

**BXA**  
**Pentium II<sup>®</sup> Mainboard**

**User's Manual**

**Model** : BXA  
**Manual version** : English, version 1.0  
**Release Date** : June 31, 1998

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## FCC & & DOC Compliance

### Federal Communications Commission Statement

This device complies with FCC Rules Part 15. Operation is subject to the following two conditions:

- ✧ This device may not cause harmful interference, and
- ✧ This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer

communication. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ✧ Re-orient or relocate the receiving antenna.
- ✧ Increase the separation between the equipment and the receiver.
- ✧ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- ✧ Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- ✧ Consult the dealer or an experienced radio/TV technician for help.

**Warning! The use of shielded cables for the connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this authority to operate this equipment.**

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# SECTION 1.

## PRODUCT INFORMATION

Thanks for purchasing BXA Pentium II mainboard.

This user' s manual contains all the information and features that show you how to use the BXA mainboard. Please take a moment to familiarize yourself with the design and organization of this manual.

### 1-1 Manual Features

This manual is divided into the following four sections:

#### **Section 1: Product Information**

A brief overview of what comes in the mainboard package, the mainboard layout and the specification it appears.

#### **Section 2: Hardware Installation**

Tell you the usage of the mainboard jumpers and the connectors.

#### **Section 3: CMOS Setup Utility**

A summary of the mainboard CMOS (BIOS) Setting.

#### **Section 4: BIOS/Software Utility**

Introduction of some useful mainboard BIOS/Software utility.

### 1-2 Package Check List

This BXA mainboard package contains the following items. Please inspect the package contents and confirm that everything is there. If anything is missing or damaged, call your vendor for instructions before operating.

# I. PRODUCT INFORMATION

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The package includes:

- One BXA Mainboard
- One Pentium II Retention Module
- One Floppy Interface Cable
- One IDE Interface Cable
- One CD Title including Bus Master IDE Driver and Utilities
- One User' s Manual

## 1-3 Mainboard Specification

<b>Form Factor</b>	<ul style="list-style-type: none"><li>● ATX form factor</li></ul>
<b>Board Size</b>	<ul style="list-style-type: none"><li>● 30.48 cm x 19 cm</li></ul>
<b>CPU</b>	<ul style="list-style-type: none"><li>● Supports Pentium II CPUs 233 ~ 450 MHz</li></ul>
<b>System Memory</b>	<ul style="list-style-type: none"><li>● DIMM 168-pin x 3 , SDRAM maximum 768MB</li><li>● Supports 64M-bit SDRAM technology</li></ul>
<b>Chipset</b>	<ul style="list-style-type: none"><li>● Intel 440BX AGP Chipset</li></ul>
<b>System Bus/FSB</b>	<ul style="list-style-type: none"><li>● 66/100MHz</li><li>● 75/83.3/112/124/133MHz (Available for over-clocking)</li></ul>
<b>Expansion Slots</b>	<ul style="list-style-type: none"><li>● 1 x AGP bus</li><li>● 2 x ISA bus</li><li>● 5 x PCI bus with Bus master mode</li></ul>
<b>Serial Port</b>	<ul style="list-style-type: none"><li>● Two serial ports UART 16C550 compatible</li><li>● Sets serial port 2 to operate in normal mode , IrDA or ASKIR</li></ul>
<b>Parallel Port</b>	One parallel port supports : <ul style="list-style-type: none"><li>● SPP-standard parallel port</li><li>● EPP-enhanced parallel port</li><li>● ECP-extended capabilities port</li></ul>
<b>Floppy Interface</b>	Supports drives inches/format with:

## I. PRODUCT INFORMATION

	<ul style="list-style-type: none"> <li>● 3.5 inches–720KB/1.44MB/2.88MB</li> <li>● 5.25 inches–360KB/1.2MB</li> </ul>
<b>IDE Interface</b>	<ul style="list-style-type: none"> <li>● Dual PCI IDE interface support up to 4 x IDE HDD or CDROM</li> <li>● Supports PIO mode 4 , DMA mode 2 and Ultra DMA 33</li> </ul>
<b>USB Interface</b>	<ul style="list-style-type: none"> <li>● Two USB ports supported</li> <li>● USB legacy keyboard function supported</li> </ul>
<b>PS/2 Mouse</b>	<ul style="list-style-type: none"> <li>● PS/2 mouse supported by connector onboard</li> </ul>
<b>Keyboard</b>	<ul style="list-style-type: none"> <li>● PS/2 keyboard by connector onboard</li> </ul>
<b>Fuse</b>	<ul style="list-style-type: none"> <li>● Supports recoverable fuse for USB and KB/Mouse</li> </ul>
<b>RTC and Battery</b>	<ul style="list-style-type: none"> <li>● RTC build in chipset (south bridge PIIX4)</li> <li>● Lithium (CR-2032) battery</li> </ul>
<b>Wake Up Function</b>	<ul style="list-style-type: none"> <li>● Modem ring wake up</li> <li>● LAN wake up</li> <li>● RTC Alarm wake up</li> </ul>
<b>Synchronous Switching Regulator</b>	<ul style="list-style-type: none"> <li>● High efficient synchronous switching regulator for CPU core voltage from 2.0V to 3.5V</li> <li>● Supports over-voltage / over-current protection function</li> </ul>
<b>Hardware Monitor (Optional)</b>	<ul style="list-style-type: none"> <li>● Fan speed monitor–Two fan connectors , warning when CPU or Housing fan is malfunction</li> <li>● Voltage monitor–Warning when system voltage (5V,12V,3.3V,VCORE) are abnormal</li> <li>● CPU and system thermal monitor–Warning when CPU and system temperature is higher than a predefined value</li> </ul>
<b>Power Connector</b>	<ul style="list-style-type: none"> <li>● Supports ATX(20-pin) power connector</li> </ul>
<b>Power On Function</b>	<ul style="list-style-type: none"> <li>● Panel switch power on</li> <li>● Keyboard power on (optional)</li> </ul>
<b>BIOS</b>	<ul style="list-style-type: none"> <li>● Award BIOS</li> <li>● Year 2000 Compliance</li> </ul>

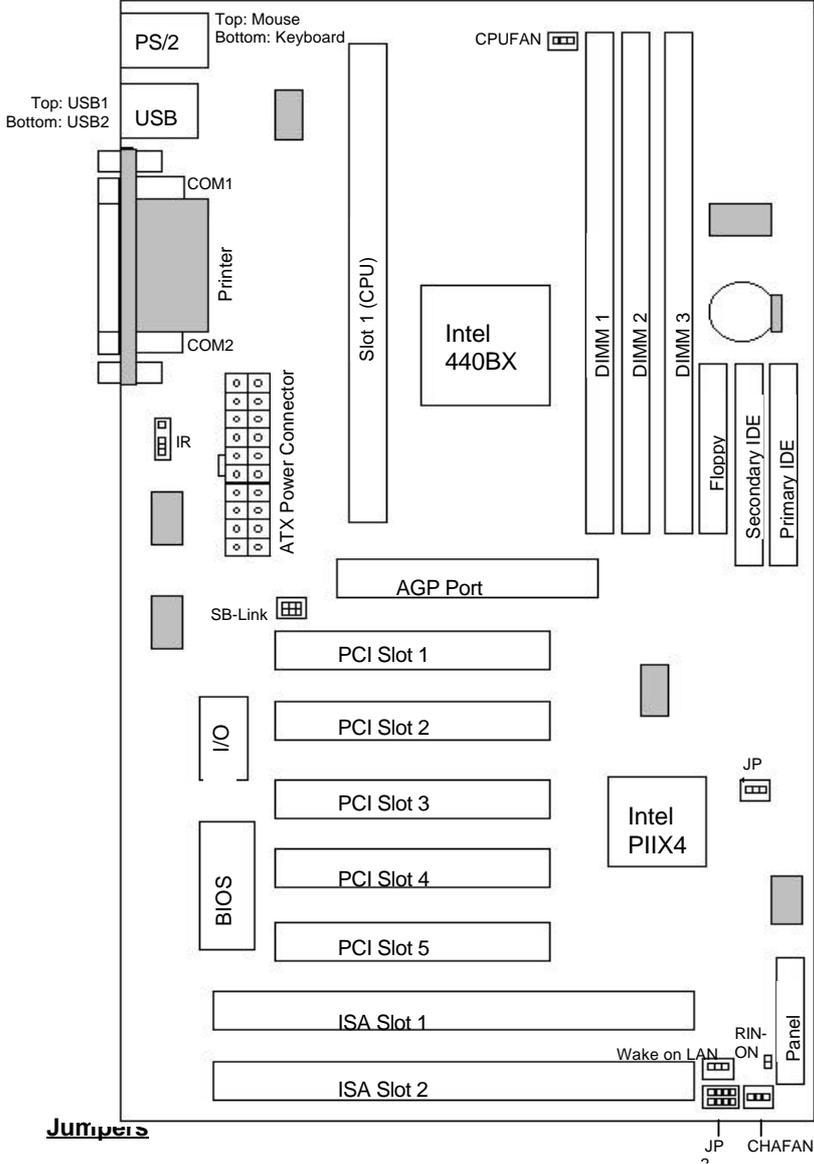
## I. PRODUCT INFORMATION

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	<ul style="list-style-type: none"><li>● PCI 2.1 Compliance</li><li>● PnP BIOS v1.0a Compliance</li><li>● APM v1.2 Compliance</li><li>● DMI 2.0 compliance</li><li>● Flash/Upgrade BIOS protection</li><li>● Supports ACPI (Advanced Configuration and Power Interface) and OS Directed Power Management</li><li>● Supports SOFT power</li><li>● Virus warning supported</li><li>● Floppy drive swapping function supported</li></ul>
<b>LED Indicator</b>	<ul style="list-style-type: none"><li>● System power LED</li><li>● HDD activity LED</li></ul>
<b>SB-Link Connector (Optional)</b>	<ul style="list-style-type: none"><li>● Supports Creative PCI sound card</li></ul>

### 1-4 Mainboard Layout

# I. PRODUCT INFORMATION



# I. PRODUCT INFORMATION

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- |                   |   |
|-------------------|---|
| 1. JP1            | Clear CMOS (Real Time Clock)                              |
| 2. JP2            | CPU Clock Ratio & CPU Type                                |
| 3. JP3 (Optional) | Power On Mode (Keyboard Power On / Panel Switch Power On) |

## Expansion Sockets

- |           |                             |
|-----------|-----------------------------|
| 1. DIMM 1 | Support 168-pin DIMM Memory |
| 2. DIMM 2 | Support 168-pin DIMM Memory |
| 3. DIMM 3 | Support 168-pin DIMM Memory |

## Expansion Slots

- |                         |                                      |
|-------------------------|--------------------------------------|
| 1. CPU                  | Slot 1 for supporting Pentium II CPU |
| 2. ISA Slot 1 & Slot 2  | 16-bit ISA Bus Expansion Slot        |
| 3. PCI Slot 1 to Slot 5 | 32-bit PCI Bus Expansion Slot        |

## Connectors

- |                        |  |
|------------------------|--|
| 1. PS/2 KB             | PS/2 Keyboard Connector (6-pin female)                       |
| 2. PS/2 Mouse          | PS/2 Mouse Connector (6-pin female)                          |
| 3. USB                 | Universal Serial Bus Port 1 and Port 2<br>(two 4-pin female) |
| 4. COM1/COM2           | Serial Port 1 / Serial Port 2 (two 9-pin female)             |
| 5. PRINTER             | Printer (Parallel) Port Connector (25-pin female)            |
| 6. ATX POWER           | ATX Mainboard Power Connector (20-pin block)                 |
| 7. CPUFAN              | Pentium II CPU Fan Connector (3 pins)                        |
| 8. CHAFAN              | Chassis Fan Connector (3 pins)                               |
| 9. Floppy              | Floppy Drive Connector (34 pins)                             |
| 10. Primary IDE        | Primary IDE Connector (40 pins)                              |
| 11. Secondary IDE      | Secondary IDE Connector (40 pins)                            |
| 12. IR                 | Infrared Port Connector (5 pins)                             |
| 13. RIN-ON             | Internal Modem Ring-On                                       |
| 14. SB-LINK (Optional) | Creative PCI Sound Card Link                                 |
| 15. Panel:             |  |

## I. PRODUCT INFORMATION

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- **PWR LED** ATX Power LED Connector (3 pins)
- **KBLCK** Keyboard Lock Switch Connector (2 pins)
- **SLP** Suspend Switch Connector (2 pins)
- **SPEAKER** Chassis Speaker Connector (4 pins)
- **GRN LED** Green Status LED Connector (3 pins)
- **HDD LED** HDD LED Connector (4 pins)
- **RESET** Reset Switch Connector (2 pins)
- **PWR ON** ATX Power Switch Connector (2 pins)

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## SECTION 2.

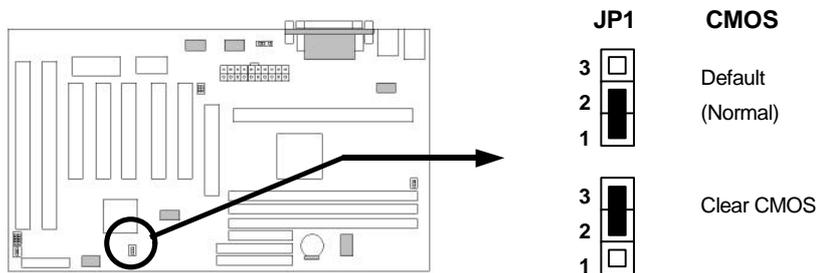
# HARDWARE INSTALLATION

This section gives you a step-by-step procedure on how to install your system. Follow each section accordingly.

### 2-1 Jumper Settings

Please refer the following figures for the locations of the jumpers on the mainboard.

#### 2-1.1 CMOS Clear Setting



To clear CMOS, please follow the steps below:

1. Power off the system and unplug the chassis AC power cord.
2. Short JP1 at pin 2-3 for few seconds.
3. Set JP1 back to its Normal position at pin 1-2.
4. Plug the AC power cord to the chassis.
5. Power on the system and load the BIOS setup default.

## II.HARDWARE INSTALLATION

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### 2-1.2 CPU Type Setting

This mainboard supports jumperless CPU type setting, no jumper or switch is needed. Select your Intel Pentium II CPU under "CHIPSET FEATURES SETUP" in BIOS(CMOS) Setup Menu.

The Intel Pentium II CPU currently available in the market are listed as below:

<b>CPU Type</b>	<b>CPU Clock Ratio</b>	<b>CPU Clock Frequency</b>
Intel Pentium II 233	3.5x	66MHz
Intel Pentium II 266	4x	66MHz
Intel Pentium II 300	4.5x	66MHz
Intel Pentium II 333	5x	66MHz
Intel Pentium II 350	3.5x	100MHz
Intel Pentium II 400	4x	100MHz
Intel Pentium II 450	4.5x	100MHz

This mainboard also supports CPU over-clocking by adjusting the CPU Clock Frequency and CPU Clock Ratio under BIOS Setup.

$$\text{System Frequency} = \text{CPU Clock Ratio} * \text{CPU Clock Frequency}$$

The available settings are:

**- CPU Clock Frequency**

66 / 68.5 / 75.0 / 83.3 / 100 / 103 / 112 / 124 / 133MHz

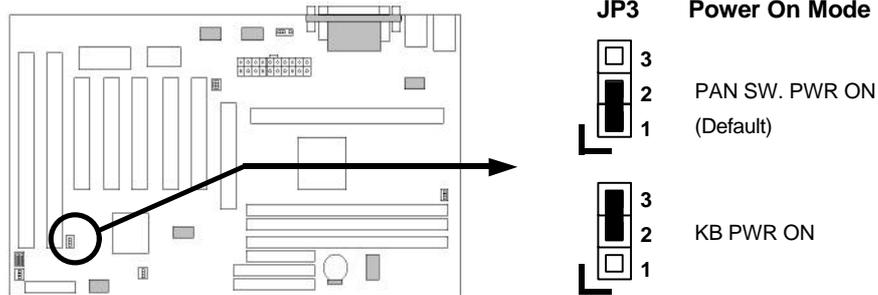
**- CPU Clock Ratio**

5x / 2x / 2.5x / 3x / 3.5x / 4x / 4.5x / 5x / 5.5x / 6x / 6.5x / 7x / 7.5x / 8x

**Warning:** Normally, Intel Pentium II CPU supports 66/100MHz, the other CPU Clock Frequency 75.0/83.3//103/112/124/133MHz are available only for internal test or end-user over-clocking testing, which may cause your system unstable or serious damage.

## II.HARDWARE INSTALLATION

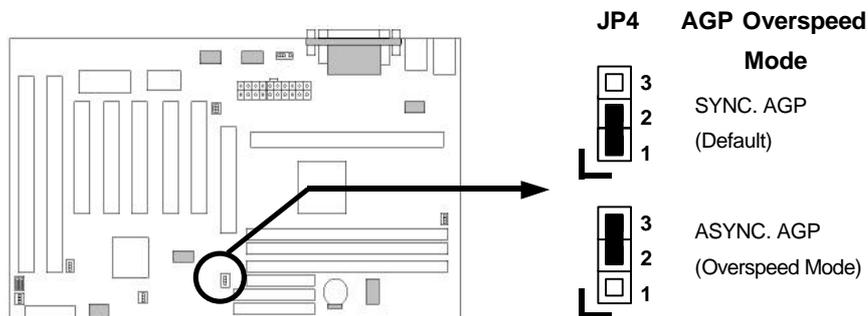
### 2-1.3 Power On Mode (Optional)



The mainboard supports two kinds of system power on mode, panel switch power on (**PAN SW. PWR ON**) mode and keyboard power on (**KB PWR ON**) mode. Set JP3 at pin 1-2 to use power switch/button to power on your system.

If you want to use the “Keyboard Power On” function, make sure you have a 300mA/+5VSB or above ATX power supply and the supporting mainboard BIOS. Set JP3 at pin 2-3 to enable the keyboard power on mode.

### 2-1.4 AGP Overspeed Mode (Optional)



The mainboard supports AGP Overspeed Mode. Set JP3 at pin 2-3, **ASYN. AGP (Overspeed Mode)**, for better AGP performance if your system is running overclocking. Set JP3 at pin 1-2 for default AGP operation.

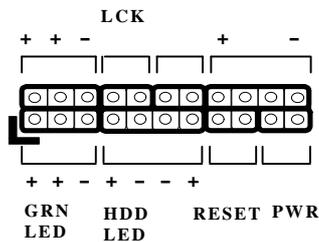
**Note:** The maximum clock of the AGP specification is 66MHz. If the system bus clock is larger than 66MHz, you can set this jumper to pin 2-3 to force AGP clock synchronize with bus clock. However, doing so may probably cause your system unstable or serious damage

## II.HARDWARE INSTALLATION

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### 2-2 Connectors

#### 2-2.1 Panel Connector



- **PWR LED** ATX Power LED Connector (3 pins)
- **KBLCK** Keyboard Lock Switch Connector (2 pins)
- **SLP** Suspend Switch Connector (2 pins)
- **SPEAKER** Chassis Speaker Connector (4 pins)
- **GRN LED** Green Status LED Connector (3 pins)
- **HDD LED** HDD LED Connector (4 pins)
- **RESET** Reset Switch Connector (2 pins)
- **\* PWR ON** ATX Power Switch Connector and Suspend Switch Connector (2 pins)

#### \* PWR ON: ATX Power Switch and Suspend Switch Connector

Attach the ATX power button or suspend switch cable to this connector.

In the ATX power system, this connector will be not only an ATX power button, but a suspend switch as well. Details are describes as below:

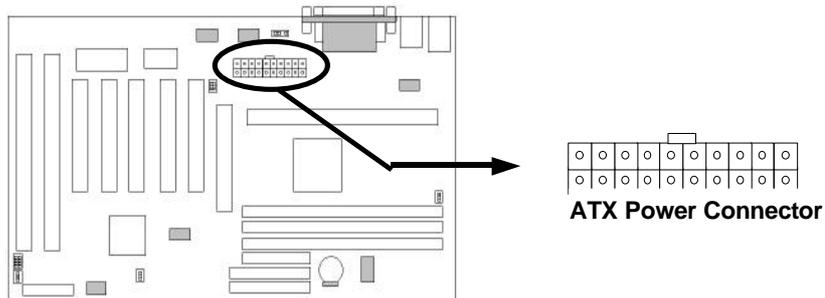
When the system is off, push the power button to turn the system on. When the system is on, push the power button rapidly within 4 seconds to switch the system to the suspend mode, and, by pushing and holding the button for more than 4 seconds, it will turn the system completely off. When the system is in the suspend mode, push the power button rapidly to turn the system on.

When the system is in suspend mode, the **GRN LED** will flash. And when the system is in normal working mode, the **GRN LED** will not work.

## II.HARDWARE INSTALLATION

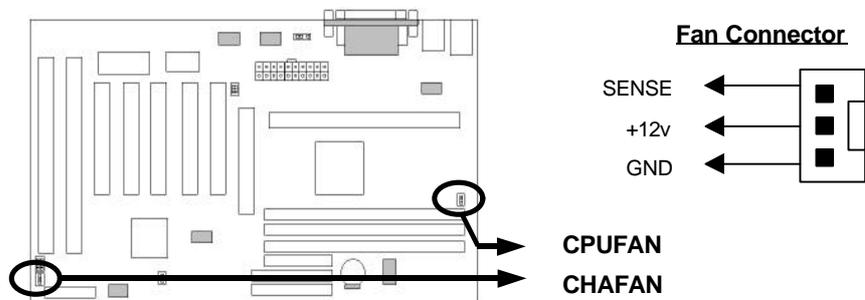
### 2-2.2 Power Connector

Connect the 20-pin ATX power supply cable to this power connector. Make sure the right plug-in direction and the power supply is off before connecting or disconnecting the power cable.



### 2-2.3 Fan Connectors

Connect the CPU and Chassis Fan cables to the fan connectors shown below. The fan connectors are marked as: **CPUFAN** and **CHAFAN** on the motherboard.

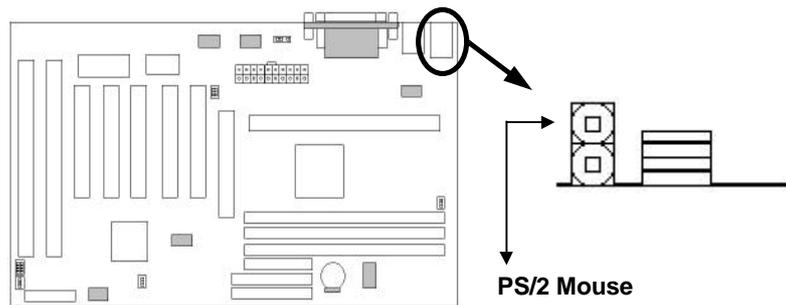


## II.HARDWARE INSTALLATION

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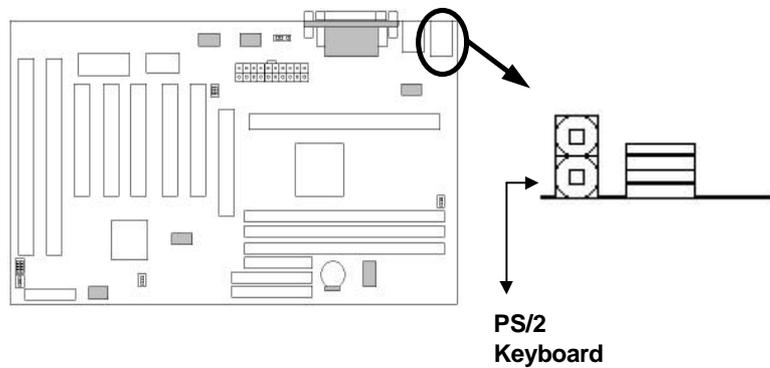
### 2-2.4 PS/2 Mouse Connector

Connect the PS/2 mouse to the onboard 6-pin Mini-Din connector marked as **MOUSE**.



### 2-2.5 Keyboard Connector

Connect the PS/2 keyboard to the onboard 6-pin Mini-Din connector marked as **KB**.

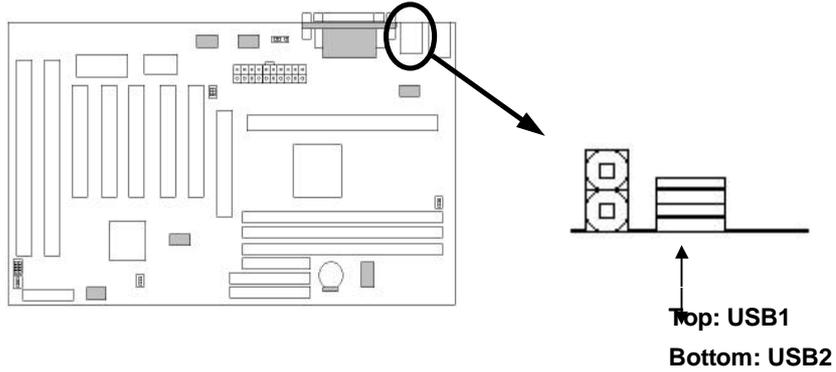


## II.HARDWARE INSTALLATION

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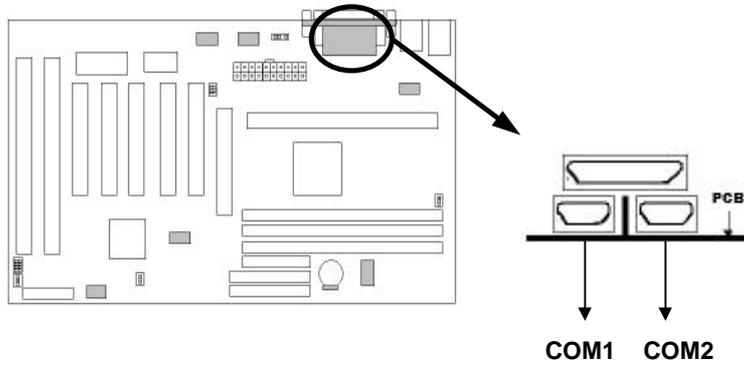
### 2-2.6 USB Device Connector

Connect your USB device(s) to the onboard USB connector marked as **USB**.



### 2-2.7 Serial Device(COM1/COM2) Connectors

Connect your serial device(s) to the onboard 9-pin serial connectors marked as **COM1** and **COM2**.

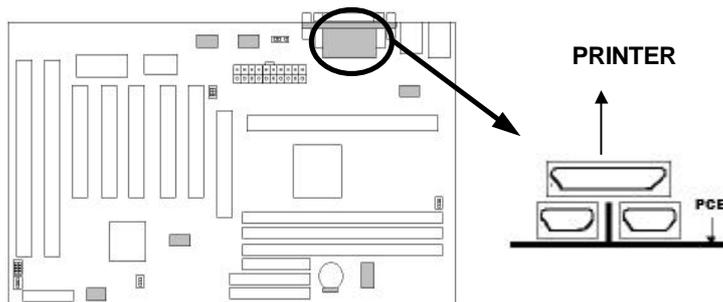


## II.HARDWARE INSTALLATION

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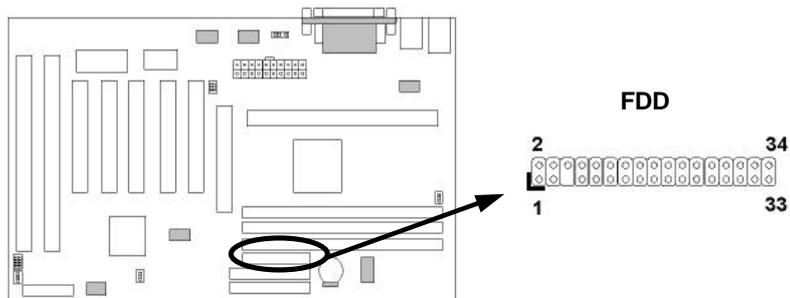
### 2-2.8 Printer Connector

Connect your local printer to the onboard 25-pin printer connector marked as **PRINTER**.



### 2-2.9 Floppy Drive Connector

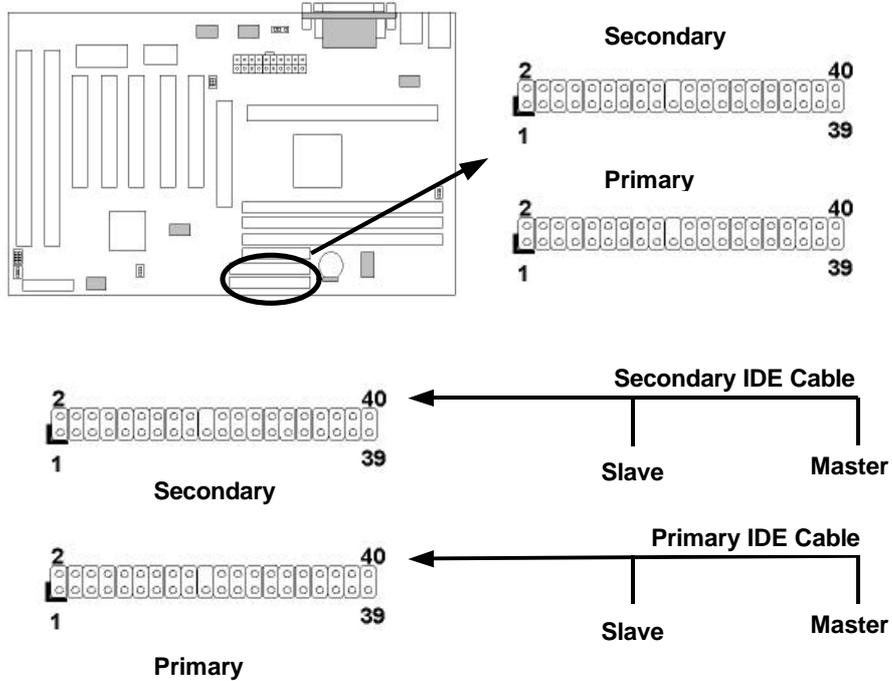
Connect the floppy drive cable to the onboard 34-pin floppy drive connector marked as **FDD**.



### 2-2.10 IDE Hard Disk and CD-ROM Connector

Connect your IDE devices to the onboard 40-pin IDE connectors marked as **Primary** and **Secondary**.

## II.HARDWARE INSTALLATION

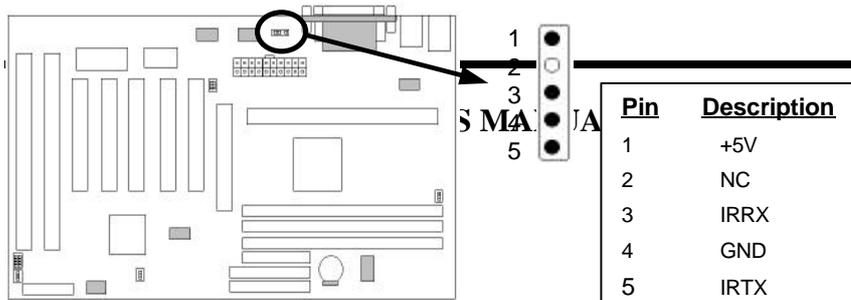


It is suggested that you connect the IDE devices to your IDE cables as the figure shown above. Each IDE channel, either Primary or Secondary, supports two IDE devices which must be set differently to master mode and slave mode.

(Refer to your hard disk and CD-ROM user's manual for detailed settings of IDE master and slave mode.)

### 2-2.11 IrDA Connector

Connect your IR device to the onboard IrDA connector marked as **IR**.

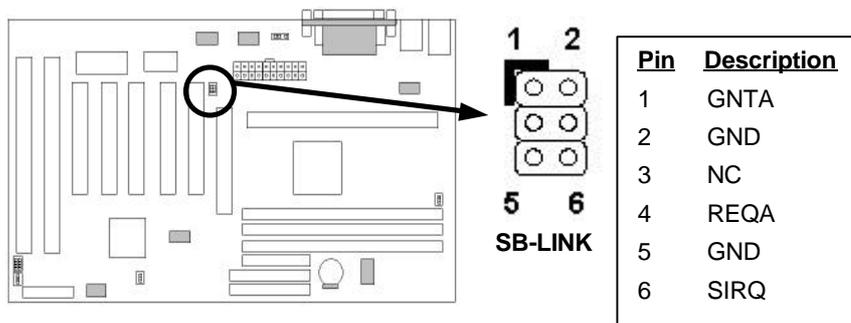


## II.HARDWARE INSTALLATION

IR

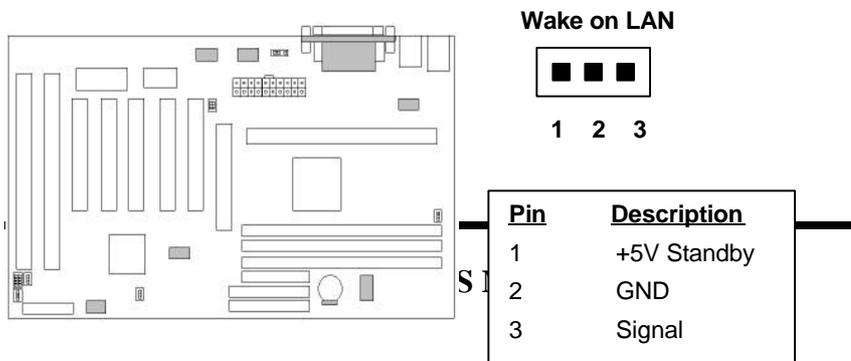
### 2-2.12 SB-LINK Connector (Optional)

If you have a Creative PCI sound card installed in your system, connect the sound card to this SB-LINK connector for compatibility issue under DOS environment.



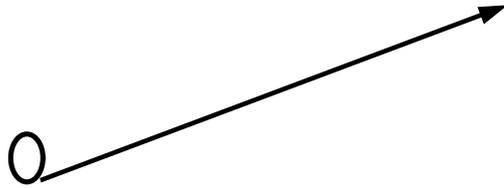
### 2-2.13 Wake on LAN Connector

This mainboard supports wake up on LAN function. To use this function, you need a Wake on LAN supported network card and software.



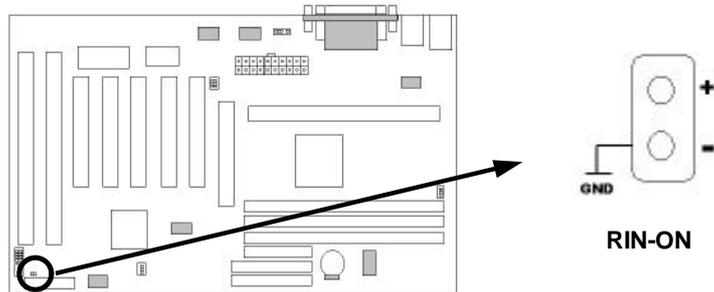
## II.HARDWARE INSTALLATION

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### 2-2.14 Ring-On Connector

Connect the internal modem to this onboard RIN-ON connector to support the modem ring-on function. To use this function, you need a ring-on supported modem card.

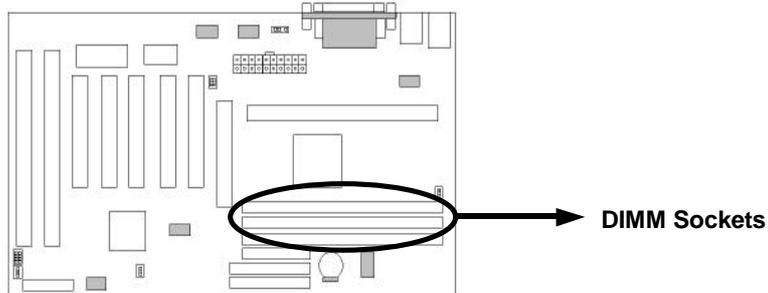


### 2-3 System Memory Installation

There are 3 pcs 168-pin **DIMM** (Dual Inline Memory Module) sockets on the mainboard which support Synchronous DRAM and Registered SDRAM, and allow you install system memory maximum up to 768MB.

## II.HARDWARE INSTALLATION

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### 2-3.1 Type

This mainboard supports Synchronous DRAM and Registered SDRAM. However, mixing SDRAM and Registered SDRAM is not allowed. Install one type only in your system for better compatibility.

### 2-3.2 Speed

The memory speed normally marked as: -15, -12, -10, -7, -8, PC-100.

The meaning is,

- 15 = 15ns, and the maximum clock is 66MHz
- 12 = 12ns, and the maximum clock is 83MHz
- 10 = 10ns, and the maximum clock is 100MHz
- 8 = 7ns, and the maximum clock is 125MHz
- 7 = 8ns, and the maximum clock is 142MHz
- PC-100 = New Intel specification for high memory speed  
with 100MHz or above CPU Bus Clock.

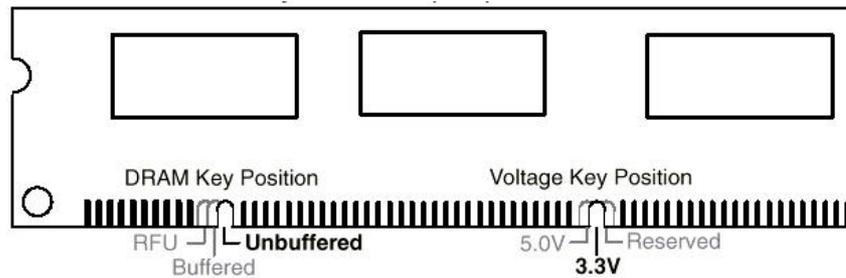
This motherboard supports all the above memory speed. For better system performance and reliability, we suggest that you use PC-100 SDRAM if 100MHz or above CPU Bus Clock is used in your system.

## II.HARDWARE INSTALLATION

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### 2-3.3 Buffered and Non-buffered

Only the non-buffered DIMM can be used in this mainboard.



The difference between buffered and non-buffered DIMM can be identified by the notch position shown above.

### 2-3.4 2-clock and 4-clock signal

Both 2-clock and 4-clock SDRAM DIMM supported by this mainboard.

### 2-3.5 Parity and Non-parity

This mainboard supports standard 64 bit (Non-parity) and 72 bit (Parity) DIMM modules.

### 2-3.6 Memory Auto detection by BIOS

## II.HARDWARE INSTALLATION

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This mainboard BIOS can automatically detect the DIMM memory size and type, so you do not need to adjust any hardware or software settings. The maximum memory size supported up to 768MB.

### 2-3.7 Suggested SDRAM combination

This mainboard supports the following SDRAM combination.

DIMM Location	DIMM Size	Max. Memory Size
DIMM 1	SDRAM 8, 16, 32, 64 128, 256MB	256MB
DIMM 2	SDRAM 8, 16, 32, 64 128, 256MB	256MB
DIMM 3	SDRAM 8, 16, 32, 64 128, 256MB	256MB
	Total System Memory	768MB

**Total Memory Size = DIMM1 + DIMM2 + DIMM3**

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## SECTION 4.

# BIOS/SOFTWARE UTILITY

### 4-1 Flash Utility MAXFLASH.EXE

This section tells you a step-by-step procedure on how to use the flash utility, "maxflash.exe", upgrade your mainboard BIOS.

To upgrade your motherboard BIOS, please follow the following:

1. For Win95 system, press F8 before Win95 boot-up, and select "Safe mode command prompt only".  
For Non-Win95 system, boot-up the system into DOS prompt with a bootable floppy disk.  
**!!!DO NOT load any memory manager like EMM386.EXE, QEMM386.EXE under config.sys.!!!**
2. Run **A:>maxflash biosfile.bin**
3. After loading the new BIOS code, the utility will prompt you to save original BIOS code into your HDD or floppy. Please press "Y" to store  
it as "BIOS.OLD".
4. After the old BIOS has been successfully saved, press "Y" to replace  
BIOS.
5. After the flashing process, reboot the system by turn off the power.  
**!!! DO NOT TURN OFF THE POWER DURING THE FLASHING PROCESS. !!!**
6. Press "DEL" key to enter BIOS setup during POST. Reload the "BIOS SETUP DEFAULT" and reconfigure other items as your previous set
7. Then save and exit.

## IV. BIOS/SOFTWARE UTILITY

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### 4-2 BIOS Flash/Upgrade Protection

This mainboard supports BIOS Flash/Upgrade protection which allows you protect your system BIOS being flashed by flash utility. We suggest you use this feature with Password Setting in BIOS to prevent your BIOS being flashed by flash utility.

To active the BIOS Flash/Upgrade protection, follow the steps below:

1. When the system boot up at POST (Power On Self- Test), press <Del> key to enter BIOS Setup Utility.
2. Set the "Flash/Upgrade BIOS" item in the "Integrated Peripherals" to Disabled.
3. Save the changes and exit Setup Utility.

, are so new, Win95 did not support them on Aug. of 1995

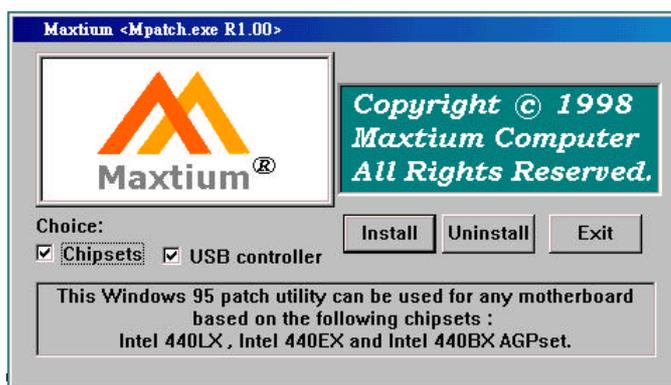
### 4-3 Remove Question Marks "?" in Win95 Device Manager

Since some of Intel 440BX/LX/EX latest technologies, like

which is the moment Win'95 formal released.

To solve this problem, please use the Maxtium Win95 patch utility – Mpatch.exe. You can find this utility under the directory \UTILITY in the bundled CD title.

After running the utility, you will see below screen. Select both



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## IV. BIOS/SOFTWARE UTILITY

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### **4-4 Install Bus Master IDE (Ultra DMA/33) Driver**

The Bus Master IDE (Ultra DMA/33) driver is available in the bundled CD title. You may run setup.exe directly to install the driver.

After installation, you will see following devices under Win95 Device Manager:

**--- Hard Disk Controllers**

**Intel 82371AB PCI Bus Master IDE Controller**

**Primary Bus Master IDE Controller**

**Secondary Bus Master IDE Controller**