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## EC Declaration of Conformity

We

Iwill Corp.

No. 10, Wu-Chuan 3 Rd.,

Hsin-Chuang City,

Taipei, Taiwan R.O.C.

declare under sole responsibility that the

**XA100 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 Radiate**

**IEC 801-4 Fast Transient**

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## About This Manual

This manual will introduce to the users how this XA100 Ultra ATA-2 ( Ultra DMA 33 ) and 100 MHz bus 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 provides a quick reference for experienced users. Please follow the instructions while installing the system.

### The Overview chapter ---

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

### The Hardware Installation chapter ---

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

### The AMI BIOS Setup chapter ---

This chapter presents clear AMI BIOS setup options. Usually the manufacture default s are the best choices for most users.

### The chapter Appendix ---

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

## Warning

Most of the features of this motherboard have passed strict verification and are subject to change at any time without notice. If any malfunction occurs due to the future technical changes made by the respective component manufacturers, Iwill assumes no responsibility or liability for it.

## Version

This manual is written to go with Iwill's XA100 motherboard Version.1.1.

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## Changes

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

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# CHAPTER 0

## Overview

Thank you for purchasing Iwill **XA100 Ultra DMA 33** Motherboard. This operation manual will instruct you how to configure and install properly. It contains an overview about the engineering design and features of this board. Also, this manual provides useful information for later on upgrade or configuration change. Keep this for your future need.

### 0.1 Features

This XA100 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 incorporates with ALI Aladdin V PCI set with I/O subsystem that supports for processor external working frequency up to 100MHz.

To run faster bus speed is a great plus in this XA100 motherboard. It not only can run the 66MHz bus that Intel claims on all her highest system bus but also built in 75MHz, 83MHz and 100MHz 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 3 ISA slots for great expansion ability.

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 with three of the 168-pin DIMM memory sockets that support the new 3.3V, unbuffered Synchronous 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 to be compliant with ATX specification 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. Please follow the installation steps introduced either in Chapter 1 or Chapter 2 to set the CPU frequency.

### ■ CHIPSET:

ALI Aladdin V PCIset with I/O subsystem chipset is used on this motherboard.

### ■ BIOS:

AMI 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-board. The cache size can achieve up to 512 MB. It also supports 32 bit power-on function, that is, one DIMM will be able to power on the PC.

### ■ Memories:

3 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 or the new Synchronous DRAM with DIMM socket (3.3V un-buffered type).

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

### ■ AGP (Accelerated Graphic Port) slot:

1 X 124-pin expansion slot, which provides high performance bus for graphics devices and is designed primarily for 3D applications.

### ■ Expansion slots:

This motherboard provides :

3 X 16-bits ISA slots, 4 X 32-bits PCI slots

### ■ Switching DC/DC Voltage Regulator for CPU:

Efficiently cool down CPU temperature and increase system stability

### ■ IDE functions:

Two 40-pin box-header connectors are provided for IDE devices. They are separately 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):**

Plug and Play devices outside the computer box

Up to 12Mbit

Easy of use

■ **Power Connectors:**

Support remote power on connector. ATX power supply connector is 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 high speed 16550 UART serial port

IRQ selectable from BIOS.

Address changeable from system BIOS

NS16C550 compatible, Programmable Baud Rate Generator

■ **Parallel Port**

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

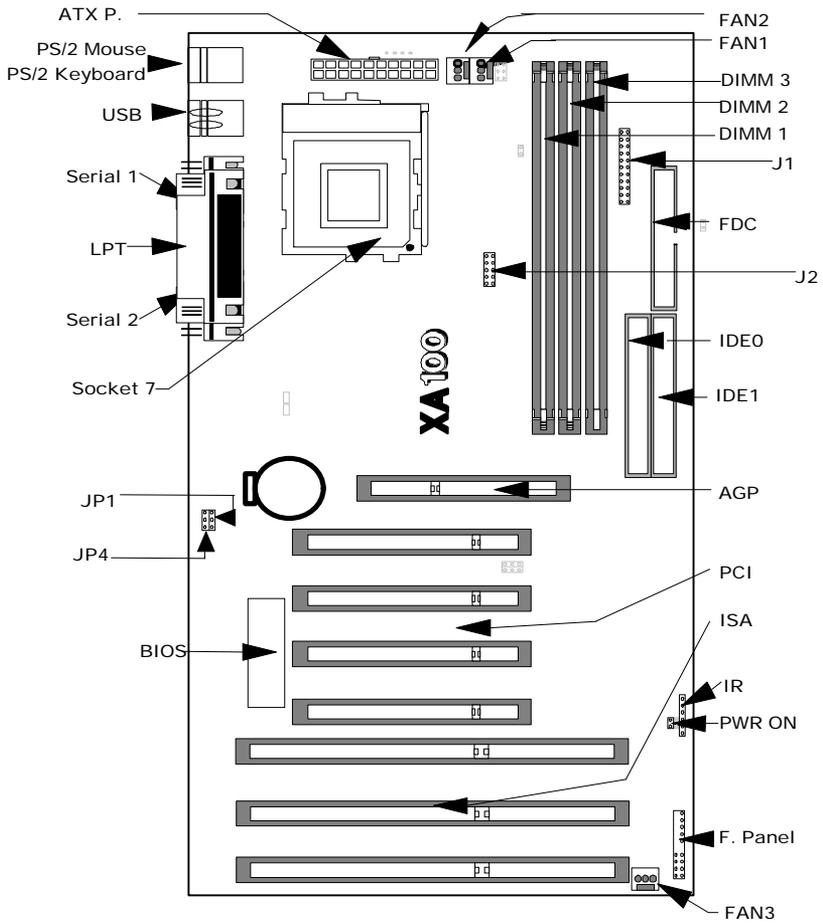
**ECP Mode** --Microsoft & Hewlett Packard Extended Capabilities Port (ECP) Compatible

Incorporates ChiProtect Circuit for protection against damage due to printer power-on

## 0.2 Specifications

- **Physical Dimensions:** Length: 180mm / Width: 305mm
- **Environmental Requirements:**
  - Temperature 0-55 degrees C (operating or storage)
  - 5% to 95% non-condensing relative humidity

### 0.3 Placement of XA100



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## 0.4 Connectors and Jumpers Description:

### Connector Function Description

AGP:	124-pin expansion slot, for graphics devices and is designed primarily for 3D applications.
ATX P:	20-pin Standard ATX power input connector
BIOS:	BIOS (Basic Input Output System)
DIMM1:	64 bit Dual In-line Memory Module.
DIMM2:	64 bit Dual In-line Memory Module.
DIMM3:	64 bit Dual In-line Memory Module.
Fan1:	(J39 ) A 3-pin power connector for Processor fan.
Fan2:	(J40) A 3-pin power connector for system fan to release the hot air.
Fan3:	(J41) A 3-pin power connector for system fan to absorb the cold air
FDC:	34-pin key-protected Floppy disk drive connector
F Panel:	Front panel signal control connector RST –Reset Switch IDE LED –IDE LED P. LED –Power LED SPEAKER –Speaker connector
IDE0:	40-pin key-protected for Primary IDE connector
IDE1:	40-pin key-protected for Secondary IDE connector
IR:	6-pin Infrared connector
ISA:	3 x ISA (Industrial Standard Architecture) 98-pin expansion slot
LPT:	25-pin D-Sub connector for Parallel port connector
PCI:	4 x PCI version 2.1 compliance 120-pin PCI (Peripheral Component Interface) expansion slot
PS2 Mouse:	6-pin PS/2 Mouse Mini-DIN connector
PS2 KB:	6-pin PS/2 Keyboard Mini-DIN connector
PWR ON:	2 -in remote power on switch
Serial 1:	9-pin D-Sub connector for serial 1 port connector
Serial 2:	9-pin D-Sub connector for serial 2 port connector
Socket 7:	321-pin socket 7 CPU socket
USB:	two sets 4-pin Universal Serial Bus connector

### Jumper Setting

JP1	CMOS Clear Jumper
JP4	5V/12V BIOS voltages select
J1	CPU Frequency select
J2	CPU Voltage Select

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## **0.5 Unpack the XA100:**

You should find the following components when open the box:

- (1) XA100 Motherboard.
- (2) This Operation Manual
- (3) 40-pin internal IDE signal cable.
- (4) 34-pins internal Floppy Disk Drive signal cable.

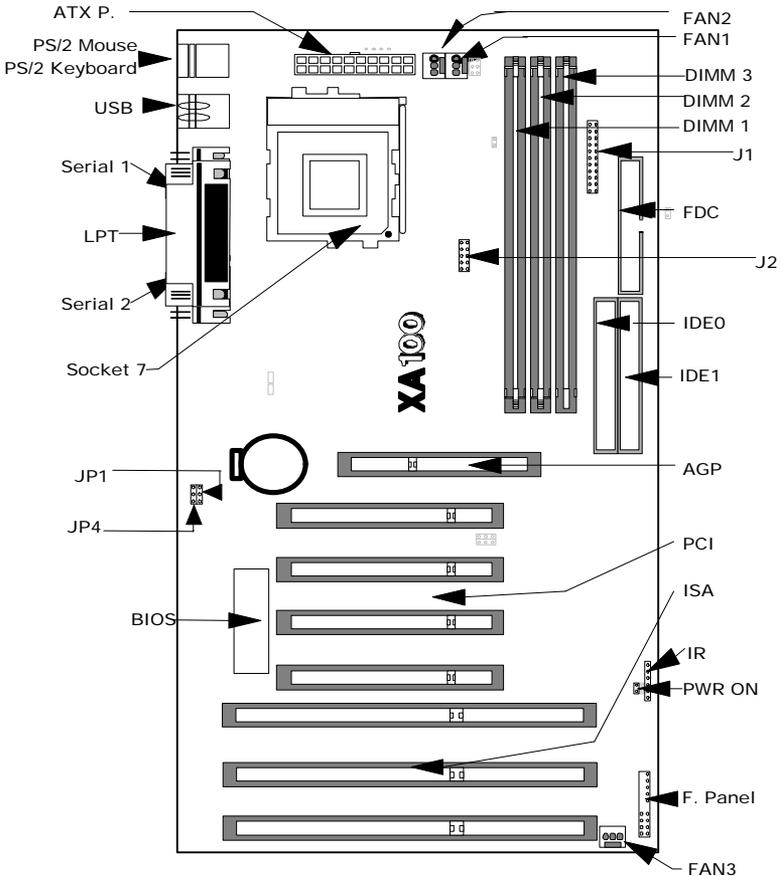
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# CHAPTER 1

## 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 2.

### 1.1 Placement for XA100



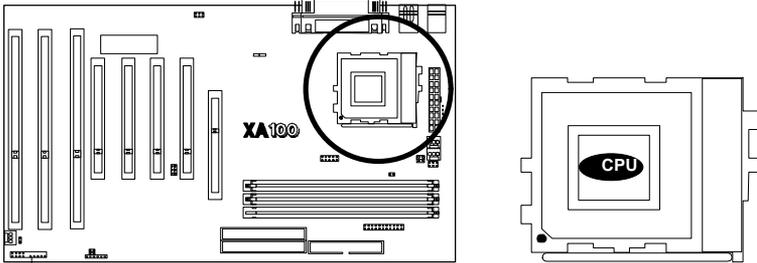
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## Quick Installation

### 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, make sure they are connected thoroughly in the right direction.

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

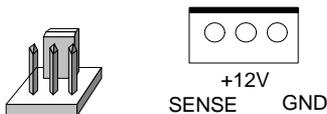
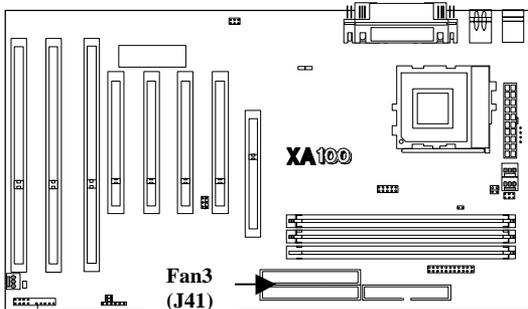


### Step2. Install CPU Coolers

On this XA100 motherboard, there are three fan connectors:

J39 for Fan 1 is to cool down the CPU; J40 for Fan 2 and J41 for Fan 3 are to release the heat produced by power supply and other components inside the computer chassis.

Hook the CPU Cooler's power cable to the connector marked "FAN 1".



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### Step 3. Adjust the CPU Voltage

Jumper J2 is designed for users to set the proper voltage for the processor installed. A wrong voltage setting will cause fatal damage to the CPU permanently.

There are total 7 different voltage selections in this XA100 motherboard to support full socket 7 processors that are available today and in the near future.

If an Intel Pentium with MMX dual voltage processor is installed, please set to 2.8V.

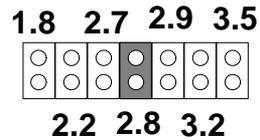
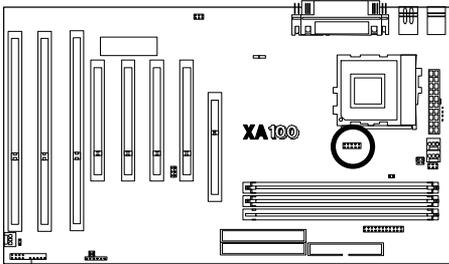
If a AMD K6 with MMX dual voltage (166 and 200MHz) processor is installed please set to 2.9V.

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

If a AMD new generation K6 with MMX dual voltage (233 and 266MHz) processor is installed please set to 2.2V.

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

2.7V and 1.8V are reserved for future use.



### Step 4. Adjust the CPU Frequency

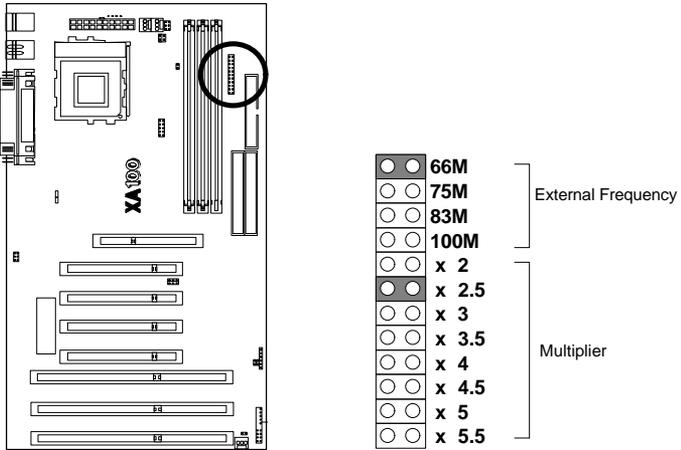
J1 is a 2x12-pin jumper. The upper four blocks of J1 are for processor External Frequency selection, and the others are used to select processor's Multiplier. This motherboard supports four External Frequency: 66 MHz, 75 MHz, 83 MHz and 100 MHz. Regarding the External Frequency and Multiplier for different processors, please refer to the following table.

Intel			AMD		
	External Freq.	Multiplier		External Freq.	Multiplier
133	66	2	K5 166	66	2.5
166	66	2.5	K6 166	66	2.5
200	66	3	K6 200	66	3
233	66	3.5	K6 233	66	3.5
			K6 266	66	4
			K6 300	100	3
			K6 350	100	3.5
			K6 400	100	4

Cyrix			IDT		
	External Freq.	Multiplier		External Freq.	Multiplier
M1 PR166	66	2	200	66	3
M2 PR166	66	2			
M1 PR 200	75	2			
M2 PR 200	75	2			
M2 PR 233	75	2.5			
M2 PR 266	83	2.5			

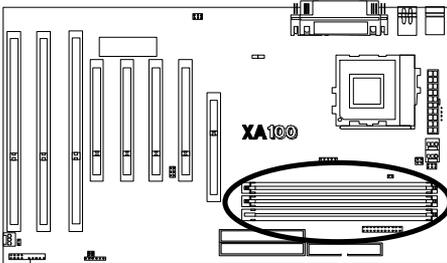
( Note: Freq. stands for Frequency.)

For example, if your CPU is Intel Pentium MMX 166, which means 66MHz (its external bus speed ) x 2.5 (multiplier). So, for an Intel Pentium MMX 166 CPU holder, the only act users need to do is to place one jumper cap on the position marked "66MHz" and the other jumper cap on the position marked "x 2.5" on J1.



## Step 5. Install the Memory Module

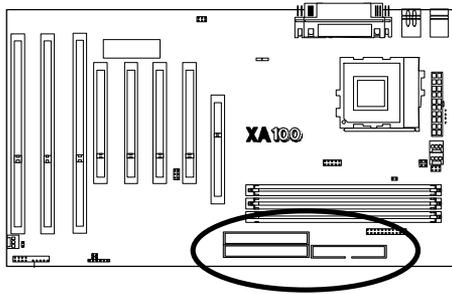
At least one piece of 168-pin DIMM (Dual In-line Memory Module ) must be inserted in this XA100 Ultra DMA 33 motherboard.



## Step 6. Install the Internal Peripherals

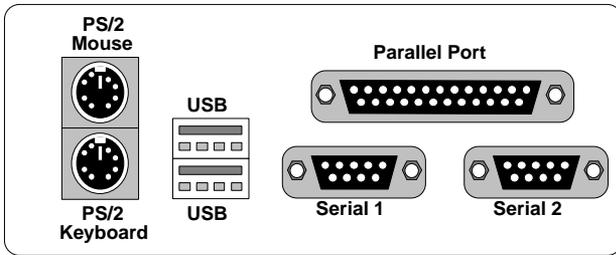
The internal peripherals means devices that are in the computer chassis such as the Floppy Disk Drive, Hard Disk Drive, CD ROM Drive \*etc. Within this motherboard package, There are one 34-pin flat cable for floppy disk drive and one 40-pin flat cable for IDE devices included in your retail package. Use these cables to connect the motherboard and internal devices.

The protect key on cables' connector will guide you the correct direction when you insert the cables.



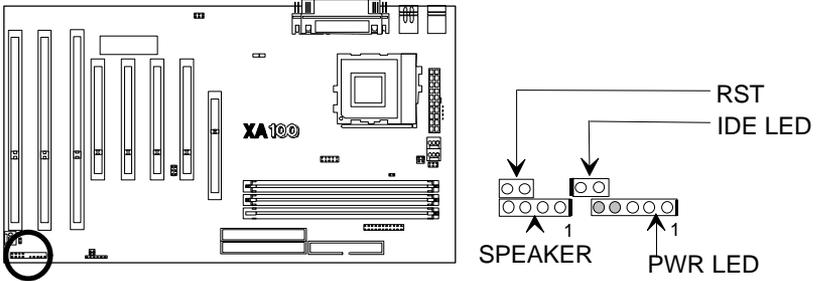
### Step 7. Install the External Peripherals

The external devices mean devices that are outside the computer chassis like the Serial mouse, Printer, PS/2 Mouse, External Modem and etc.



### Step 8. Connect the Reset switch

Most computer chassis provides a reset switch on their front pannel control. Connect the button with provided 2-pin twisted wire to the header marked RST on motherboard for RESET function. When the button is on, the motherboard resets and will restart the computer.



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## Step 9. Connect the Speaker

Connect the speaker to the motherboard's speaker connector. (Normally the red cable is +5V power)

## Step 10. Connect the Power LED

Most computer chassis provides a power LED to identify if the system is on or off. The power LED lights up when computer is powered on. Connect the power LED to the motherboard's power LED connector. (normally the red cable is +5V power)

## Step 11. Connect the IDE LED

This header can be connected to the IDE device LED on front panel.

The LED shows activities of ( read from or write to ) an IDE device.

## Step 12. Connect the Power On Button

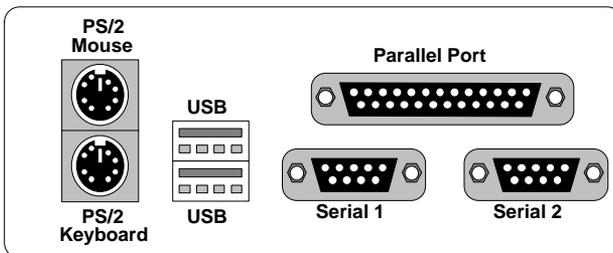
All the ATX computer chassis provide a power on switch. Connect the header marked "PWR-ON" to the switch.

## Step 13. Connect the Power Supply

This motherboard provides the new 20-pin ATX power connector. Once the ATX power supply is plugged into this ATX power connector then the power on connector is necessary to be connected to work as the power On/Off switch.

## Step 14. Connect the Keyboard

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



## Step 15. Install the Display Card (ISA/PCI/AGP)

Insert the display card you have in vertical direction into the PCI/ISA expansion slot. Another option provided for you to get higher performance for graphic-intensive applications in the system is to insert the AGP card on the AGP (Accelerated Graphics Port) slot, which is designed intently for exclusive use for display adapter.

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## **Step 16. Power on the system**

Once the system is powered 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 respond "Load SETUP default (Y/N)?", press "Y" and "Enter." Followed with message "SAVE to CMOS and EXIT (Y/N)?" Then press "Y" and "Enter". Your system will now re-start with default settings and we wish you to enjoy it.

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# CHAPTER 2

## Hardware Installation

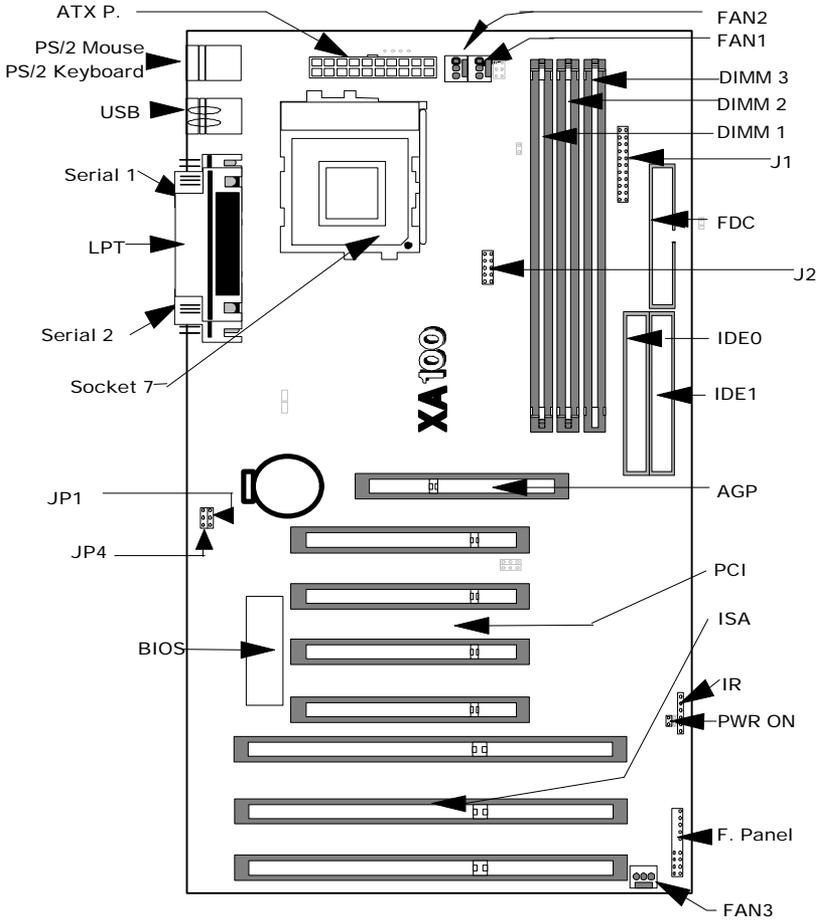
### 2.1 Preparation and Inspection

This **XA100 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, 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:**

- Medium size flat blade screwdriver.
- Medium sized Phillips head screwdriver.
- A 3/16 inch nut driver or wrench.

## 2.2 Placement

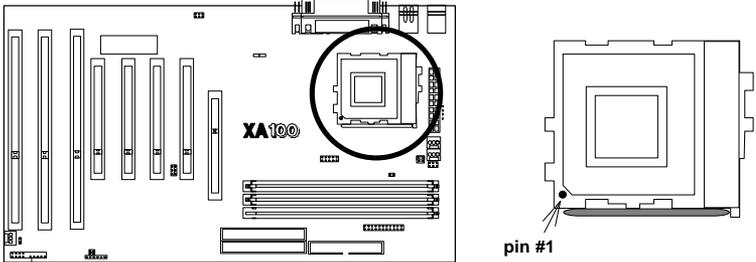


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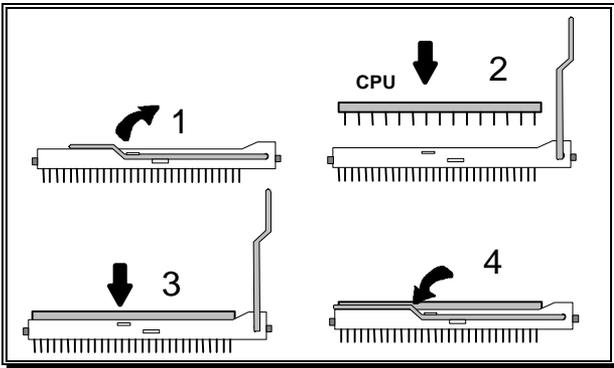
## 2.3 CPU group

### 2.3.1 CPU Socket Installation

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.



### How to install CPU



### 2.3.2 CPU Cooler Fan Installation

**Warning !!!**

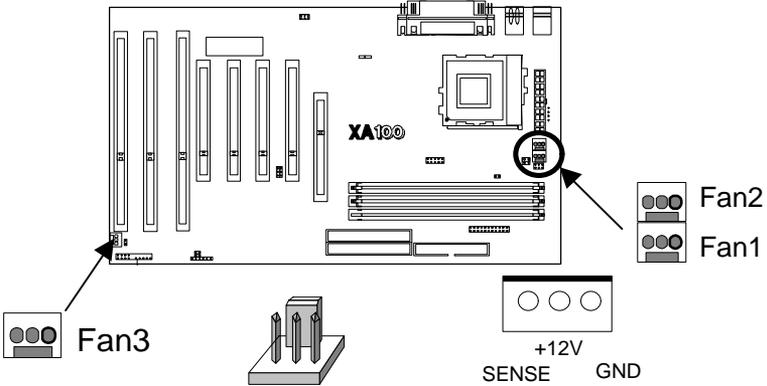
**Warning !!!**

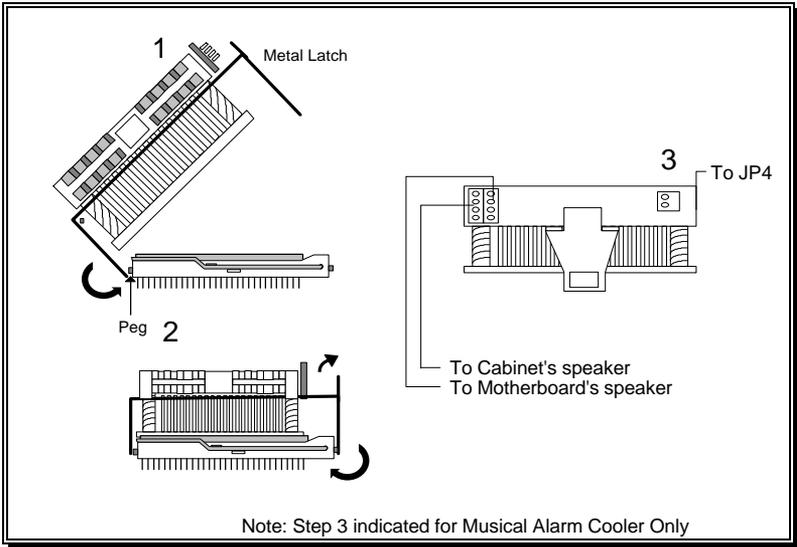
**Warning !!!**

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

There are three Fan connectors for users to upgrade their system.

Connectors	Function	Headers
Fan 1	CPU Cooler Fan	J49
Fan 2	System fan	J50
Fan 3	System fan	J51





### 2.3.3 CPU Frequency Selection

J1 is a 2x12-pin jumper. The upper four blocks of J1 are for processor External Frequency selection, and the others are used to select processor's Multiplier. This motherboard supports four External Frequency: 66 MHz, 75 MHz, 83 MHz and 100 MHz. Regarding the External Frequency and Multiplier for different processors, please refer to the following table.

Intel			AMD		
	External Freq.	Multiplier		External Freq.	Multiplier
133	66	2	K5 166	66	2.5
166	66	2.5	K6 166	66	2.5
200	66	3	K6 200	66	3
233	66	3.5	K6 233	66	3.5
			K6 266	66	4
			K6 300	100	3
			K6 350	100	3.5
			K6 400	100	4

Cyrix			IDT		
	External Freq.	Multiplier		External Freq.	Multiplier
M1 PR166	66	2	200	66	3
M2 PR166	66	2			
M1 PR 200	75	2			
M2 PR 200	75	2			
M2 PR 233	75	2.5			
M2 PR 266	83	2.5			

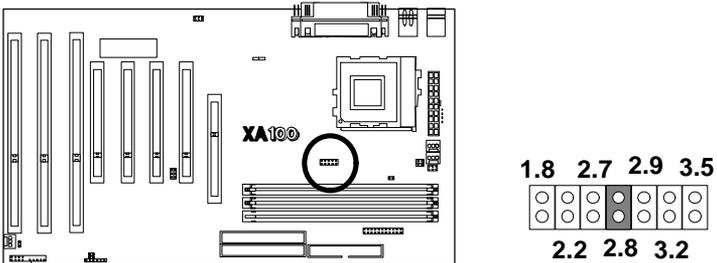
( Note: Freq. stands for Frequency.)

For example, if your CPU is Intel Pentium MMX 166, which means 66MHz (its external bus speed) x 2.5 (multiplier). So, for an Intel Pentium MMX 166 CPU holder, the only act users need to do is to place one jumper cap on the position marked “66MHz” and the other jumper cap on the position marked “x 2.5” on J1.

### 2.3.4 CPU Voltage Selection

The manufacture default on this J2 jumper is “2.8V.” This J2 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 to satisfy different requirements.

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



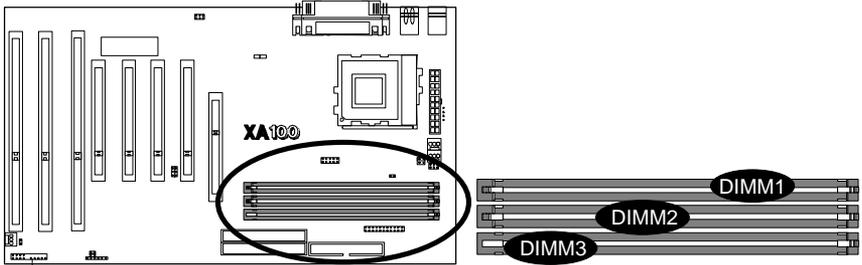
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## 2.4 L2 Cache Memory

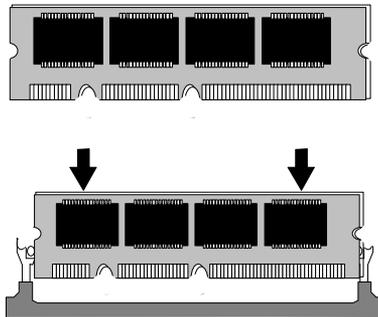
The second level L2 cache memory supports pipelined burst SRAM, it will has much higher performance compared with the traditional asynchronous SRAM. This motherboard uses the new pipelined burst cache technology with 512K size and the memory cacheable size from 64MB to 512MB.

## 2.5 D-RAM Configuration

This motherboard provides three DIMMs memory sockets. At least one piece 168-pin DIMM (Dual In-line Memory Module) must be inserted in this XA100 Ultra DMA 33 motherboard.



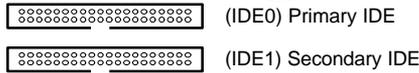
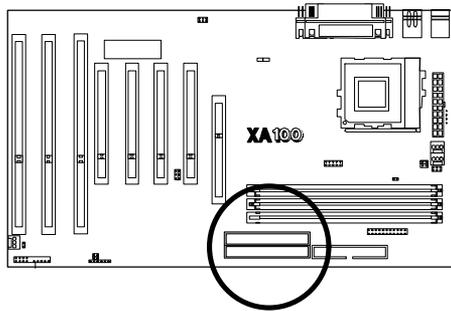
### Install the DIMM



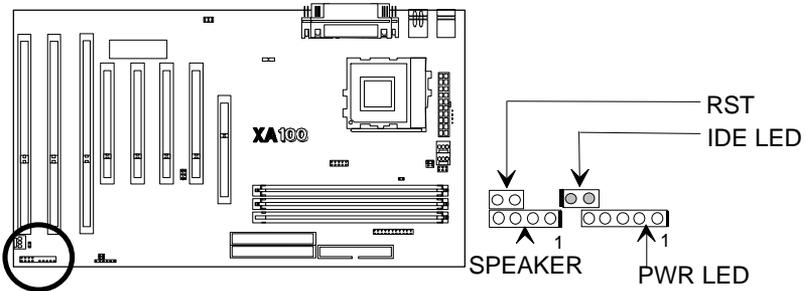
## 2.6 IDE Interface

### 2.6.1 Primary, Secondary IDE Connectors

Primary / Secondary IDE are 40-pin 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.



### 2.6.2 IDE LED



A 2-pin IDE LED connector is to be connected to the LED on chassis, which will be lighted up as busy signal when IDE devices are detected in operation.

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

## 2.7 USB (Universal Serial Bus) Connection

The USB is suitable for mid to low speed devices like Mouse, Keyboard, Joystick...etc. In the past, all these devices were using different connectors, and it is complicated for end users to install the system. Two of 4-pin standard USB connectors are designed on this motherboard, users only need to plug all their USB peripherals on these kinds of connector in chain and are ready to go.

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

---

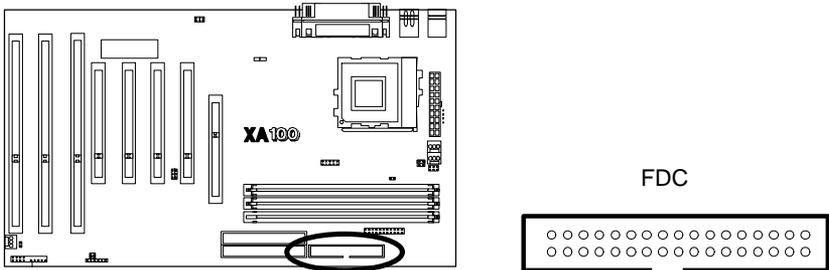
## 2.8 Enhanced Multi-IO Connection

### 2.8.1 Install Floppy Disk Drive

The IBM compatible floppy disk drive includes 360KB, 720KB, 1.2MB, 1.44MB and 2.88MB. The most popular one is 1.44MB in 3.5 inch. There is another kind of 3 Mode FDD used for the NEC PC98 series computer.

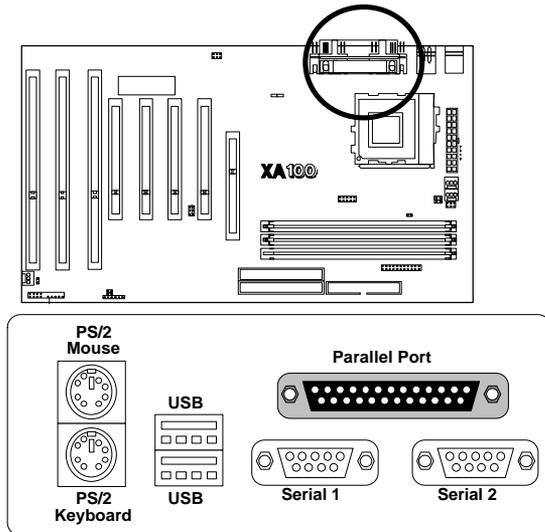
This motherboard supports two FDD in any capacity with the same connector and also supports QIC-80 Tape Driver with floppy interface.

Use the provided 34-pin flat cable to connect between this connector and floppy drives.



### 2.8.2 Parallel Port Connector

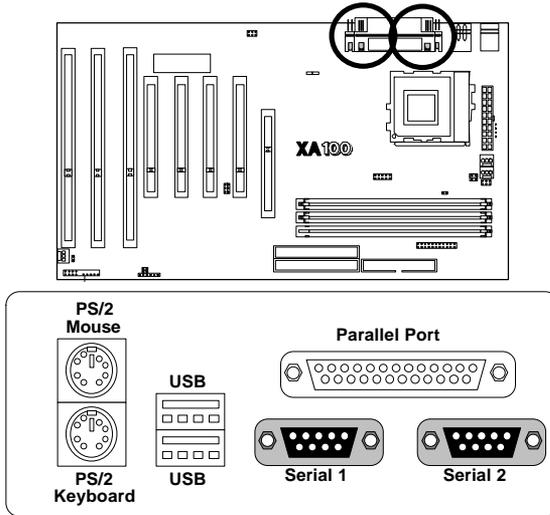
The parallel port transfers data in an 8-bit unit, thus its transfer rate is much faster than serial devices. Used for printer or other parallel devices. Simply connect the parallel port cable with parallel peripherals between devices and the parallel port connector.



---

## 2.8.3 Serial Port

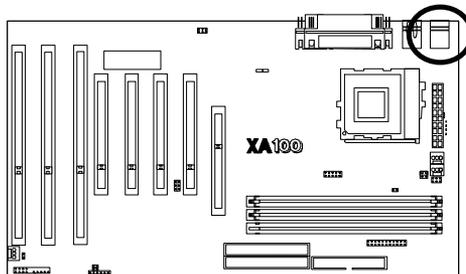
The serial port is using the data in serial transfer. The speed is slower than a parallel port. This is often used in serial mouse, serial printer, fax modem .etc. This motherboard provides a high speed 16550 compatible serial port, which is faster in transfer speed than a traditional 16450 compatible serial port.

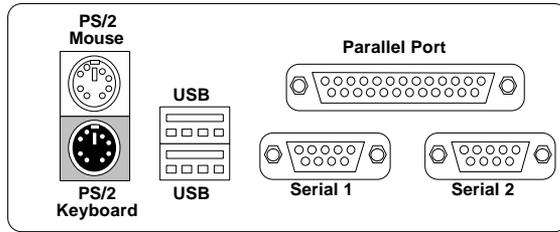


## 2.9 Others

### 2.9.1 Keyboard Connector

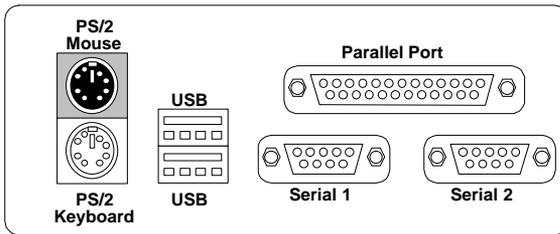
The keyboard connector is a 6-pin, circular-type Mini-DIN socket. It is used to connect the standard PS/2 compatible keyboard.





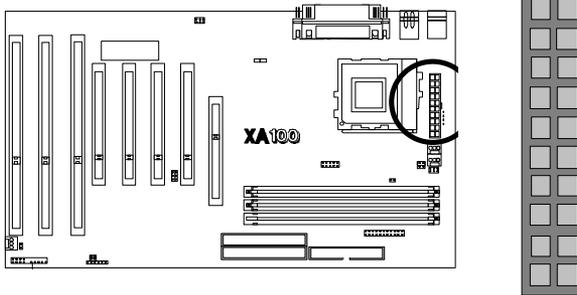
### 2.9.2 PS/2 Mouse

PS/2 Mouse is a 6-pin Mini-DIN PS/2 mouse connector. The user can choose this as Mouse port and save the standard Serial port for other purpose use.



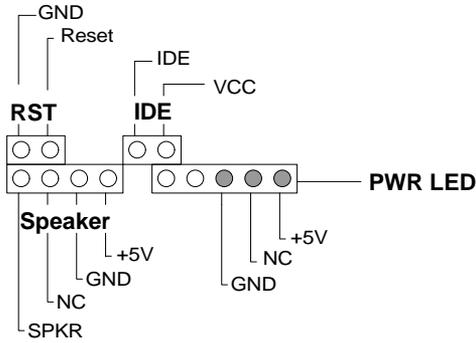
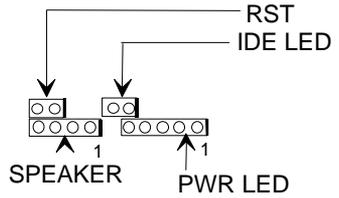
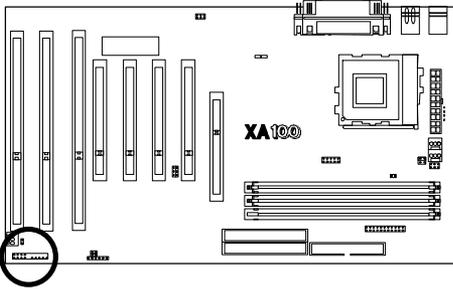
### 2.9.3 Power Supply Connector

This is a 20-pin ATX standard power connector. It is used to connect power lines and power good signal from the power supply's output headers to the motherboard.



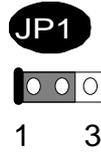
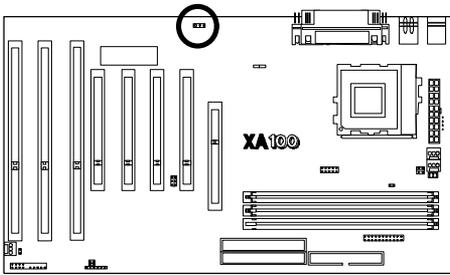
- Note:**
1. The Remote Control Power On Switch must connect to J42.
  2. When Green function is enable, Power on switch is also the SMI switch.

## 2.9.4 Reset, IDE LED, P. LED, Speaker, Keylock Connectors



## 2.9.5 CMOS Clear Jumper

Function	JP1	Note
NORMAL	1-2	* DEFAULT
CLEAR CMOS	2-3	



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



---

# CHAPTER 3

## AMI BIOS Setup

### Introduction

The motherboard uses an AMI BIOS, which is stored in flash memory and can be upgraded using a disk-based program. The setup program is for viewing and changing the BIOS setting for a computer. These settings are stored in battery-backed RAM so that it retains all the settings when the power is turned off.

### Upgrade BIOS

The BIOS can be upgraded from a diskette using the AMI Flash utility. BIOS upgrades and the update utility are available from Iwill through the WWW site.

### Enter BIOS setup program

The BIOS setup program is accessed by pressing the <Del> key after Power-On Self Test (POST) memory test begins and before the scanning of IDE devices. During that time, a message "Press DEL to enter SETUP" will be displayed at the bottom of the screen. If the message disappears before you respond, you can restart the system by

- Turning off the system power then turn it on again, or

- Pressing the "RESET" button on the system case, or

- Pressing <Ctrl>, <Alt> and <Del> keys simultaneously.

### Using BIOS setup program

The following table shows the function keys available for menu screens.

---

<Up>	Move to previous field
<Down>	Move to next field
<Left>	Move to the field in the left hand
<Right>	Move to the field in the right hand
<Esc>	Quit from setup program without saving changes, or Exit from current menu page and return to main menu page
<PgUp> or <+>	Select the previous value for a field
<PgDn> or <->	Select the next value for a field
<F1>	Bring up a help screen for the current field
(Shift)<F2>	Change screen color. F2 to select color forward, (Shift) F2 to select color backward
F10 key	Save the current value and exit setup program

**NOTE:**

Generally, the BIOS default settings have been carefully chosen by the system manufacturer to provide the absolute maximum performance and reliability. It is very dangerous to change any setting without full understanding. We strongly suggest that

**DO NOT update your BIOS if the system works perfect.**

**DO NOT change any setting unless you fully understand what it means.**

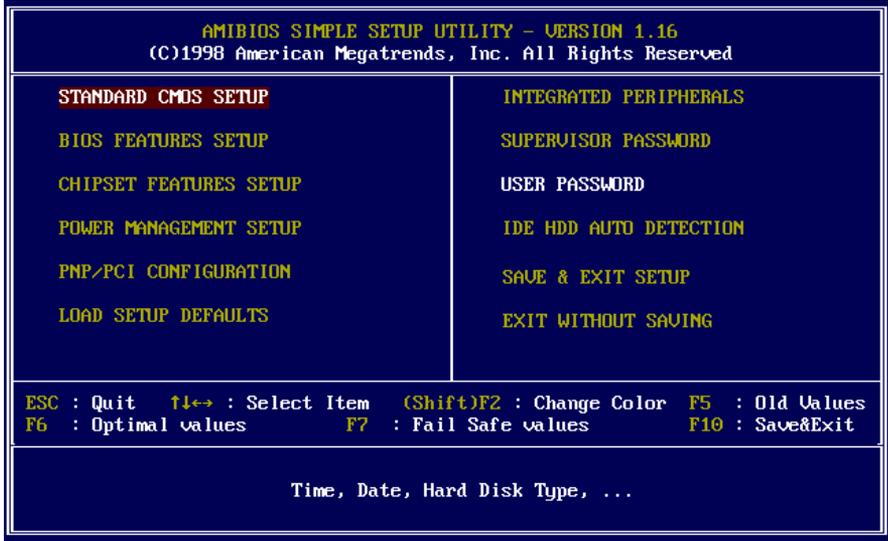
If the system does not work smoothly after changing the BIOS setting, follow the procedures that described before to enter setup program then load the default to back to the manufacturer default setting.

If the system is no longer able to boot after changing the setting, clear the data stored in RTC CMOS is the only way to recover it. To reset the RTC CMOS data, you need to change the jumper cap of JP1 from 1-2 close to 2-3 close, then set to default 1-2 close again. After that, you should get into BIOS setup program and choose LOAD SETUP DEFAULTS to get original manufacturer default setting in your CMOS.

---

## 3.1 SETUP UTILITY

### Main Menu:



The main menu allows you to select from several setup pages. Use the arrow keys to select among these pages and press <Enter> key to enter the sub-menu. Note that a brief description of each highlighted selection appears at the bottom of the screen.

The main menu includes the following setup pages.

### STANDARD CMOS SETUP

Allocates resources for hardware components

### BIOS FEATURES SETUP

Specifies advanced features available through the BIOS

### CHIPSET FEATURES SETUP

Specifies advanced features available through the chipset

### POWER MANAGEMENT SETUP

Specifies power management features

---

## **PNP /PCI CONFIGURATION**

Specifies Plug and Play and PCI features

## **LOAD SETUP DEFAULTS**

Load the manufacturer default setting into CMOS

## **INTEGRATED PERIPHERALS**

Specifies on-board controller features

## **SUPERVISOR / USER PASSWORD**

Specifies passwords

## **IDE HDD AUTO DETECTION**

Auto-detect the parameters of IDE disks

## **SAVE & EXIT SETUP**

Save current value to CMOS and exit setup

## **EXIT WITHOUT SAVING**

Abandon all changes and exit setup

---

## 3.2 Standard CMOS Setup

AMIBIOS SETUP - STANDARD CMOS SETUP							
(C)1998 American Megatrends, Inc. All Rights Reserved							
Date (mm/dd/yyyy): Mon Mar 16, 1998							
Time (hh/mm/ss) : 15:37:23							
TYPE	SIZE	CYLS	HEAD	PRECOMP	LANDZ	SECTOR	MODE
Pri Master	: Not Installed						
Pri Slave	: Not Installed						
Sec Master	: Not Installed						
Sec Slave	: Not Installed						
Floppy Drive A:	Not Installed						Base Memory : 0 Kb
Floppy Drive B:	Not Installed						Other Memory : 384 Kb
Boot Sector Virus Protection	Disabled						Extended Memory : 0 Mb
							Total Memory : 1 Mb
Month: Jan - Dec							ESC : Exit
Day: 01 - 31							↑↓ : Select Item
Year: 1901 - 2099							PU/PD/+/- : Modify
							(Shift)F2 : Color

This setup page is used for allocating resources for hardware components.

### Date

This field specifies the current date. The date format is <day>, <month>, <date>, <year>.

### Time

This field specifies the current time. The time format is <hour> <minute> <second>. The time is calculated based on the 24-hour military-time clock.

### Primary Master / Primary Slave / Secondary Master / Secondary Slave

This field specifies the geometric parameters and addressing method of IDE disk drives.

### TYPE:

This field specifies the geometric parameters of IDE disk drives.

Options	Description
1 - 46:	Specifies predefined disk drive parameters
User	Specifies disk drive parameters by user. When selected, user can fill in the values for the cylinders, heads and sectors fields
Auto	BIOS automatically fills in the values for the cylinders, heads and sectors fields.

---

## MODE

This field specifies the addressing method of IDE disk drives.

Options	Description
NORMAL:	Specifies traditional CHS addressing
LARGE:	Specifies extended CHS addressing
LBA	Specifies LBA addressing
AUTO	BIOS specifies addressing method automatically

## Floppy Drive A / Floppy Drive B

This field specifies the traditional type of the floppy drives.

Options	Description
None	No floppy drive is connected
360K, 5.25 in.	A 360K floppy drive is connected
1.2M, 5.25 in.	A 1.2M floppy drive is connected
720K, 3.5 in.	A 720K floppy drive is connected
1.44M, 3.5 in.	A 1.44M floppy drive is connected
2.88M, 3.5 in.	A 2.88M floppy drive is connected

## Base Memory

The POST will determine the amount of base (conventional) memory installed in the system. The value of the base memory is typically 640K. This field is displayed only.

## 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 processor's memory address map. This field is displayed only.

## 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. This field is displayed only.

---

## 3.3 Bios Features Setup

### BIOS Features Setup

AMIBIOS SETUP - BIOS FEATURES SETUP			
(C)1998 American Megatrends, Inc. All Rights Reserved			
1st Boot Device	:Disabled	D000,16k Shadow	:Disabled
2nd Boot Device	:Disabled	D400,16k Shadow	:Disabled
3rd Boot Device	:Disabled	D800,16k Shadow	:Disabled
4th Boot Device	:Disabled	DC00,16k Shadow	:Disabled
Try Other Boot Devices	:Yes		
Quick Boot	:Disabled		
BootUp Num-Lock	:Off		
Floppy Drive Swap	:Disabled		
Floppy Drive Seek	:Disabled		
Floppy Access Control	:Normal		
HDD Access Control	:Normal		
PS/2 Mouse Support	:Disabled		
Primary Display	:Absent		
Password Check	:Setup		
Boot To OS/2	:No		
External Cache	:Disabled	ESC : Quit	F1+ : Select Item
System BIOS Cacheable	:Disabled	F1 : Help	PU/PD/+/- : Modify
Video BIOS Shadow	:Disabled	F5 : Old Values	(Shift)F2 : Color
CB00,16k Shadow	:Disabled	F6 : Load BIOS Defaults	
CC00,16k Shadow	:Disabled	F7 : Load Setup Defaults	

#### 1st Boot Device / 2nd Boot Device / 3rd Boot Device / 4th Boot Device

This field configures the boot sequence of boot devices.

Options	Description
Disable	Disable the first Boot device.

#### IDE 0

Boot from Master IDE disk drive on Primary channel

#### IDE 1

Boot from Master IDE disk drive on Secondary channel

#### IDE 2

Boot from Slave IDE disk drive on Primary channel

#### IDE 3

Boot from Slave IDE disk drive on Secondary channel

---

## Floppy

System will boot from floppy drive

## ARMD-FDD / ARMD HDD

LS-120 or ZIP drive, master IDE disk drive on primary channel

## CDROM

Boot from ATAPI CDROM drive

## SCSI

Boot from SCSI drive.

## Network

Boot from Network.

## Try Other Boot Devices

Set this option to *Yes* to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the **1<sup>st</sup> Boot Device**, **2<sup>nd</sup> Boot Device**, **3<sup>rd</sup> Boot Device**, and **4<sup>th</sup> Boot Device** options.

## Quick Boot

Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. This option replaces the old **Above 1 MB Memory Test** Advanced Setup option. The settings are:

Setting	Description
Disabled	AMIBIOS test all system memory. AMIBIOS waits up to 40 seconds for a READY signal from the IDE hard disk drive. AMIBIOS waits for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again. AMIBIOS checks for a <Del> key press and runs AMIBIOS Setup if the key has been pressed.
Enabled	AMIBIOS does not test system memory above 1 MB.  AMIBIOS does not wait up to 40 seconds for a READY signal from the IDE hard disk drive. If a READY signal is not received immediately from the IDE drive, AMIBIOS does not configure that drive. AMIBIOS does not wait for .5 seconds after sending a RESET signal to the IDE drive to allow the IDE drive time to get ready again.  You cannot run AMIBIOS Setup at system boot, because there is no delay for the <i>Hit &lt;Del&gt; to run Setup</i> message.

---

## Boot Up NumLock Status

This field configures the numeric keypad after system booting up.

Options	Description
<b>On (*)</b>	Keypad works as number keys
<b>Off</b>	Keypad works as arrow keys

## Floppy Drive Swap

When this field is enabled, the logical drive letter of floppy drive A and B will be hanged without changing the physical cable.

Options:	<b>Enabled</b>
	<b>Disabled (*)</b>

## Floppy Drive Seek

When this field is enabled, BIOS will check floppy drive status during POST. If an error occurred, system will be paused and an error message will be prompted.

Options:	<b>Enabled (*)</b>
	<b>Disabled</b>

## Floppy Access Control

This option specifies the read/write access that is set when booting from a floppy drive. The settings are *Read/Write* or *Read-Only*.

## Hard Disk Access Control

This option specifies the read/write access that is set when booting from a hard disk drive. The settings are *Read/Write* or *Read-Only*.

## PS/2 Mouse Support

Set this option to *Enabled* to enable AMIBIOS support for a PS/2-type mouse. Pins 2-3 of the PS/2 Mouse Selector jumper on the motherboard must be shorted together to enable PS/2 mouse support. The settings are *Enabled* or *Disabled*.

## Primary Display

This option configures the type of monitor attached to the computer. The settings are *Mono*, *CGA40x25*, *CGA80x25*, *VGA/EGA*, or *Absent*.

## Password Check

This option enables password checking every time the system boots or when you run AMIBIOS Setup. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if AMIBIOS is executed. See the Advanced Setup chapter for instructions on changing a password.

---

## Boot To OS/2

Set this option to *Enabled* if running OS/2 operating system and using more than 64 MB of system memory on the motherboard. The settings are *Enabled* or *Disabled*.

## External Cache

This field configures system external cache (L2 cache).

Options	<b>Enabled (*)</b>
	<b>Disabled</b>

## System BIOS Cacheable

When set to *Enabled*, the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment are always copied from the BIOS ROM to system RAM for faster execution. The settings are *Enabled* or *Disabled*.

## Video Shadow

When enabled, the video BIOS will be copied to system memory and increase the video speed.

Options	<b>Enabled (*)</b>
	<b>Disabled</b>

## C8000-CBFFF Shadow / CC000-CFFFF Shadow / D0000-D3FFF Shadow

## D4000-D7FFF Shadow / D8000-DBFFF Shadow / DC000-DFFFF Shadow

When enabled, the extended ROM data located at the respective address range will be copied to system memory.

Options	<b>Enabled</b>
	<b>Disabled (*)</b>

---

## 3.4 Chipset Setup



This setup page is used to specify advanced features available through the chipset. The default settings have been chosen carefully for the most operating conditions.

**DO NOT change the value of any field in this setup page unless you fully understand what it means.**

### USB Function

Set this option to *Enabled* to enable USB (Universal Serial Bus) support. The settings are *Enabled* or *Disabled*.

### USB Keyboard/Mouse Legacy Support

Set this option to *Enabled* to enable support for older USB keyboards and mouse devices if the **USB Function** option is set to *Enabled*. The settings are *Enabled* or *Disabled*.

### DRAM Timing Latency

This option specifies the latency for the DRAM system memory signals. The settings are *Auto* (AMIBIOS automatically determines the optimal delay) or *Manual*.

### Gated Clock

This bit is used to control the internal clock regarding the Memory Data Bus. When this bit is "Enabled," the clock never stops. When this bit is "Disabled," M1541 will automatically stop the internal DRAM controller when there is no Memory Data Bus activity.

---

## Graphic Aperture Size:

Size of Programmable Frame Buffer. The Frame buffer Region should not overlap with local memory.

## VGA Frame Buffer

VGA frame buffer memory range.

## VGA DATA Merge

Linear\_Word\_Merge for Frame Buffer Cycle.

## Passive Release

When enabled, the south bridge ALI M1541 will support the Passive Release mechanism when it is a PCI master. The PCI revision 2.1 compliant requires this field to be enabled. This field is for experienced user only.

Options	<b>Enabled (*)</b>
	<b>Disabled</b>

## ISA Master Line Buffer

This setting enable or disable ISA Master line buffer.

Options	<b>Enabled (*)</b>
	<b>Disabled</b>

## Delay Transaction

Dealy transaction for PCI spec. 2.1 Enable/ Disable.

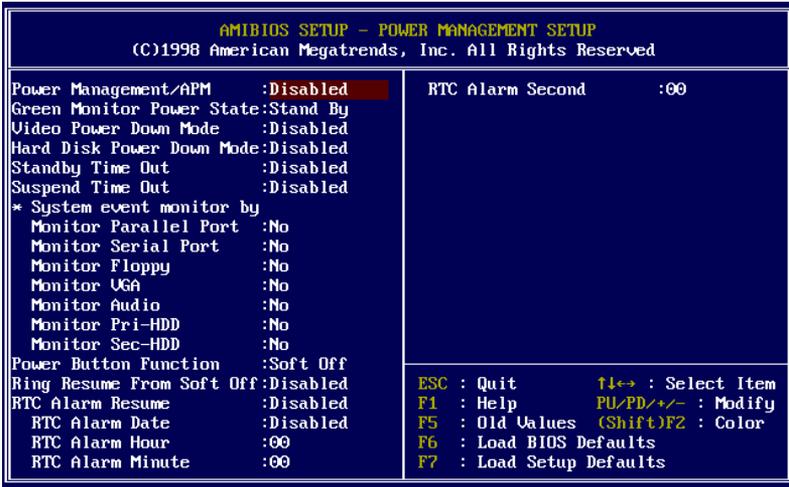
Options	<b>Enabled (*)</b>
	<b>Disabled</b>

## AT Bus Clock

This option is used to select I/O bus clock settings. Possible settings are derived from and vary according to system clock for example, at a system clock speed of 50MHz, selecting PCICLK/6 would result in a bus clock speed of 8.33MHz.

---

## 3.5 Power Management Setup



This setup page specifies power management features.

There are several modes used to save computer's energy:

### Standby Mode

The CPU clock will run at slower speed, And the fixed disk drive will be power off, and The video will be power off, and all other devices still operate at full speed

### Suspend Mode

All devices except the CPU will be shut off. Each power saving mode has a respective timer. The value of the timer can be assigned or reloaded and it will count down to zero. When the timer equal to zero, the system will be forced into the related power saving mode. If any predefined signal or event is detected during the timer counting period, the timer will be reloaded automatically.

### Power Management/APM

Set this option to *Enabled* to enable the chipset power management and APM (Advanced Power Management) features. The settings are *Enabled* or *Disabled*.

### Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are *Off*, *Standby*, *Suspend*, or *Disabled*.

---

## Video Power Down Mode

This field specifies the method that video subsystem used for power saving.

Options:     **Standby**  
              **Suspend**  
              **Disable**

## Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are *Disabled*, *Standby*, or *Suspend*.

## Standby/Suspend Timer Unit

This option specifies the unit of time used for the Standby and Suspend timeout periods. The settings are *4 msec*, *4 sec*, *32 sec*, or *4 min*.

## Standby Timeout

This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are *Disabled*, *4 msec*, *8 msec*, *12 msec*, *16 msec*, *up to 508 msec*, *in increments of 4 msec*

## Suspend Timeout

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are *Disabled*, *4 msec*, *8 msec*, *12 msec*, *16 msec*, *up to 508 msec*, *in increments of 4 msec*

## Power Button Function

This option specifies how the power button mounted externally on the computer chassis is used. The settings are:

Setting	Description
Soft Off	Pushing the power button turns the computer on or off.
Green	Pushing the Power button places the computer in Green mode.

## Ring Resume From Soft Off

When enabled, the system can be resume from power saving mode by MODEM ring signal.

Options       **Enabled**  
              **Disabled (\*)**

---

## **RTC Alarm Resume:**

When system is soft off state, set this option to Enable, the system will resume in the time set by The following option:

- RTC Alarm Date** Set the system resume time (date)
- RTC Alarm Hour** Set the system resume time (hour),
- RTC Alarm Minute** Set the system resume time (minute)
- RTC Alarm Second** Set the system resume time (second)

---

## 3.6 PCI/PnP Setup

Choose PCI/Plug and Play Setup from the AMIBIOS Setup screen to display the PCI and Plug and Play Setup options, described below.

AMIBIOS SETUP - PNP/PCI CONFIGURATION	
(C)1998 American Megatrends, Inc. All Rights Reserved	
Plug and Play Aware O/S :No	IRQ5 :PCI/PnP
Clear NVRAM on Every Boot:No	IRQ7 :PCI/PnP
PCI Latency Timer (PCI Clocks)	IRQ9 :PCI/PnP
PCI VGA Palette Snoop :Disabled	IRQ10 :PCI/PnP
OffBoard PCI IDE Card :Auto	IRQ11 :PCI/PnP
OffBoard PCI IDE Primary Disabled	IRQ12 :PCI/PnP
OffBoard PCI IDE Secondary Disabled	IRQ14 :PCI/PnP
Assign IRQ to PCI VGA :Yes	IRQ15 :PCI/PnP
PCI Slot1 IRQ Priority :Auto	
PCI Slot2 IRQ Priority :Auto	
PCI Slot3 IRQ Priority :Auto	
PCI Slot4 IRQ Priority :Auto	
DMA Channel 0 :PnP	
DMA Channel 1 :PnP	
DMA Channel 3 :PnP	
DMA Channel 5 :PnP	
DMA Channel 6 :PnP	
DMA Channel 7 :PnP	
IRQ3 :PCI/PnP	ESC : Quit T4← : Select Item
IRQ4 :PCI/PnP	F1 : Help PU/PD/+/− : Modify
	F5 : Old Values (Shift)F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

### Plug and Play Aware O/S

The field specifies whether a Plug and Play operating system is installed.

Option	Yes
	No

### Clear NVRAM on Every Boot

When set this option to Yes, the data in the NVRAM will be cleared during every booting.

### PCI Latency Timer (PCI Clocks)

This option specifies the latency timings (in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are 32, 64, 96, 128, 160, 192, 224, or 248.

### PCI VGA Palette Snoop

When this option is set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example: if there are two VGA devices in the computer (one PCI and one ISA) and:

VGA Palette Snoop Bit	Action
<i>Disabled</i>	Data read and written by the CPU is only directed to the PCI VGA device's palette registers.
<i>Enabled</i>	Data read and written by the CPU is directed to the both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

This option must be set to *Enabled* if any ISA adapter card installed in the system requires VGA palette snooping.

### **Offboard PCI IDE Card**

This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the motherboard onboard IDE controller is automatically disabled. The settings are *Disabled*, *Auto*, *Slot1*, *Slot2*, *Slot3*, *Slot4*, *Slot5*, or *Slot6*. If *Auto* is selected, AMIBIOS automatically determines the correct setting. This option forces IRQ 14 and 15 to a PCI slot on the PCI local bus. This is necessary to support non-compliant PCI IDE adapter cards.

### **Offboard PCI IDE Primary IRQ**

This option specifies the PCI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The settings are *Disabled*, *Hardwired*, *INTA*, *INTB*, *INTC*, or *INTD*.

### **Offboard PCI IDE Secondary IRQ**

This option specifies the PCI interrupt used by the secondary IDE channel on the offboard PCI IDE controller. The settings are *Disabled*, *Hardwired*, *INTA*, *INTB*, *INTC*, or *INTD*.

### **Assign IRQ To PCI VGA**

Set this option to *Yes* to allocate an IRQ to the VGA device on the PCI bus. The settings are *Yes* or *No*.

**PCI Slot1 IRQ Priority**

**PCI Slot2 IRQ Priority**

**PCI Slot3 IRQ Priority**

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## PCI Slot4 IRQ Priority

These options specify the IRQ priority for PCI devices installed in the PCI expansion slots. The settings are *Auto*, (*IRQ*) *3, 4, 5, 7, 9, 10*, and *11*, in priority order.

### DMA Channel 0

### DMA Channel 1

### DMA Channel 3

### DMA Channel 5

### DMA Channel 6

### DMA Channel 7

These options allow you to specify the bus type used by each DMA channel. The settings are *PnP* or *ISA/EISA*.

### IRQ3

### IRQ4

### IRQ5

### IRQ7

### IRQ9

### IRQ10

### IRQ11

### IRQ12

### IRQ14

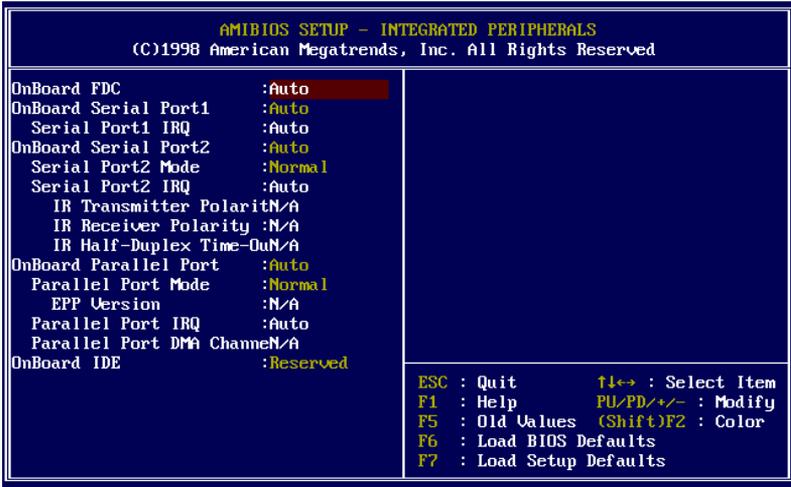
### IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards. These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an *ISA/EISA* setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as *PCI/PnP*. **IRQ12** only appears if the **Mouse Support** option in Advanced Setup is set to *Disabled*. IRQ14 and 15 will not be available if the onboard PCI IDE is enabled. If all IRQs are set to *ISA/EISA* and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are *ISA/EISA* or *PCI/PnP*.

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## 3.7 Integrated Peripherals Setup

Peripheral Setup options are displayed by choosing Peripheral Setup from the AMIBIOS Setup main menu. All Peripheral Setup options are described here.



### Onboard Floppy Controller

This field enables or disables the onboard floppy controller.

Options      **Enabled (\*)**  
             **Disabled**

### Onboard Serial Port1/2

These fields configure the onboard serial ports. There are several port addresses and IRQ channel can be selected.

Options	Description
<b>3F8 / IRQ 4</b>	Port address 3F8h, IRQ 4
<b>2F8 / IRQ 3</b>	Port address 2F8h, IRQ 3
<b>3E8 / IRQ 4</b>	Port address 3E8h, IRQ 4
<b>2E8 / IRQ 3</b>	Port address 2E8h, IRQ 3
<b>AUTO</b>	BIOS assigns port address and IRQ channel automatically
<b>Disable</b>	Disable serial port

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## Serial Port2 Mode

This option specifies the operating mode for serial port 2. This option only appears if the **Onboard Serial Port2** option is not set to **Auto** or **Disabled**. The settings are *IR* (infrared) or *Normal*.

## IR Transmitter

This option specifies the type of transmission used by the infrared devices attached to serial port 2. This option only appears if the **Onboard Serial Port2** option is not set to **Auto** or **Disabled**. The settings are *1.6 uS* or *3/16 Baud*. There are no default settings.

## IR Duplex Mode

This option specifies the type of duplexing used for infrared on serial port 2. This option only appears if the **Onboard Serial Port2** option is not set to **Auto** or **Disabled**. The settings are *Half* or *Full*. There are no default settings.

## IR Receiver Polarity

This option specifies the type of receiving used by infrared on serial port 2. This option only appears if the **Onboard Serial Port 2** option is not set to **Auto** or **Disabled**. There are no default settings.

## Onboard Parallel Port

This field configures the onboard parallel port. There are several port addresses and IRQ channel can be selected.

Options	Description
<b>378 / IRQ 7</b>	Port address 378h, IRQ 7
<b>278 / IRQ 5</b>	Port address 278h, IRQ 5
<b>3BC / IRQ 7</b>	Port address 3BCh, IRQ 7
<b>Disable</b>	Disable parallel port

## Parallel Port Mode

This option specifies the parallel port mode.

The settings are:

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Setting	Description
<i>Normal</i>	The normal parallel port mode is used.
<i>Bi-Dir</i>	Use this setting to support bi-directional transfers on the parallel port.
<i>EPP</i>	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.
<i>ECP</i>	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bi-directional communication.

### **EPP Version**

This option specifies the Enhanced Parallel Port specification version number that is used in the system. This option only appears if the **Parallel Port Mode** option is set to *EPP*. The settings are *1.7* or *1.9*.

### **Parallel Port DMA Channel**

This option is only available if the setting for the **Parallel Port Mode** option is *ECP*. This option sets the DMA channel used by the parallel port. The settings are *DMA Channel0*, *1*, or *3*.

### **Parallel Port IRQ**

This option specifies the IRQ used by the parallel port. The settings are *Auto*, (*IRQ*) *5*, or (*IRQ*) *7*.

### **Onboard IDE**

This option specifies the IDE channel used by the onboard IDE controller. The settings are *Disabled*, *Primary*, or *Secondary*.