EC Declaration of Conformity

We

Iwill Corp.

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Hsin Chuang City, Taipei,

Taiwan, R.O.C.

Declare under sole responsibility that the

P55XPlus 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 P55XPlus Ultra ATA (Ultra DMA 33) motherboard is manufactured. All useful informations will be described in later chapters. Keep this manual for your future upgrade or system configuration change.

The Quick Installation chapter ---

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

The Overview chapter ---

This chapter describes the features and specificaton of this Ultra DMA 33 motherboard.

The Hardware Installation chapter ---

The hardware detail specification and connection are described in this chapter.

The Award BIOS Setup chapter ---

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

Most of the features in this motherboard have passed strict verification and are subject to change at any time without notice.   If there's any malfunction due to these changes made by their respective manufacturers, Iwill assumes no responsibility or liability for it.

Version

This manual is written to match Iwill's P55XPlus motherboard Version.1.01.

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IWILL Corporation reserves the right to change the product design without reservation and without notification to its users.

*P55*XPlus™ ———————————————————————

Contents

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 a beginner and need to know more about this motherboard, please start from Chapter 1.
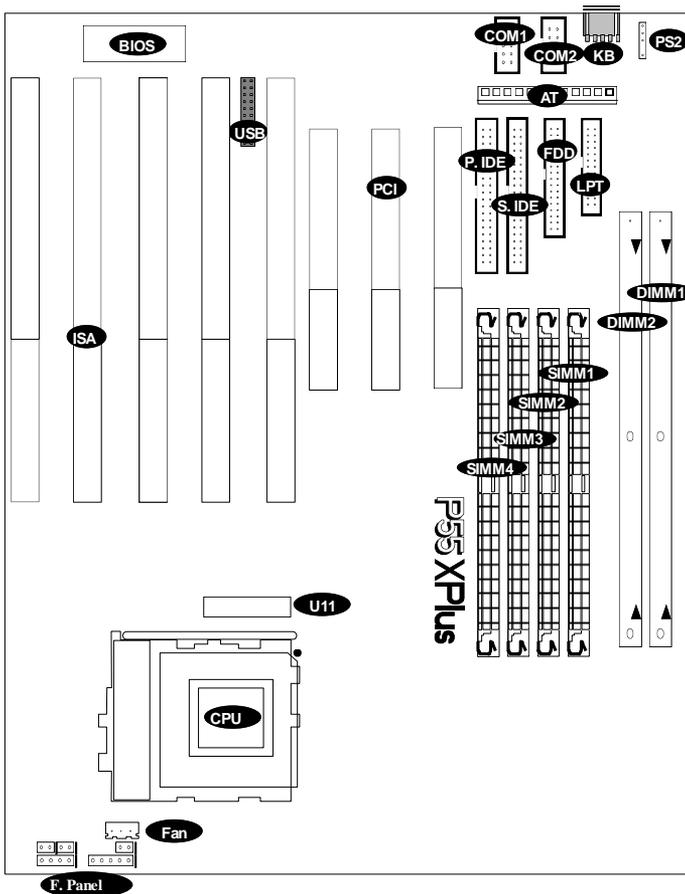
Figure 1:Connectors for P55XPlus
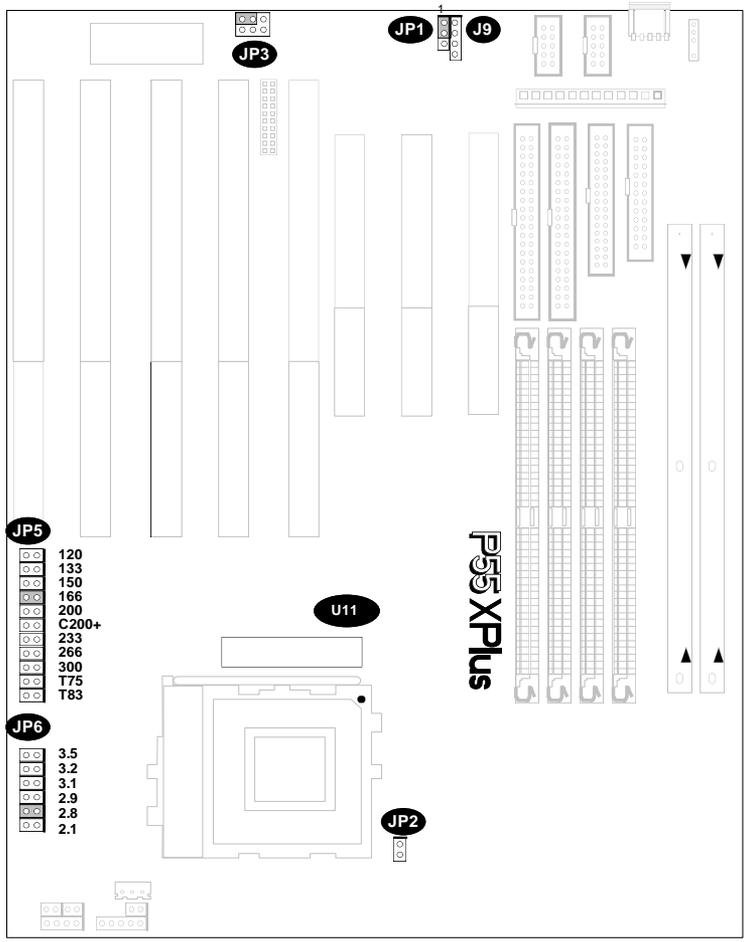
Figure 2: Jumpers Location

P55XPlus

Connector Function Description

AT	12 pin Standard AT power input connector
BIOS	BIOS (Basic Input Output System)
COM1	2 x 5 pin box-header for Serial 1 port connector
COM2	2 x 5 pin box-header for Serial 2 port connector
CPU	321 pin Socket 7 CPU socket
DIMM1	64 bit Dual In-line Memory Module.
DIMM2	64 bit Dual In-line Memory Module.
Fan	3 pin CPU Cooling fan power connector
FDD	34 pin key-protected Floppy disk drive connector
F Panel C	Front panel signal control connector
	RST—Reset Switch
	IDE LED—IDE LED
	PWR. LED—Power LED
	Speaker—Speaker connector
	Keylock— Keylock switch connector
ISA:	5 x ISA (Industrial Standard Architecture) 98 pin expansion slot
LPT:	2 x 13 pin key-protected for Parallel port connector
KB:	5 pin keyboard DIN connector
P. IDE:	40 pin key-protected for Primary IDE connector
PCI:	3 x PCI version 2.1 compliance 120 pin PCI (Peripheral Component Interface)expansion slot
PS2:	5 pin PS2 connector
S. IDE:	40 pin box-header for secondary IDE connector
SIMM1:	32 bit Single In-line Memory Module Socket.
SIMM2:	32 bit Single In-line Memory Module Socket.
SIMM3:	32 bit Single In-line Memory Module Socket.
SIMM4:	32 bit Single In-line Memory Module Socket.
USB:	20 pin Universal Serial Bus connector
U11:	28 pin socket for second Tag Ram installation.

Jumper Setting

J9　　　　Part of ATX Power supply connector
JP1　　　　CMOS Clear Jumper
JP2　　　　CPU Voltage Monitor Jumper
JP5　　　　CPU Frequency select
JP6　　　　CPU Voltage Select

Quick Installation

Step 1. Install CPU

Pull up the CPU handle bar, place the CPU into the socket in gentle and horizontal way then pull down the handle bar back to its original place. When you insert the CPU, pay more attention to the the right direction.
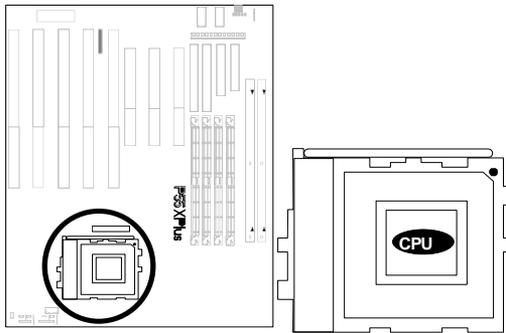
Step 2. Install CPU Cooler

Hook one side of the CPU Cooler's metal latch to the CPU cooling fan connector, then press the metal latch again to fit into another side.

Warning: Care must be taken when the CPU Cooler is installed, an improper force might scrach this motherboard.

JP4

GND　+12V　NC
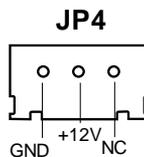
Step 3. Adjust the CPU Voltage

Jumper JP6 is designed for users to set the proper voltage for the processor installed. A wrong voltage setting will damage the CPU permanently.

There are total 6 different voltage selections in this P55XPlus motherboard to support full socket 7 processors that are avaialble today and in the near future.

If an Intel Pentium with MMX dual voltage processor is installed, please set to 3.5V.

If a AMD K6 with MMX dual voltage (166 and 200MHz) processor is installed please set to 2.9V.

If a AMD K6 with MMX dual voltage (233 and 266MHz) processor is installed please set to 3.2V.

If an Intel Pentium, AMD or Cyrix single voltage processor is installed please set to 3.5V.

JP6

3.5
3.2
3.1
2.9
2.8
2.1
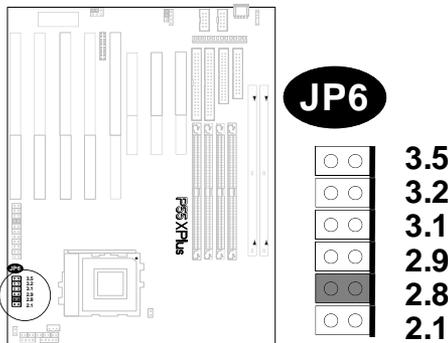
Step 4. Adjust the CPU Frequency

Jumper JP5 is designed to set the CPU speed frequency. Easily place the colored jumper cap into the jumper that have the actual speed mark on the side of this JP5. Once the jumper cap is inserted, it will auto assign the external clock and internal/external clock multiplier. There are more detail description on Chapter 3 CPU Clock Select and Appendix A CPU for more information.

JP5

○ ○	**120**
○ ○	**133**
○ ○	**150**
○ ○	**166**
○ ○	**200**
○ ○	**C200+**
○ ○	**233**
○ ○	**266**
○ ○	**300**
○ ○	**T75**
○ ○	**T83**
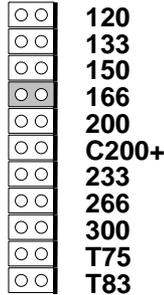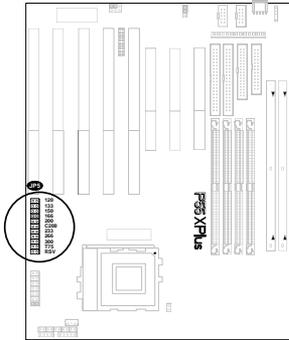
Step 5. Install the Memory Module

At least one piece of 72 pin SIMM(Single In-line Memory Module) or one piece of 168 pin DIMM(Dual In-line Memory Module) must be inserted in this P55XPlus Ultra DMA 33 motherboard.

The memory in this motherboard is devided into three banks.

Please see the graphic below for your reference.

DIMM1
DIMM2
SIMM1
SIMM2
SIMM3
SIMM4
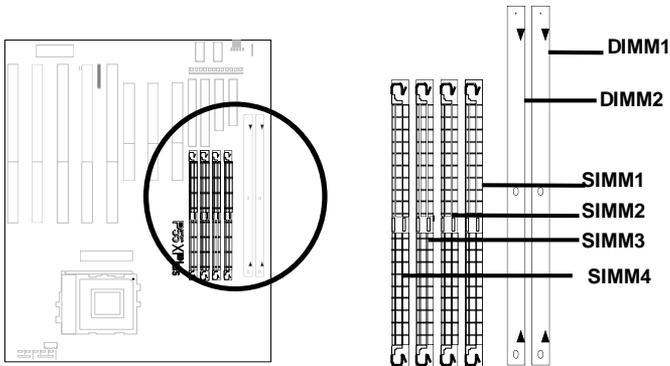
Step 6. Install the Internal Peripherals

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

The colored side of the flat cable is Pin 1.
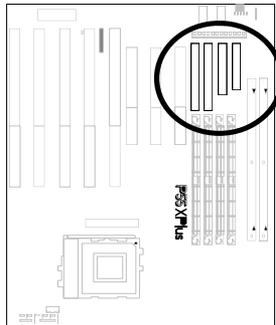
Step 7. Install the External Peripherals

The external devices mean devices that are outside the computer chassis like the Serial mouse, Printer, PS/2 Mouse, External Modem and etc. Enclosed in this motherboard's package, there are two 10 pin connectors: one converts to 9 pin ,and the other converts to 25 pin D-Sub male connector cable for Serial port.   One 26 pin connector that converts to 25 pin D-Sub female connector cable is for Parallel port.   And there is another one 5 pin housing but only 4 wires converted into a 6 pin Mini-DIN, for the PS/2 mouse cable is available at option.

Step 8. Connect the Reset switch

Most computer chassis provides a reset switch to front pannel control, this will reboot the system without turning off the power switch while the reset switch is pushed. Use the chassis that provides a 2 pin housing and connect to this reset switch.

RST
IDE LED
SPEED LED
SPEAKER
KEYLOCK
PWR LED
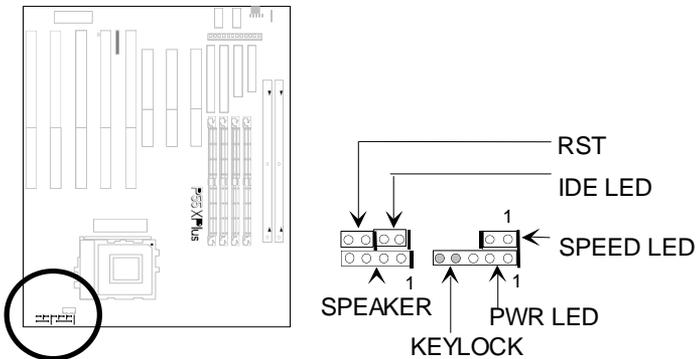
Step 9. Connect the Keylock (keyboard lock) Switch

Most computer chassis will provide 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 is a 5 pin pin-header. (See reference information in the Chapter 3—Hardware Installation for detail pin assignment) If the chassis does not provide the switch, you can skip this step.

Step 10. Connect the Speaker

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

Step 11. Connect the Power LED

Most computer chassis provides a power LED to 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.

Step 12. Connect the Devices LED

Some computer chassis provides device LED (Like HDD LED) to 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 13. Connect the Power Input

This motherboard provides two standard AT power input.   Carefully plug the P8 and P9 connectors from your AT power supply to the motherboard.

Step 14. Connect the Keyboard

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

Step 15. Plug the Display Card

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

Step 16. Power on the system & Load the BIOS Default

Once the system is 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."   Finally, choose "SAVE to CMOS and EXIT (Y/N)?" by pressing "Y" and "Enter."

CHAPTER 1

Overview

Thank you for purchasing this **P55XPlus Ultra DMA33 Motherboard**. This operation manual will guide you to proper configuration and installation. It has an overview of the engineering design and features of this board. Also, this manual provides useful information for your later upgrading or any changes to the configuration. Please keep this for your future reference.

1.1 Features

This P55XPlus Ultra DMA 33 motherboard is your best choice for optimizing media rich performance desktop on the socket 7 processor with the new MMX technology. It incorportes with Ali Aladdin 4+ PCIset with I/O subsystem that supports for processors up to 300 MHz with one single jumper to set the speed frequency and 512Kbyte for second Level Cache onboard that is well prepared to run heavy application.

To run faster bus speed is a great plus in this P55XPlus motherboard. It not only can run the 66MHz bus that Intel claims on all her highest system bus but also built in 75MHz and 83MHz bus speed as an option for users to take advantage of.

In order to support all the legacy ISA devices well available today, there are 5 ISA slots for great expansion ability. A optional tag ram can be added to support memory cacheable size up to 512MB.

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.

Besides, run with faster system memory is another feature on this Pentium EIDE Motherboard to outperform the whole system performance. It equips 4 of the 72 pin SIMMs that support both fast page and EDO DRAM also with two of the 168 pin DIMM memory sockets that support the new 5V, unbuffered Synchonous DRAM.

The onboard two IDE channels support UltraDMA/33 that enhances the data transfer rate to 33 Mbytes, which is new technology and is compatible with the existing ATA-2 IDE specification.

It fully supports plug and play I/O that contains two high speed serial ports, one ECP/EPP printer port, up to 2.88 floppy disk port, and keyboard. And the real time clock is used for users to enjoy the plug and play function. This Pentium EIDE, Ultra DMA 33 motherboard is 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.

It is a powerful combination of performance, quality and innovative design to address the need of today's market. Current Intel, Cyrix, AMD processors 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 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 types of current Cyrix (M1, M2), AMD (K5, K6) and Intel Pentium, Pentium with MMX processor. One easy jumper is designed for users to set the CPU frequency just according to your CPU speed from 120 to 300MHz.

■CHIPSET:
Ali Aladdin 4+ PCIset with I/O subsystem chipset is used on this motherboard.

■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 users to update their BIOS data on the system board, users can down-load/ update newer version BIOS from Internet or diskette file.

■Cache memories:
High performance write-back second Level external static RAM cache. This supports 512KB Synchronous Pipelined Burst Cache on-baord.   The cacheabe size can achieve up to 512 MB/Sec.   It also supports 32 bit power-on function, that is, one SIMM will be able to power on the PC.

■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 **512MB** (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).

Support 32 bit power-on function. For example, one SIMM is able to power on the computer.

■Expansion slots:

This motherboard provides :

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

■Switching DC/DC Voltage Regulator for CPU:

Effeciently cool down CPU temperature, increase system stability and supoport future processors.

More and more Pentium or compatible processors have been releasing releasesing and most of them are not using the same voltage for the processor. For example, the current Intel Pentium processor is using 3.5V 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 users need not to care what processor is used. Please refer to Appendix A for more information

■IDE functions:

Two 40 pin box-header connectors are provided for IDE devices. They are separatedly defined as the Master/ Slave, if two IDE devices are in the same channels, or the two IDE devices can be the same Master but in different channels. The LED will light on when the IDE devices were in writing / reading.

· Support UltraDMA 33 MB/SEC data transfer rate

· Built in dual PCI Bus Master EIDE Channels.

· Support ATAPI (AT Attachment Packet Interface)

■USB interface (Universal Serial Bus):

To support this function, you need to purchase an extra USB Riser card. The optional USB Riser card for this motherboard provides two USB connectors.

· Plug and Play devices outside the computer box

· Up to 12Mbit

· Easy of use

■Power Connectors:

Support AT power supply connector

Support remote power on connector. (Option, ATX power supply connector needed)

■ **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 connectors provide 2 Serial ports. Use the two cables that go 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 IEEE 1284
>
> **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: 260mm / 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 **P55XPlus Ultra DMA 33** Motherboard, like all electronic equipments, 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 devices, floppy drive and 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 opening the box :

1. P55XPlus Motherboard.
2. This Operation Manual
3. 40 pins IDE flat cable.
4. 34 pins Floppy Disk Drive flat 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. 5 pins convert to mini-DIN PS/2 mouse cable. (Optional)
9. USB Riser Card (optional)
10. High speed printer port software driver (optional).

2.2 Placement
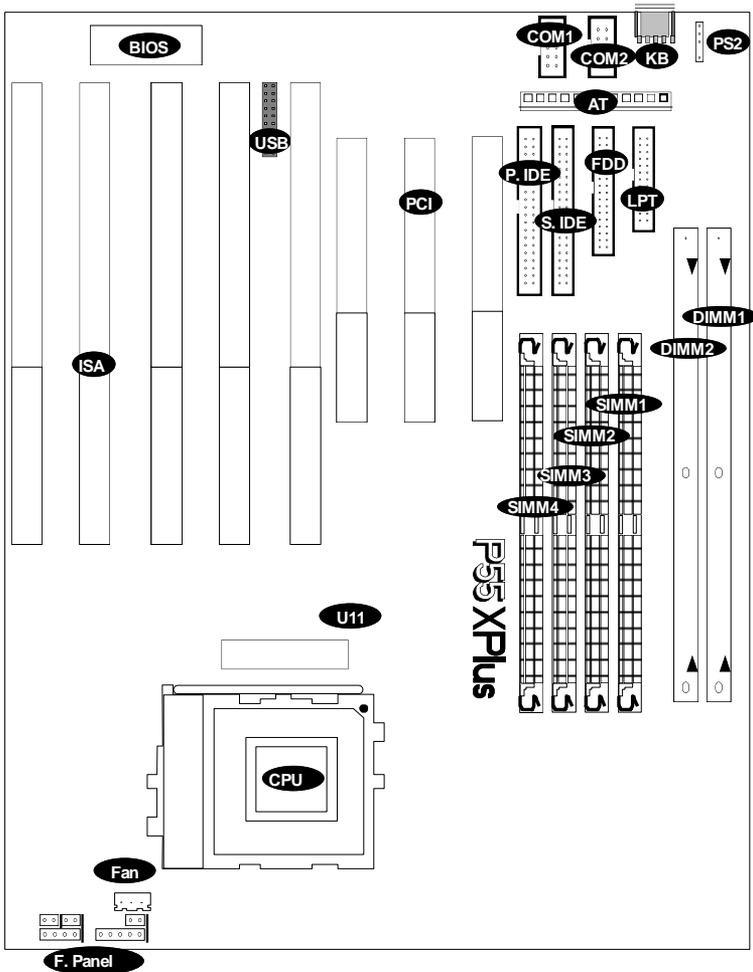
Figure 1 : Connectors for P55XPlus
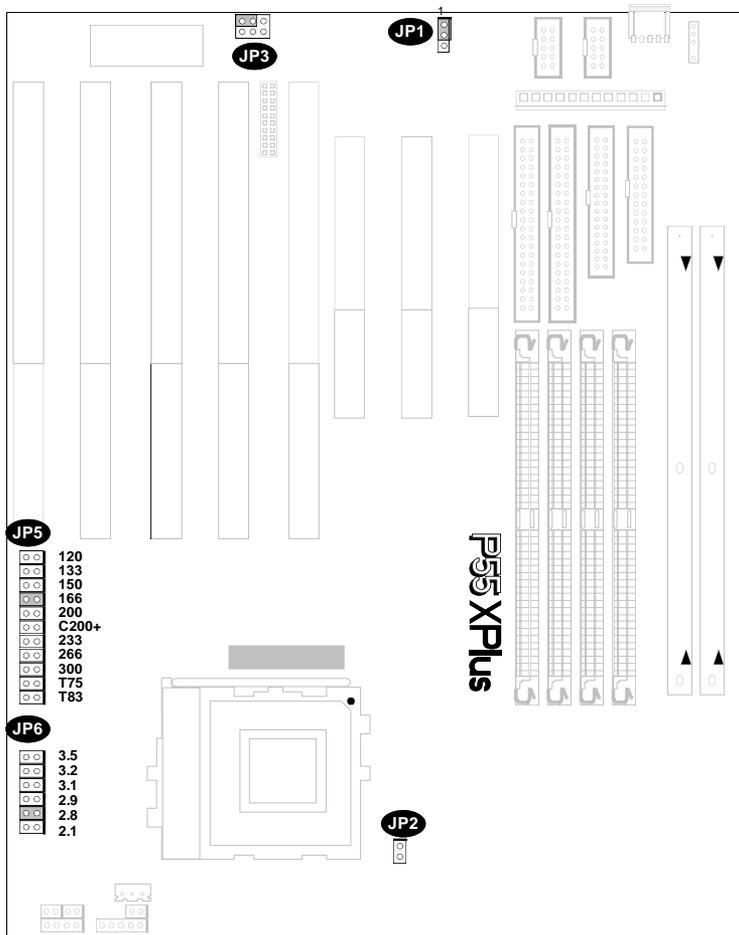
Figure 2 : Jumpers for P55XPlus

2.3 CPU group

2.3.1 CPU Socket

This CPU socket provides flexibility for Intel Pentium, Pentium OverDrive, Pentium with MMX processors, AMD K6 with MMX, K5-5k86 and Cyrix M2 with MMX, M1-6x86 processors.   When you install the CPU into the Zero Insertion Force (ZIF) socket, you should be very careful. 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 the socket handle down.

pin #1
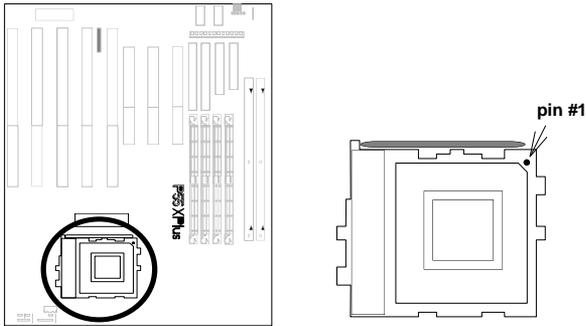
How to install CPU
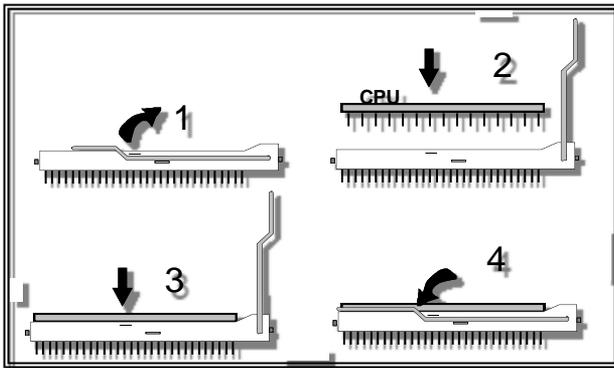
2.3.2 JP4 CPU Cooler Fan Power Connector

Warning !!!   Warning !!!   Warning !!!

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

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

JP4

GND   NC
+12V

CPU

Fan

1   Metal Latch

3   To JP4

Peg   2

To Cabinet's speaker
To Motherboard's speaker

Note: Step 3 indicated for Musical Alarm Cooler Only
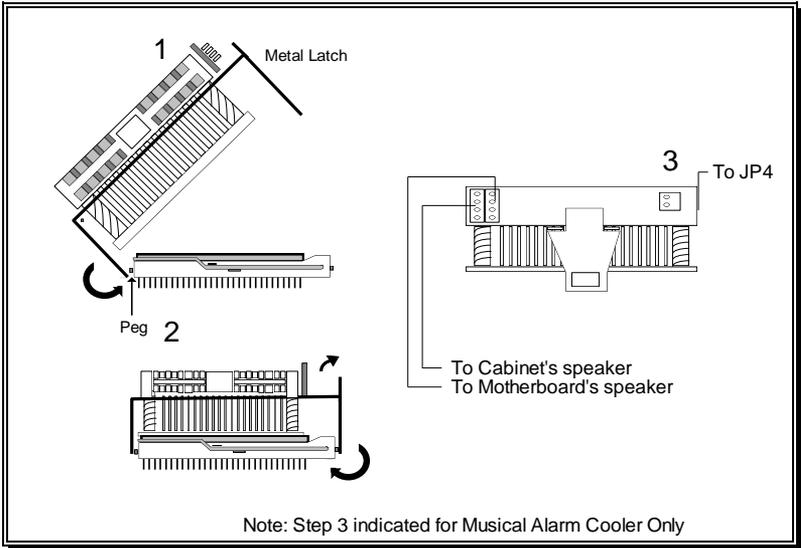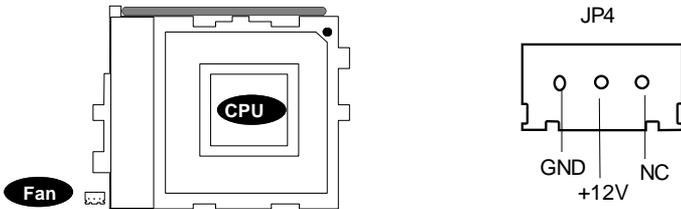
2.3.3 CPU Clock Select (JP5)

JP5 is a 2 X 11 pin jumpers, 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 JP5)

The user will never be bothered to understand the "Bus Frequency" and "Ratio" while configuring the jumpers.   For example, if your CPU is Pentium with MMX 166MHz, all you need to do is to place the yellow jumper cap on the position marked "166" on JP5.
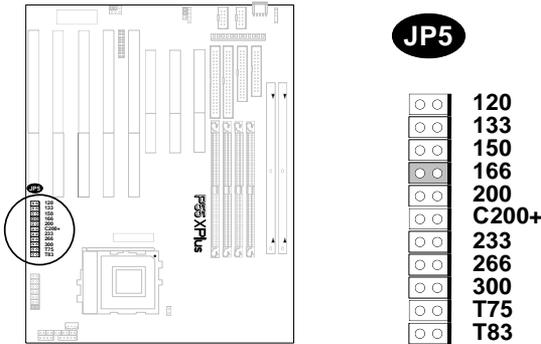
The following figures are for your reference:

(1) Intel CPU

Intel Pentium-166 CPU at 166 MHz	Intel MMX-166 CPU at 166 MHz	Intel MMX-233 CPU at 233 MHz

(2) Cyrix CPU (for M1,M2)

	120		120		120
●●	133		133	●●	133
	150		150		150
	166		166		166
	200		200		200
	C200+	●●	C200+		C200+
	233		233		233
	266		266		266
	300		300		300
	T75		T75		T75
	T83		T83		T83

Cyrix 6x86 M2-PR166+ CPU at 133 MHz | Cyrix 6x86 L-PR200+ CPU at 150 MHz | Cyrix 6x86-P150+ CPU at 120 MHz

(3) AMD CPU (K5,K6)

	120		120		120
	133		133		133
	150		150		150
●●	166		166		166
	200	●●	200		200
	C200+		C200+		C200+
	233		233	●●	233
	266		266		266
	300		300		300
	T75		T75		T75
	T83		T83		T83

AMD-K5-166 | AMD-K6-200 | AMD-K6-233

(4) IDT

	120		120
	133		133
●●	150		150
	166		166
	200	●●	200
	C200+		C200+
	233		233
	266		266
	300		300
	T75		T75
	T83		T83

IDT C6-150 CPU at 150 MHz | IDT C6-200 CPU at 200 MHz

* Refer to Appendix A for CPU voltage setting.

2.3.4 CPU Voltage (JP6)

The manufacture default on this JP6 jumper is "2.8V." This JP6 jumper sets the voltage for the CPU. For example, the Intel Pentium single voltage CPU uses 3.52V. and the Pentium with MMX CPU uses the dual power source and more "Green" concept at 2.8V. This motherboard provides a jumper for different application purposes.

Most of them do not use the same voltage for the processors. For example, the current Intel Pentium processor is using 3.5V single power source and Intel Pentium with MMX processor is using the 2.8V dual power source.

Read the Appendix A for more detail description on the CPU.

2.3.5 JP3 CPU Voltage Monitor Jumper
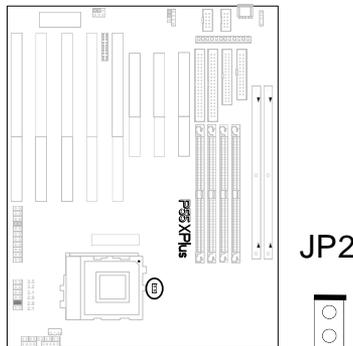
The Pentium with MMX , AMD K6, and Cyrix M2 are dual voltage CPUs. One volatge

is for CPU Core (Vcore), the other is for CPU input/output single (Vio). The JP2 pin 1 is connected to the CPU Vcore and pin 2 is connected to the CPU Vio.

2.4 L2 Cache Memory

The second level L2 cache memory supports pipelined burst SRAM, it will has much higher performance compared with the traditional asynchronous SRAM.   This motherboard uses the new pipelined burst cache technology with 512K size and the memory cacheable size from 64MB to 512MB (Extra Tag RAM is needed) .

2.5 D-RAM Configuration

This motherboard provides two DIMMs and four SIMMs memory sockets. At least one piece 72 pin SIMM (Single In-line Memory Module) or one piece 168 pin DIMM (Dual In-line Memory Module)must be inserted in this P55XPlus Ultra DMA 33 motherboard.

1. Two DIMM (DIMM 1, DIMM 2) sockets—support 3.3V Unbuffered Synchronous DRAM (SDRAM). Each DIMM memory size can be 8/16/32/64/128/256 MByte. The maximum memory is 512 MByte that the ALI Aladdin 4+ Chipset maximum can support.
2. Four SIMM sockets (Bank 0, Bank 1)—support Fast Page and EDO DRAM.   These four SIMMs sockets are devided into two groups by each two SIMM sockets. Each two SIMM in the same group must be the same memory size and type, the Fast Page and EDO DRAM can not be mixed in the same group.
3. When second tag ram is installed for memory cacheable size to reach 512MB, the SIMM 1 and SIMM 2 can not be installed.
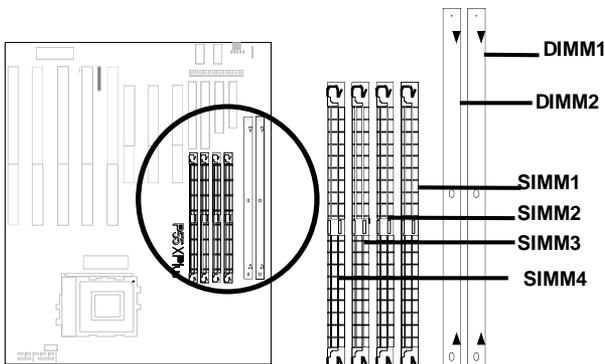
Install the SIMM
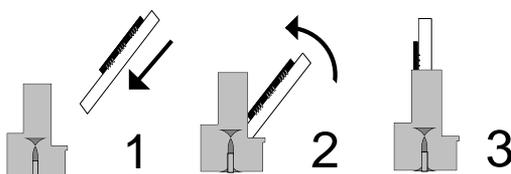
Install the DIMM
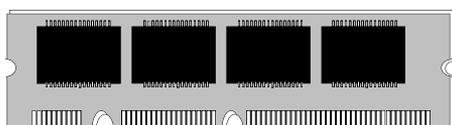
Left Key Zone
(Unbuffered)　　Center Key Zone
(3.3V DRAM)
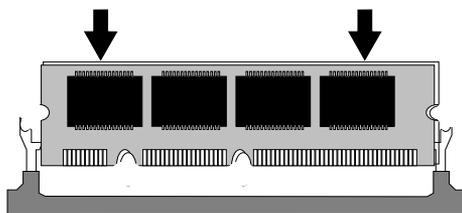
2.6   IDE Interface

2.6.1 Primary, Secondary IDE Connectors

Primary / Secondary IDE are 40 pins internal IDE port connectors. Use a 40-pin 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 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.

Secondary IDE
Primary IDE

3.6.2 IDE LED
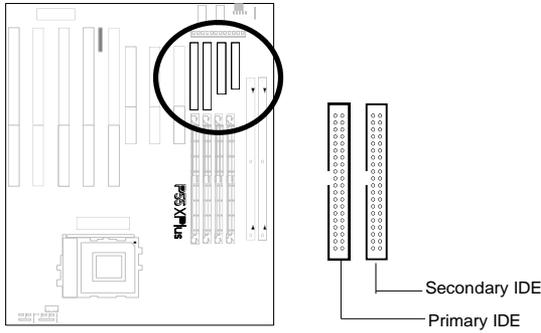
RST
IDE LED
1
SPEED LED
1
SPEAKER
1
KEYLOCK
PWR LED
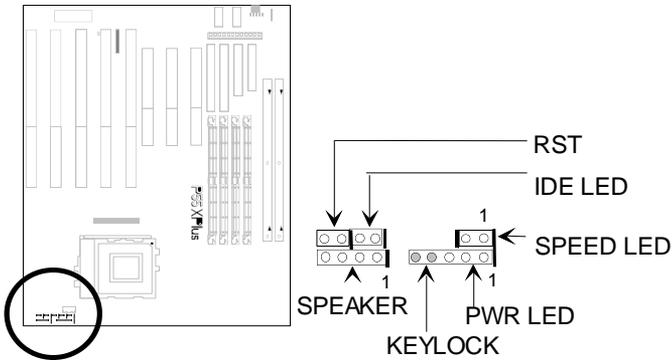
A 2 pin IDE detect LED connector.

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

2.7 USB (Universal Serial Bus)

Basically, the USB is suitable for mid-to-low speed devices like Mouses, Keyboards, Joysticks..etc.   In the past, all these were using different connectors, and it is complicated for end users to install the system. A 4 pin standard USB connector is designed on the USB riser card, users just need to plug all their USB peripherals on these kinds of connectors and they will start running.

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

J10 is a 2 x 10 pin connector, please connect it with the USB riser card and fix on the computer chassis's backplane.
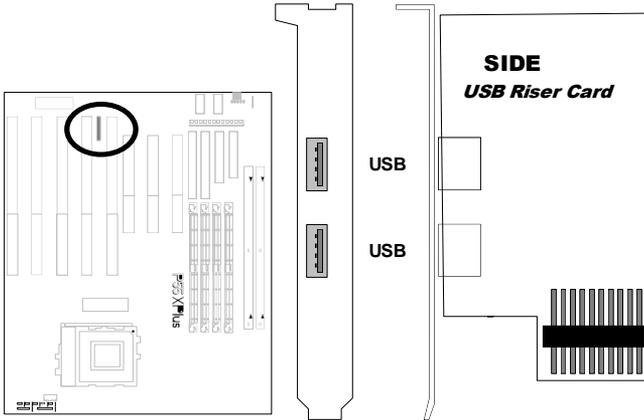
2.8 Enhanced Multi-IO

2.8.1 FDC Connector

The IBM compatible floppy disk drive has 360KB, 720KB, 1.2KB, 1.44KB and 2.88KB. The most popular one 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 up to two different kinds of FDDs in the same connector and also support QIC-80 Tape Driver under floppy interface.

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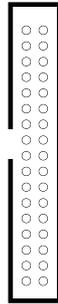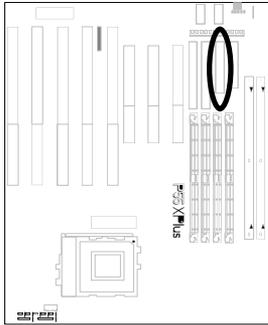
FDC

2.8.2 Parallel Port Connector

The parallel port is using the parallel signal transfer.   The speed is faster than serial port and mostly it is used on the parallel printer or other parallel devices.

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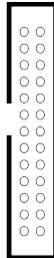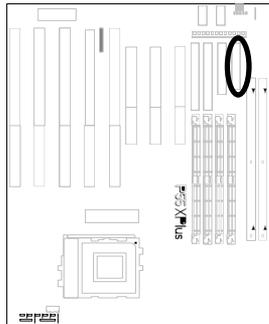
Parallel

Following selection is all controlled by the BIOS:

ECP Mode DMA Channel Selected 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-talk

With these features, it 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 provide, you may experience the data efforts.

2.8.3 Serial Port

The serial port is using the data in serial transfer. The speed is slower than a parallel port.   This is often used 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.

COM1 COM2

Serial 2   Serial 1
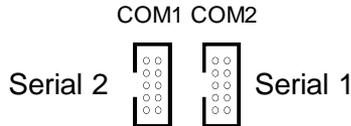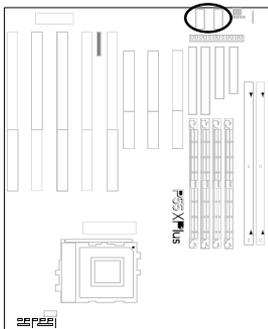
2.9 Others

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 is as follows:
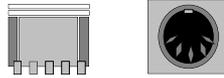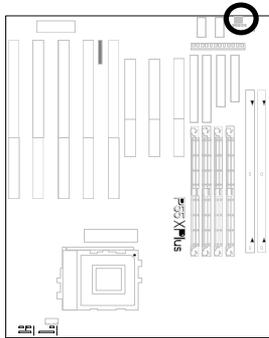
Keyboard

2.9.2 Power Supply Connector

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:
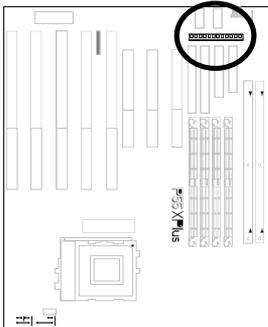
**AT
Power connector**
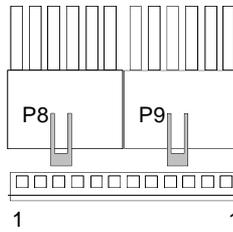
Pin	Color	Voltage
1	Orange	PG
2	Red	5.0 V
3	Yellow	12.0 V
4	Blue	-12.0 V
5	Black	GND
6	Black	GND
7	Black	GND
8	Black	GND
9	White	-5.0 V
10	Red	5.0 V
11	Red	5.0 V
12	Red	5.0 V

Note: The standard AT power supply will not power-up from JP12 for it doesn't has the "POWER O.K." signal.

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

RST
IDE LED
SPEED LED
SPEAKER
PWR LED
KEYLOCK

GND
Reset
GND
IDE
GND
+5V
RST IDE
SPEED LED
PWR LED
Speaker Keylock
+5V
+5V
GND
NC
GND
GND
SPKR
Lock
GND
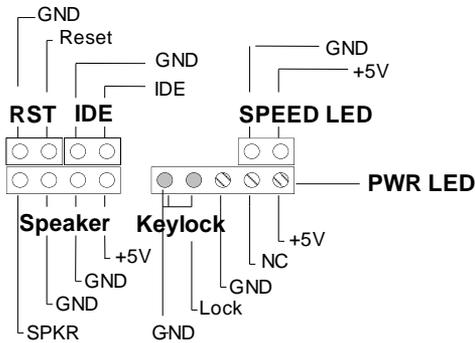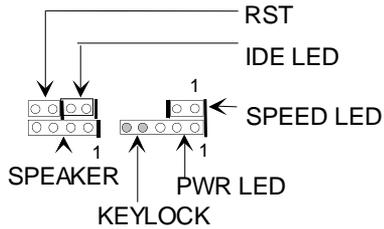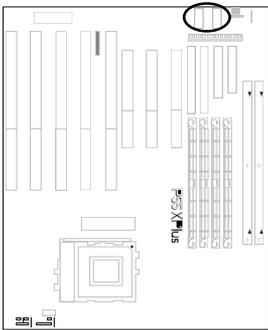
Note: The Power LED can be connected from both the "LED" & "Keylock."

This motherboard has no Turbo function, so 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 has mounted Turbo LED and power on this system.

2.9.4 PS/2 Mouse (Optional)

PS/2 Mouse

JP1
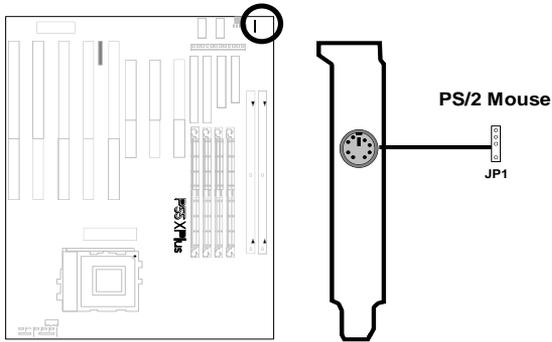
PS/2 Mouse is a 6 pin Mini-DIN PS/2 mouse connector, the manufacture default is IRQ12.

2.9.5 CMOS Clear Jumper

JP1
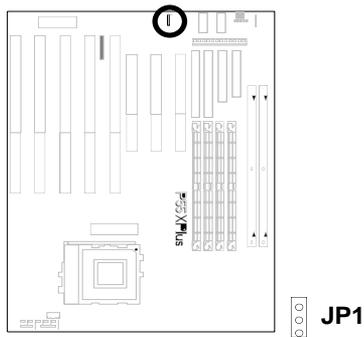
The JP1 is a 3 pin pin-header connector: jumper cap on 1-2 for normal operation or jumper cap on 2-3 for clear CMOS.

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 <Del> immediately after switching the system on, or

2. by pressing the <Del> 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,   <DEL> 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              INTEGRATED PERIPHERALS
BIOS FEATURES SETUP             SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP          USER PASSWORD
POWER MANAGEMENT SETUP          IDE HDD AUTO DETECTION
PNP/ PCI CONFIGURATIONI/O SETUP HDD LOW LEVEL FORMAT
LOAD BIOS DEFAULTS              SAVE & EXIT SETUP
LOAD SETUP DEFAULTS            EXIT WITHOUT SAVING

Esc : Quit                      ↑↓→←  : Select Item
F10 : Save & Exit Setup         (Shift) F2 : Change Color

Time, Date, Hard disk Type.....
```

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 Feature 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 Detetion

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                    Base Memory  :    640  K
 Floppy 3 Mode Support  : Disabled  Extended Memory : 523264K
                                    Other Memory :    384  K
 Video  : EGA/VGA
 Halt On : All Errors               Total Memory  : 524288 K

 Esc : Quit          ↑↓→← : Select Item      PU/PD/+/-  : Modify
 F1  : Help         (Shift) F2 : Change Color
```

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    Video BIOS Shadow    : Enabled
CPU Internal Cache      : Enabled     C800-CBFFF Shadow    : Disabled
External Cache          : Enabled     CC00-CFFFF Shadow    : Disabled
Quick Power On Self Test : Enabled    D000-D3FFF Shadow    : Disabled
Boot Sequence           : A, C, SCSI  D400-D7FFF Shadow    : Disabled
Swap Floppy Drive       : Disabled    D800-DBFFF Shadow    : Disabled
Boot Up Floppy Seek     : Enabled     DC00-DFFFF Shadow    : Disabled
Boot Up NumLock         : On
Boot Up System Speed    : High
Gate A20 option         : Fast
Memory Parity/Ecc Check : Disabled
Typematic Rate Setting  : Disabled
Typematic Rate (Char/Sec): 6
Typematic Delay (Msec)  : 250
Security Option         : Setup        Esc : Quit        ↑↓→← : Select Item
PS/2 mouse function control : Enabled  F1 : Help         PU/PD/+/- : Modify
PCI/VGA palette Snoop   : Non-OS2      F5 : Old Values (Shift) F2 Color
OS Select For DRAM > 64MB: Disabled    F6 : Load BIOS Defaults
Report No FDD For WIN 95 : No          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 760K, 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.

P55XPlus

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        Passive Release      : Disabled
AT BUS CLOCK            :7.16 MHz        ISA :ome Buffer      : Disabled
DRAM Write WS           :X-3-3-3         Delay Transaction    : Disabled
Page Mode Read WS       :X-4-4-4         TAG RAM Size         : 8 bit
RAS Precharge Period    :4T
Fast RAS To CAS Delay   :3T
EDO Read WS/FP)         :x222/x333
DRAM Write Burst Timing :X-3-3-3
DRAM Speculative Read   :Disabled
SDRAM CAS Latency       :3
SDRAM Access Timing     :3-6-9
SDRAM Speculative Read  :Disable
Pipelined Function      :Disable
DRAM Refresh Period     :15 us
DRAM Data Integrity Mode:Parity         Esc : Quit          ↑↓→← : Select Item
Memory Hole At 15-16 M  :Disabled       F1 : Help           PU/PD/+/-  : Modify
Primary Frame Buffer    :Disabled       F5 : Old Values   (Shift)F2 : Color
VGA Frame Buffer        :Disabled       F6 : Load BIOS Defaults
                                        F7 : Load Setup Defaults
```

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 **R**ow **A**ddress **S**trobe 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.

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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 ALI Aladdin 4+ 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 peculative 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.

Tag Ram Size

8 bit for 64 MByte cacheable memory; 9 bit for 128 MByte cacheable;

10 bit for 256 MByte; 11 bit for 512 Mbyte.

You need to install an extra 32K8 Tag Ram on U11 if over 64 Mbyte cacheable is needed.
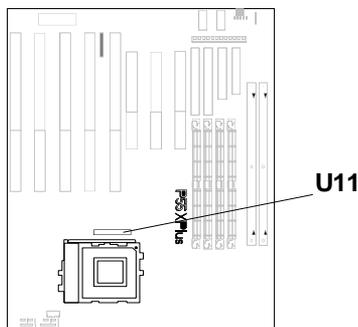
3.5 Power Management Setup

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

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 **ReQ**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 (Coprocessor)
- · 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 (2A5KII39)
                 PNP/PCI CONFIGURATION
                 AWARD SOFTWARE, INC.

 PNP OS Installed          : No      PCI IDE 2nd Channel  : Disabled
 Resources Controlled By   : Auto    PCI IRQ Actived By   : Level
 Reset Configuration Data  : Diasabled   PCI IRQ Map To   : ISA




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

IRQ3/4/5/7/9/10/11/12/14/15, 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 "S*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 (2A5KII39)
              INTEGRATED PERIPHERALS
              AWARD SOFTWARE, INC.

 On-Chip Primary PCI IDE     :Enabled      UR2 Mode              :  Normal
 On-Chip Secondary PCI IDE   :Enabled
 IDE Primary Master PIO      :Auto         Onboard Parallel Port : 378/IRQ7
 IDE Primary Slave PIO       :Auto         Parallel Port Mode    : SPP
 IDE Secondary Master PIO    :Auto
 IDE Secondary Slave PIO     :Auto
 IDE Primary Master UDMA     :Disabled
 IDE Primary Slave UDMA      :Disabled
 IDE Secondary Master UDMA   :Disabled
 IDE Secondary Slave UDMA    :Disabled
 IDE HDD Block Mode          :Disabled
 On-chip USB Controller      :Disabled
 USB Controller              :Disabled

 Onboard FDC Controller      :Enabled
 Onboard Serial Port 1       :2F8/IRQ3    Esc : Quit        ↑↓→← : Select Item
 UR1 Mode                    :Normal      F1 : Help         PU/PD/+/-  : Modify

 Onboard Serial Port 2       :Auto        F5 : Old Values (Shift)  F2 : Color
                                          F6 : Load BIOS Defaults
                                          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 MANAGEM                              EL FORMAT
PNP/ PCI CONFIGUF   LOAD SETUP DEFAULTS (Y/N) ?  N   ETUP
INTEGRATED PHER                            SAVING
LOAD SETUP DEFAULTS

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              SUPERVISOR PASSWORD
BIOS FEATURES SETUP             USER PASSWORD
CHIPSET FEATURES SETUP          IDE HDD AUTO DETECTION
POWER MANAGEM                              EL FORMAT
PNP/ PCI CONFIGUF   Enter Password  :       ETUP
INTEGRATED PHER                            SAVING
LOAD SETUP DEFAULTS

Esc : Quit                      ↑↓→← : Select Item
F10 : Save & Exit Setup         (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 MMX 200	Full Series	200Mhz	200	2.83V

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 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 lineP166 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