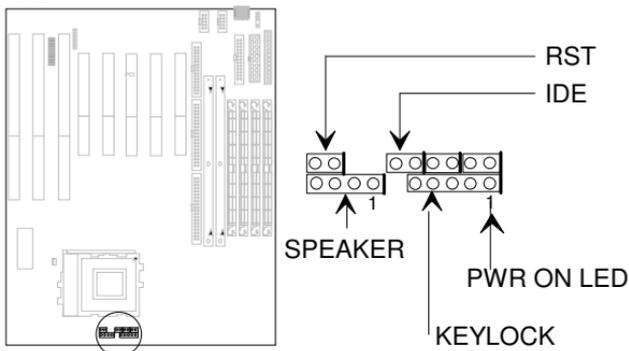
2.6 IDE Interface

2.6.1 Primary, Secondary IDE Connectors

Primary / Secondary IDE are 40 pins internal IDE port connectors. Use a 40 pins flat cable to connect between this connector and the IDE devices. Normally put the boot-up hard disk at the primary IDE channel and other IDE devices at the secondary IDE channel (like CD-ROM). Each IDE connector can connect for two IDE devices. For easy installation, set the first IDE device to "Master" and second IDE device to "Slave" when you connect two IDE devices in one connector.



3.6.2 IDE LED



A 2 pins IDE detect LED connector.

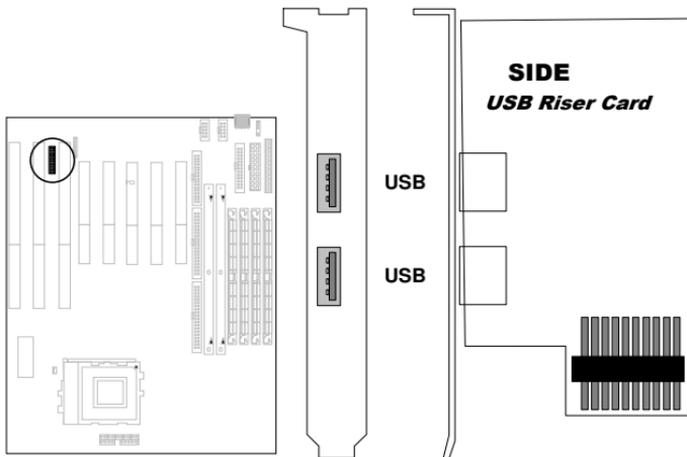
Pin	Assignment
1	LED anode (+)
2	LED cathode (-)

2.7 USB (Universal Serial Bus)

Basically the USB is suitable for middle low speed devices like Mouse, Keyboard, Joystick..etc. In before, all these were using different connectors, and it is complicated for end user in installing the system. A 4 pin standard USB connector was designed on the USB riser card, user just plug all their USB peripherals on these kinds of connector and just run.

This USB riser card transfer rate up to 12Mbit per second and will provide better performance that compare to a cable type USB.

J6 is a 2 x 10 pin connector, connect this with the USB riser card and fix on the computer chassis's backplane.



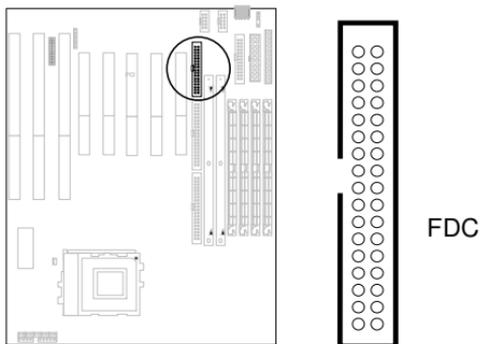
2.8 Enhanced Multi-IO

2.8.1 FDC Connector

The IBM compatible floppy disk drive has 360KB, 720KB, 1.2KB, 1.44KB and 2.88KB. The most popular is 1.44MB in 3.5 inch. There is also one kind of 2.88MB FDD used in the Japan NEC PC98 series computer.

This motherboard can support for up to two different kind FDD in same connector and also support QIC-80 Tape Driver under floppy interface.

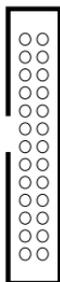
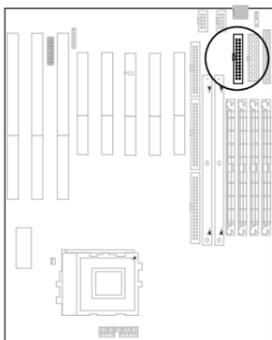
FDC is a 34 pins internal Floppy port connector. Use 34 pins flat cable to connect between this connector and floppy drives.



2.8.2 Parallel Port Connector

The parallel port is using the parallel signal transfer, Byte per unit is the data input/ output. The speed is faster than serial port and most this was used on the parallel printer or other parallel devices.

Parallel port is a 25 pins female external DB25 connector for parallel port.



Parallel

Following selection is all controled by the BIOS:
 ECP Mode DMA Channel Select by BIOS
 printer Port Address and IRQ Select by BIOS
 (378h/3BC with IRQ7, 278h with IRQ5.)

Printer and IEEE 1284 cable

The IEEE 1284 compliant cables have better features on the following:

- Twisted pairs of conductors
- Full foil shield
- Wire braid
- Controlled impedance -- 62 ohm
- Limited cross-walk

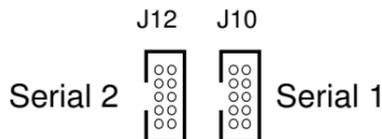
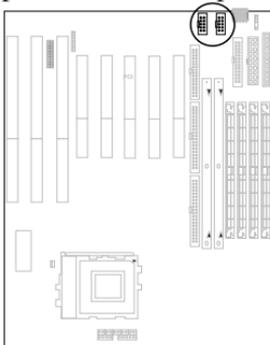
With these features will guarantee the IEEE 1284 cable perform at much higher bandwidth rates that the fast Centronics, EPP and ECP modes perform at.

If you are using the ordinary parallel cables running at the EPP or ECP mode that this controller provided, you may experience that the data efforts.

2.8.3 Serial Port

The serial port is using the data in serial transfer. Because it transfer data input/ output by bit per unit, the speed is slower than a parallel port. This ofen use in serial mouse, serial printer, fax modem...etc. This provides a 16550 compatible serial port and this is faster in transfer speed than a traditional 16450 compatible serial port.

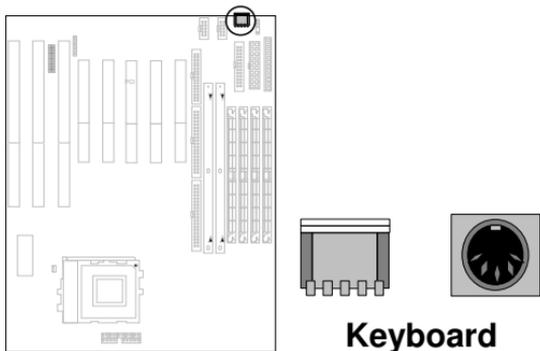
The Serial 1 & Serial 2 are 2 x 5 pin box header connector. This motherboard package provides 9 and 25 pin male converter cable for flexible purpose use.



2.9 Others

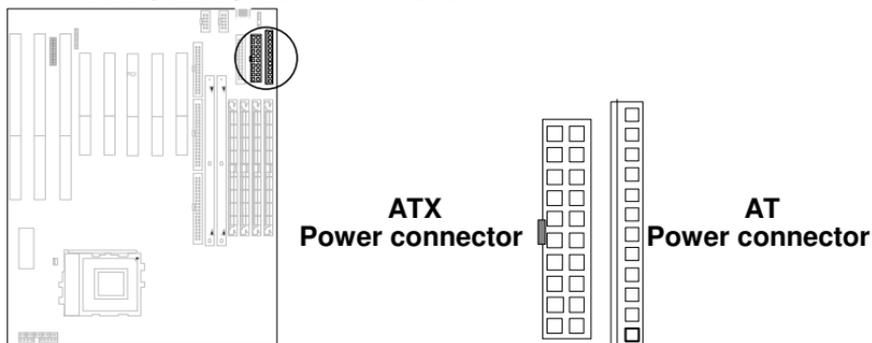
2.9.1 Keyboard Connector

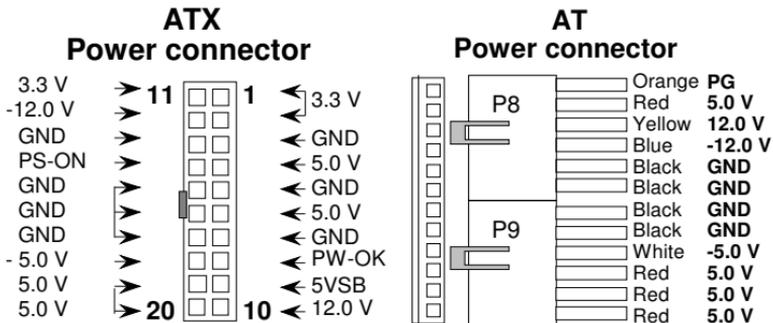
The keyboard connector is a 5-pin, circular-type Mini-DIN socket. It is used to connect this SCSI motherboard keyboard interface to any standard AT-compatible keyboard (84 or 101key type keyboards). The pin assignment are as follows:



2.9.2 Power Supply Connector

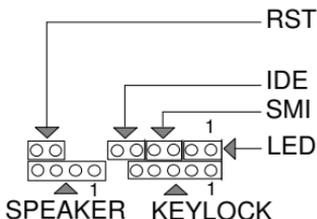
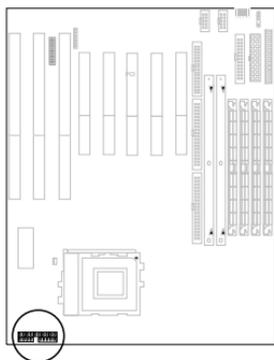
There are two types of power connector provided by this SCSI motherboard. **The 20 pin box header is ATX standard power connector. (will describe this on next chapter ATX Form Factor).** The 12-pin is AT standard power connectors. This is used to connect power lines and power good signal from the power supply's P8 and P9 headers to the motherboard. The pin assignments for P8 and P9 are indicated below:

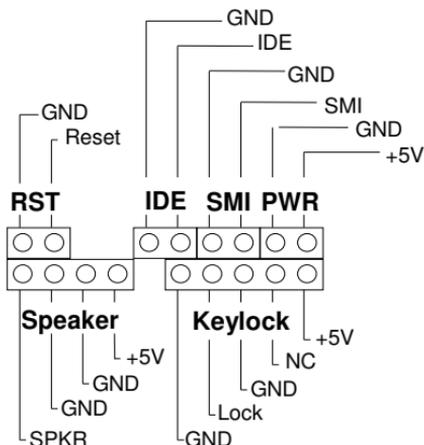




Note: The standard AT power supply will not power-up from JP15 for it doesn't has the "POWER O.K." signal.

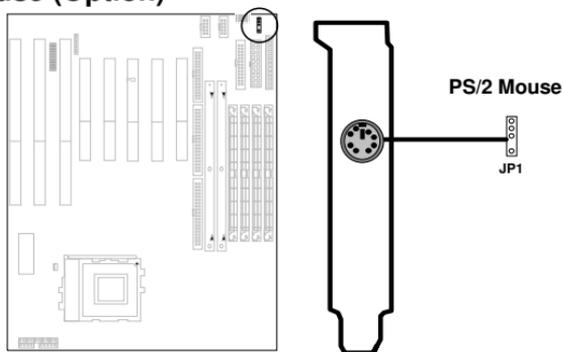
2.9.3 Reset, IDE LED, SMI Switch, LED, Speaker, Keylock Connectors





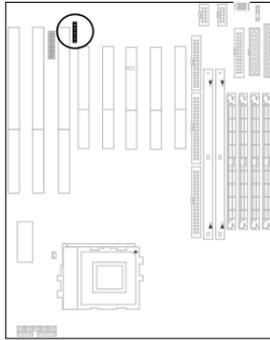
Note: The Power LED can be connected from both the “LED” & “Keylock”. This motherboard has no Turbo function, it will not support Turbo function. If the computer chassis has the front Turbo LED in the front panel for identification, the Power LED will light-on when you connect a computer case that mounted Turbo LED and power on this system.

2.9.4 PS/2 Mouse (Option)



PS/2 Mouse is a 4 pin Mini-DIN PS/2 mouse connector, the manufacture default is IRQ12.

2.9.5 IR (Infrared)



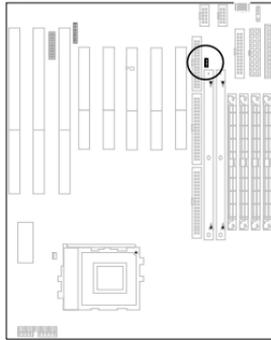
Infrared



JP5

The IR (Infrared) port is a 7 pin pin-header connector, this connector is reserved for future use.

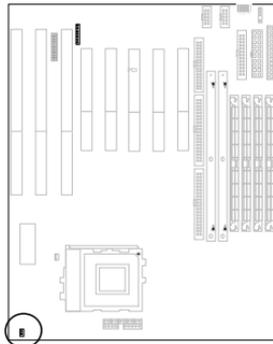
2.9.6 CMOS Clear Jumper



 **JP16**

The JP16 is a 3 pin pin-header connector, jumper cap on 1-2 for normal operation or jumper cap on 2-3 for clear CMOS.

2.9.7 ATX Power Control



 **JP15**

The JP15 is a 2 pin pin-header connector, it must be connected to a switch when the ATX Power Supply is used.

CHAPTER 3

Award BIOS Setup

Notice

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Introduction

This section discusses Award's Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

The Award BIOS installed in your computer system ROM (Read Only Memory) is a custom version of an industry standard BIOS. This means that it supports Intel/ Cyrix/ AMD processors in a standard IBM-AT compatible input/output system. The BIOS provides critical low-level support for standard devices such as disk drives and serial and parallel ports.

The Award BIOS has been customized by adding important, but non-standard, features such as virus and password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

The rest of this manual is intended to guide you through the process of configuring your system using Setup.

Starting Setup

The Award BIOS is immediately activated when you first power on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing immediately after switching the system on, or
2. by pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP.

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

Press <F1> to continue, to enter SETUP

Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand

Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
(Shift)F2 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the Award BIOS supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems

manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.1 Main Menu

Once you enter the Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

ROM PCI/ISA BIOS (XXXXXXXX) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGEMENT SETUP PNP/ PCI CONFIGURATION/I/O SETUP INTEGRATED PHERALS LOAD SETUP DEFAULTS	SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION HDD LOW LEVEL FORMAT SAVE & EXIT SETUP EXIT WITHOUT SAVING
Esc : Quit F10 : Save & Exit Setup	↑↓→← : Select Item (Shift) F2 : Change Color
Time, Date, Hard disk Type.....	

Note that a brief description of each highlighted selection appears at the bottom of the screen.

Setup Items

The main menu includes the following main setup categories. Recall that some systems may not include all entries.

Standard CMOS Setup

This setup page includes all the items in a standard, AT-compatible BIOS.

BIOS Features Setup

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

Super / User Password Setting

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

Chipset Features Setup

This setup page includes all the items of chipset special features.

Power Management Setup

This entry only appears if your system supports Power Management, screen PC”, standards.

PNP / PCI Configuration Setup

This entry appears if your system supports PNP / PCI.

Integrated Peripherals

This section page includes all the items of IDE hard drive and Programmed Input / Output features.

Load Setup Defaults

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

IDE HDD Auto Detection

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk parameters.

HDD Low Level Format

If supported by your system, this provides a hard disk low level format utility.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Save

Abandon all CMOS value changes and exit setup.

3.2 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

ROM PCI/ISA BIOS (XXXXXXXX)

STANDARD CMOS SETUP

AWARD SOFTWARE, INC.

Date (mm:dd:yy): Fri, Nov 1996

Time (hh:mm:ss): 11:15:7

HARD DISKS	TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	SECTOR
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.

Drive B : None

Floppy 3 Mode Support : Disabled

Video : EGA/VGA

Halt On : All Errors

Base Memory : 640 K

Extended Memory : 15360 K

Other Memory : 384 K

Total Memory : 16384 K

Esc : Quit

F1 : Help

↑↓→← : Select Item

(Shift) F2 : Change Color

PU/PD/+/- : Modify

Date

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

day	The day, from Sun to Sat, determined by the BIOS and is display-only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan through Dec.
year	The year, from 1900 through 2099

Time

The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Daylight saving

The category adds one hour to the clock when daylight-saving time begins. It also subtracts one hour when standard time returns.

Enabled	Enable daylight-saving
Disabled	Disable daylight-saving

Primary Master/

Primary Slave/

Secondary Master/

Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type user is user-definable.

Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type "User" to define your own drive type manually.

If you select Type "User", you will need to know the information listed below. Enter the information directly from the keyboard and press <Enter>. This information should be included in the documentation from your hard disk vendor or the system manufacturer.

If the controller of HDD interface is ESDI, the selection shall be "Type 1".

If the controller of HDD interface is SCSI, the selection shall be "None".

If you select Type "Auto", BIOS will Auto-Detect the HDD & CD-ROM Drive at the POST stage and showing the IDE for HDD & CD-ROM Drive.

TYPE	drive type
CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone

SECTORS	number of sectors
MODE	mode type

Drive A Type / Drive B Type

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

The category identifies the types of floppy disk drive A or drive B that have been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

The category selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, SVGA or PGA monitor adapters.
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error Halt

The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detected.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

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

Extended Memory

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

Other Memory

This refers to the memory located in the 640K to 1024K address space. This is memory that can be used for different applications. DOS uses this area to load device drivers in an effort to keep as much base memory free for application programs. The BIOS is the most frequent user of this RAM area since this is where it shadows RAM.

3.3 BIOS Features Setup

This section allows you to configure your system for basic operation. You have the opportunity to select the system default speed, boot-up sequence, keyboard operation, shadowing and security.

ROM PCI/ISA BIOS (XXXXXXXX)	
BIOS FEATURES SETUP	
AWARD SOFTWARE, INC.	
Virus Warning	:Disabled
CPU Internal Cache	:Enabled
External Cache	:Enabled
Quick Power On Self Test	:Enabled
Boot Sequence	:A, C, SCSI
Swap Floppy Drive	:Disabled
Boot Up Floppy Seek	:Enabled
Boot Up NumLock	:On
Boot Up System Speed	:High
Gate A20 option	:Fast
Typematic Rate Setting	:Disabled
Typematic Rate (Char/Sec)	:6
Typematic Delay (Msec)	:250
Security Option	:Setup
PCI/VGA palette Snoop	:Disabled
OS Select For DRAM > 64MB Non-OS2	
Video BIOS Shadow	: Enabled
C800-CBFFF Shadow	: Disabled
CC00-CFFFF Shadow	: Disabled
D000-D3FFF Shadow	: Disabled
D400-D7FFF Shadow	: Disabled
D800-DBFFF Shadow	: Disabled
DC00-DFFFF Shadow	: Disabled
Esc : Quit	↑↓←→ : Select Item
F1 : Help	PU/PD/+/- : Modify
F5 : Old Values (Shift)F2	:Change Color
F7 : Load Setup Defaults	

Virus Warning

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

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

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

NOTE: Many disk diagnostic programs which attempt to access the boot sector table can cause the above warning message. If you will be running such a program, we recommend that you first disable Virus Protection beforehand. CPU Internal Cache/ External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design. **The default value is enable.**

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

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

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive to search first for the disk operating system (i.e., DOS). Default value is A,C.

C,A	System will first search for hard disk drive then floppy disk drive.
A,C	System will first search for floppy disk drive then hard disk drive.
CDROM,C,A	System will first search for CDROM drive, then hard disk drive and then floppy disk drive.

C,CDROM, A	System will first search for hard disk drive , then CDROM drive, and then floppy disk drive.
------------	--

Swap Floppy Drive

This item allows you to determine whether enable the swap floppy drive or not. The choice: Enabled/Disabled.

Boot Up Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M and 1.44M are all 80 tracks.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on.

On	Keypad is number keys
Off	Keypad is arrow keys

Boot Up System Speed

Selects the default system speed -- the normal operating speed at power up.

High	Set the speed to high
------	-----------------------

Low	Set the speed to low
-----	----------------------

Gate A20 Option

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

Normal	keyboard
Fast	chipset

Typematic Rate Setting

This determines if the typematic rate is to be used. When disabled, continually holding down a key on your keyboard will generate only one instance. In other words, the BIOS will only report that the key is down. When the typematic rate is enabled, the BIOS will report as before, but it will then wait a moment, and, if the key is still down, it will begin the report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

When the typematic rate is enabled, this selection allows you select the rate at which the keys are accelerated.

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second

24	24 characters per second
30	30 characters per second

**Typematic Delay
(Msec)**

When the typematic rate is enabled, this selection allows you to select the delay between when the key was first depressed and when the acceleration begins.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

OS Select for DRAM > 64

This item allows you to access the memory that over 64MB in OS/2.
The choice: Non-OS2, OS2.

PCI / VGA Palette Snoop

It determines whether the MPEG ISA/VESA VGA Cards can work with PCI/VGA or not.

Enabled	When PCI/VGA working with MPEG ISA/VESA VGA Card.
Disabled	When PCI/VGA not working with MPEG ISA/VESA VGA Card.

Video BIOS Shadow

Determines whether video BIOS will be copied to

RAM. However, it is optional depending on chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CBFFF DC000 - DFFFF

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

3.4 Chipset Features Setup

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

Auto Configuration	: Enabled	Delay Transaction	: Disabled
DRAM Timing	: 60 ns		
DRAM RAS# Precharge Time	: 4		
DRAM R/W Leadoff Timing	: 6		
Fast RAS To CAS Delay	: 3		
DRAM Read Burst (EDO/FP)	: x222/x333		
DRAM Write Burst Timing	: x333		
Fast MA to RAS# Delay CLK	: 1		
Fast EDO Path Select	: Disabled		
Refresh RAS# Assertion	: 5 Clks		
ISA Bus Clock	: PCICLK/4		
SDRAM (CAS Lat/RAS-to-CAS)	: 3/3		
System BIOS Cacheable	: Disabled		
Video BIOS Cacheable	: Enabled		
8 bit I/O Recovery Time	: 1	Esc : Quit	↑↓→← : Select Item
16 bit I/O Recovery Time	: 1	F1 : Help	PU/PD/+/- : Modify
Memory Hole At 15M-16M	: Disabled	F5 : Old Values (Shift)F2 : Change Color	
Peer Concurrency	: Enabled	F7 : Load Setup Defaults	
Passive Release	: Enabled		

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items

should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

DRAM Settings

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Auto Configuration

Pre-defined values for DRAM, cache.. timing according to CPU type & system clock.
The Choice: Enabled, Disabled.

Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.

DRAM Timing

The DRAM timing is controlled by the DRAM Timing Registers. The timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

60ns	DRAM Timing Type.
70ns	DRAM Timing Type.

DRAM RAS# Precharge Time

DRAM must continually be refreshed or it will lose its data. Normally, DRAM is refreshed entirely as the result of a single request. This option allows you to determine the number of CPU clocks allocated for the **Row Address Strobe** to accumulate its charge before the DRAM is refreshed. If insufficient time is allowed, refresh may be incomplete and data lost.

3	Three clocks.
4	Four clocks.

Four clocks is the default.

DRAM R/W Leadoff Timing

This sets the number of CPU clocks allowed before reads and writes to DRAM are performed.

7/6	Seven clocks leadoff for reads and six clocks leadoff for writes.
6/5	Six clocks leadoff for reads and five clocks leadoff for writes.

7/6 Leadoff timing is the default.

Fast RAS# to CAS# Delay

When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from Row Address Strobe (RAS) to Column Address Strobe (CAS).

3	Three CPU clock delay.
2	Two CPU clock delay.

3 CPU clocks is the default.

DRAM Read <EDO/FPM>

This sets the timing for burst mode reads from two different DRAM(EDO/FPM). Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

x222/x333	Read DRAM (EDO/FPM) timings are 2-2-2/3-3-3
x333/x444	Read DRAM (EDO/FPM) timings are 3-3-3/4-4-4
x444/x444	Read DRAM (EDO/FPM) timings are 4-4-4/4-4-4

x222/x333 timings is the default.

DRAM Write Burst Timing

This sets the timing for burst mode writes from DRAM. Burst read and write requests are generated by the CPU in four separate parts. The first part provides the location within the DRAM where the read or write is to take place while the remaining three parts provide the actual data. The lower the timing numbers, the faster the system will address memory.

x222	Write DRAM timings are 2-2-2-2
x333	Write DRAM timings are 3-3-3-3
x444	Write DRAM timings are 4-4-4-4

x222 timings is the default.

Turbo Read Leadoff

The turbo read leadoff may be required in certain system designs to support layouts or faster memories.
Disabled is the default.

DRAM Speculative Leadoff

The 430HX chipset is capable of allowing a DRAM read request to be generated slightly before the address has been fully decoded. This can reduce all read latencies.

More simply, the CPU will issue a read request and included with this request is the place (address) in memory where the desired data is to be found. This request is received by the DRAM controller. When the 'speculative Leadoff' is enabled, the controller will issue the read command slightly before it has finished determining the address.

Disabled is the default.

Turn-Around Insertion

When this is enabled, the chipset will insert one extra clock to the turn-around of back-to-back DRAM cycles.

Disabled is the default.

ISA Clock

This item allows you to select the PCI clock type.

PCI CLK/3	PCI clock type
PCI CLK/4	PCI clock type

Cache Features

System BIOS Cacheable

When enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled.

Enabled	BIOS access cached
Disabled	BIOS access not cached

Disabled is the default.

Video BIOS Cacheable

As with caching the System BIOS above, enabling the Video BIOS cache will cause access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled

Enabled	Video BIOS access cached
Disabled	Video BIOS access not cached

Disabled is the default.

PCI and IDE Configuration

Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

1 clock is the default.

Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

1 clock is the default.

Memory Hole At 15M- 16M

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

Disabled is the default.

Peer Concurrency

Peer concurrency means that more than one PCI device can be active at a time.

Enabled	Multiple PCI devices can be active.
Disabled	Only one PCI device can be active at a time.

Enabled is the default.

Chipset Special Features

When disabled, the chipset behaves as if it were the earlier

DRAM ECC/PARITY Select

This item allows you to select between two methods of DRAM error checking, *ECC and Parity (default)*.

Memory Parity / ECC Check

This item allows you to select between three methods of memory error checking, Auto, Enabled and Disabled

Single Bit Error Report

L2 Cache Cacheable Size

When a single bit error is detected, the offending DRAM row ID is latched . The latched Valued is held until software explicit clears the error status flag. You can select Enabled or Disabled.

This item determines the size of the L2 cacheability: 64MB / 512MB .

Chipset NA# Asserted

This item allows you to select between two method of chipset NA# asserted during CPU write cycles /CPU line fills, Enabled and Disabled.

Pipeline Cache Timing

This item allows you to select two timing of pipeline cache, Faster and Fastest.

3.5 Power Management Setup

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

ROM PCI/ISA BIOS (XXXXXXXX)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	:Enabled	**Power Down & Resume Events **	
PM Control by APM	:60 ns	IRQ3 (COM 2)	:On
Video Off Method	:Enabled	IRQ4 (COM 1)	:On
MODEM Use IRQ	:4	IRQ5 (LPT 2)	:On
		IRQ6 (Floppy Disk)	:On
Doze Mode	:3	IRQ7 (LPT1)	:Off
Standard Mode	:x222/x333	IRQ8 (RTC Alarm)	:Off
Suspend Mode	:x333	IRQ9 IRQ2 Redir)	:On
HDD Power Down	:1	IRQ10 (Reserved)	:On
		IRQ11 (Reserved)	:On
** Wake Up Event In Doze & Standard **		IRQ12 (PS/2 Mouse)	:On
IRQ3 (Wake-Up Event)	:On	IRQ13 (Coprocessor)	:On
IRQ4 (Wake-Up Event)	:On	IRQ14 (Hard Disk)	:On
IRQ8 (Wake-Up Event)	:On	IRQ15 (Reserved)	:On
IRQ12 (Wake-Up Event)	:On		

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

Power Management

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. Doze Mode
2. Standby Mode
3. Suspend Mode
4. HDD Power Down

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- ONLY AVAILABLE FOR SL CPU . Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock.

If the Max. Power Saving is not enabled, this will be preset to *No*.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Initial display power management signaling.

PM Timers

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

Doze Mode

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

Standby Mode

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode

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

HDD Power Down

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

Power Down & Resume Events

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

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

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

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

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

3.6 PnP/ PCI Configuration Setup

This section describes configuring the PCI bus system. PCI, or **P**ersonal **C**omputer **I**nterconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS (XXXXXXXX)

PNP/PCI CONFIGURATION

AWARD SOFTWARE, INC.

Resources Controlled By : Enabled
Reset Configuration Data : 60 ns

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 IRQ Activated By : Level
PCI IRQ Map To : PCI-AUTO
Primary IDE Int# : A
Secondary IDE Int# : B

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

Resource Controlled by

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows® 95.

Choices are *Auto* and **Manual (default)**.

Reset Configuration Data

This item allows you to determine reset the configuration data or not.

Choices are *Enabled* and ***Disabled (default)***.

IRQ3/4/5/7/9/10/11/12/1 4/15, DMA0/1/3/5/6/7 assigned to

This item allows you to determine the IRQ / DMA assigned to the ISA bus and is not available to any PCI slot.

Choices are *Legacy ISA* and ***PCI/ISA PnP***.

PCI IRQ Activated by

This sets the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system manufacturer.

Choices are *Level (default)* and *Edge*.

PCI IDE IRQ Map to

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B,C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in *• lot x Using INT#*' above.

Selecting "*PCI Auto*" allows the system to automatically determine how your IDE disk system is configured.

Award's ROM BIOS provides a built-in Setup program which allows user modify the system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS RAM, so data will be retained even the system power is off. In general, you are not required to change any data. Unless there is a conflict or you re-configuring system, this will need to enter new setup information. Following section describes how to use this program and propriate entries.

The "LOAD SETUP DEFAULT" is recommended in your first time setup this system or you change the system's configuration. You will need "LOAD SETUP DEFAULT" first and re-confirure your system. This will be described in later chapter. And, it is possible that battery failed which might cause data lose in CMOS RAM, then you need to re-enter the system's CMOS RAM and re-configure to get the suitable parameters.

3.7 Integrated Peripherals

ROM PCI/ISA BIOS (XXXXXXXX)
 INTEGRATED PERIPHERALS
 AWARD SOFTWARE, INC.

IDE HDD Block Mode	:Enabled
IDE Primary Master PIO	:Auto
IDE Primary Slave PIO	:Auto
IDE Secondary Master PIO	:Auto
IDE Secondary Slave PIO	:Auto
On-Chip Primary PCI IDE	:Enabled
On-Chip Secondary PCI IDE	:Enabled
PCI Slot IDE 2nd Channel	:Enabled
USB Controller	:Disabled
Onboard FDC Controller	:Enabled
Onboard Serial Port 1	:3F8/IRQ4
Onboard Serial Port 2	:2F8/IRQ3
Onboard Parallel Port	:278/IRQ7
Parallel Port Mode	:ECPEPP1.7
ECP Mode Use DMA	:3

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

IDE HDD Block Mode

This allows your hard disk controller to use the fast block mode to transfer data to and from your hard disk drive (HDD).

Enabled	IDE controller uses block mode.
Disabled	IDE controller uses standard mode.

Enabled is the default.

PCI Slot IDE 2nd Channel

This item allows you designate an IDE controller board inserted into one of the physical PCI slots as your secondary IDE controller.

Enabled	External IDE controller designated as the secondary controller
---------	--

Disabled	No IDE controller occupying a PCI slot.
----------	---

Disabled is the default.

IDE PIO

IDE hard drive controllers can support up to two separate hard drives. These drives have a master/slave relationship which are determined by the cabling configuration used to attach them to the controller. Your system supports two IDE controllers--a primary and a secondary--so you have to ability to install up to four separate hard disks.

PIO means Programmed Input/ Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. This simpler and more efficient (and faster).

Your system supports five modes, numbered from 0 (default) to 4, which primarily differ in timing. When *Auto* is selected, the BIOS will select the best available mode. This is true for the next four setup items:

1. IDE Primary Master PIO
2. IDE Primary Slave PIO
3. IDE Secondary Master PIO
4. IDE Secondary Slave PIO

On-Chip Primary PCI IDE

As stated above, your system includes two built-in IDE controllers, both of which operate on the PCI bus. This setup item allows you either to enable or disable the primary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used -- Default
Disabled	Primary HDD controller not used.

On-Chip Secondary PCI IDE

As above for the Primary controller, this setup item you either to enable or disable the secondary controller. You might choose to disable the controller if you were to add a higher performance or specialized controller.

Enabled	Primary HDD controller used
Disabled	Primary HDD controller not used.

Enabled is the default.

3.8 LOAD SETUP DEFAULTS

The chipset defaults are settings which provide for maximum system performance. While Award has designed the custom BIOS to maximize performance, the manufacturer has the right to change these defaults to meet their needs.

ROM PCI/ISA BIOS (XXXXXXXX) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP	SUPERVISOR PASSWORD
BIOS FEATURES SETUP	USER PASSWORD
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGE	EL FORMAT
PNP/ PCI CONFIG	LOAD SETUP DEFAULTS (Y/N) ? N
INTEGRATED PHE	ETUP
LOAD SETUP DEFAULTS	SAVING
Esc : Quit	↑↓→← : Select Item
F10 : Save & Exit Setup	(Shift) F2 : Change Color
Time, Date, Hard disk Type.....	

3.9 Supervisor/User Password Setting

ROM PCI/ISA BIOS (XXXXXXXX) CMOS SETUP UTILITY AWARD SOFTWARE, INC.	
STANDARD CMOS SETUP BIOS FEATURES SETUP CHIPSET FEATURES SETUP POWER MANAGE PNP/ PCI CONFIG INTEGRATED PHE LOAD SETUP DEFAULTS	SUPERVISOR PASSWORD USER PASSWORD IDE HDD AUTO DETECTION EL FORMAT ETUP SAVING
Enter Password :	
Esc : Quit F10 : Save & Exit Setup	
↑↓→← : Select Item (Shift) F2 : Change Color	
Time, Date, Hard disk Type.....	

You can set either supervisor or user password, or both of them. The differences between are:

- supervisor password : can enter and change the options of the setup menus.
- user password : just can enter but do not have the right to change the options of the setup menus.

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

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

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

PASSWORD DISABLED.

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

3.10 IDE HDD AUTO DETECTION

Automatically detect and configure hard disk parameters. The Award BIOS includes this ability in the event you are uncertain of your hard disk parameters.

3.11 HDD LOW LEVEL FORMAT

If supported by your system, this provides a hard disk low level format utility.

3.12 SAVE & EXIT SETUP

Save CMOS value changes to CMOS and exit setup.

3.13 EXIT WITHOUT SAVING

Abandon all CMOS value changes and exit setup.

Appendix A—CPU Confluence

Intel CPU

CPU	CPU Spec.	Internal Clk	J15	Voltage
Pentium 75	Full Series	75Mhz	75	3.38V
Pentium 90	Full Series	90Mhz	90	3.38V
Pentium 100	SY046	100Mhz	100	3.1V
Pentium 100	Q0563,Q0587,Q0614 SX886,SX910,Q0656 Q0657,Q0697,SX963 SZ996,SU032,Q0853 SK124,Q0784,SY007 SU110,SU099	100Mhz	100	3.38V
Pentium 100	Q0677,SX960,Q0658 SX962,Q0698,SX970	100Mhz	100	3.52V
Pentium 120	Q0880,SY027	120Mhz	120	3.1V
Pentium 120	Q0708,SK110,Q0808, SX999,SY062,SY030 SY033,SU100	120Mhz	120	3.38V
Pentium 120	Q0707,Q0711,Q0732 SK086,SX994,SU033 Q0776,Q0785	120Mhz	120	3.52V
Pentium 133	Q0882,SY028	133Mhz	133	3.1V
Pentium 133	Q0733,Q0751,SK098 Q0772,Q0773,SK106 S106J,SK107,SU038 Q0843,Q0844,SY022 SY023,SU073	133Mhz	133	3.38V
Pentium 133	Q0774,	133Mhz	133	3.52V
Pentium 150	Full Series	150Mhz	150	3.38V
Pentium 166	Full Series	166Mhz	166	3.52V
Pentium 200	Full Series	200Mhz	200	3.52V
Pentium with MMX 150	Full Series	150Mhz	150	2.83V
Pentium with MMX 166	Full Series	166Mhz	166	2.83V
Pentium with	Full Series	200Mhz	200	2.83V

MMX 200				
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AMD CPU

There are three kinds of AMD CPU available in present market. (**5k86 SSA/5, K5 and K6**).

The printing on these CPUs are:

AMD5k86-P90 or AMD-SSA/5-90Abxxx
AMD-K5-PR100ABxxx
AMD-K6/PR2-xxx

A: The printing on **SSA/5 5k86** CPU is

AMD 5k86-P90
AMD-SSA/5-90Abxxx

The value behind the AMD5k86 is the processor speed.

The value behind the SSA/5 is the internal clock (for example 90). There are 75 and 90 MHz clock available today's market. The J15 should adjust to the same address that your clock really are.

The second digits behind is the CPU working voltage (for example B). Following is the description:

B: CPU working voltage range 3.45—3.6 V

C: CPU working voltage range 3.3—3.465 V

F: CPU working voltage range 3.135—3.38 V

B: The printing on the **K5** CPU is:

AMD-K5-PR100ABxxx
100MHz

The value behind the K5 is the processor speed. The CPU jumper should adjust to the same position as your CPU really is.

Behind the CPU speed is the working voltage:

B : working voltage :3.45--3.6V, suggest use 3.52V

C : working voltage :3.3--3.465V, suggest 3.38V

F : working voltage 3.135--3.465V, suggest 3.38V

H : dual working voltage CPU, Vcore range 2.86--3.0V, suggest use 2.83V

J: dual working voltage CPU, Vcore V range 2.57--2.84V, suggest use 2.70V

K : dual voltage CPU, Vcore range 2.38--2.63V, suggest use 2.50V

C: The printing on the **K6** CPU is:

AMD-K6/PR2-xxx

The value behind the K6 is the processor speed. The CPU jumper should adjust to the same position as your CPU really is.

The CPU working voltage is:

AMD-K6/PR2-166: 2.9V

AMD-K6/PR2-200:2.9V

AMD-K6/PR2-233:3.2V

Cyrix CPU

The Cyrix CPU's printing is:

6x86-P166+GP

133Mhz

3.52V (028)

The first line P166 processor index.

The second line is internal clock. (for example P133 is 133 Mega Hertz) The J15 should adjust to the same value as the CPU really are.

The third line is CPU working voltage index.

016 : working voltage is 3.15--3.45V, suggest to use 3.38V on voltage setting

028 : working voltage is 3.4--3.7V, suggest to use 3.52V on voltage setting