P/E-P55T2P4D Motherboard

USER'S MANUAL

USER'S NOTICE

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The product name and revision number are both printed on the motherboard itself. Manual revisions are released for each design represented by the digit before the period and for additions or corrections represented by the digit after the period. The BIOS version noted below represents the current release during this manual revision.

Product Name: **P/E-P55T2P4D**
Product Rev: **2.0**
Manual Rev: **2.0**
BIOS Version: **#401A0-0103 or later**
Release Date: **August 1996**

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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 manufacturer's instructions, may cause harmful interference to radio communications. 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 receiver.
- 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 connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

I. INTRODUCTION

How this manual is organized

This manual is divided into the following sections:

I.   **Introduction:** Manual information and checklist
II. **Features:** Information and specifications concerning this product
III. **Installation:** Instructions on setting up the motherboard
IV. **BIOS Setup:** BIOS software setup information
V.   **DMI Utility:** BIOS supported Desktop Management Interface
VI. **PCI-SC200:** Installation of an optional SCSI card

Item Checklist

Please check that your package is complete. If you discover damaged or missing items, please contact your retailer.

☑   The P/E-P55T2P4D motherboard

☑   2 serial port ribbon cables attached to a mounting bracket

☑   1 parallel ribbon cable with mounting bracket

☑   1 IDE ribbon cable

☑   1 floppy ribbon cable

☑   1 diskette containing support software as follows:
   • Flash Memory Writer utility to update motherboard BIOS
   • Binary file containing a BIOS version
   • Desktop Management Interface (DMI) software
   • System Configuration Utility (SCU)
   • Readme files give instructions on use of the files

☑   1 diskette containing:
   • Onboard enhanced IDE driver

☑   1 diskette containing:
   • EISA Configuration Utility

☑   This user's manual

☐   ASUS 256/512KB Pipelined Burst Cache Module with TAG RAM

☐   Optional PS/2 mouse cable with mounting bracket

☐   Optional infrared module

☐   Optional PCI-SC200 Fast-SCSI card
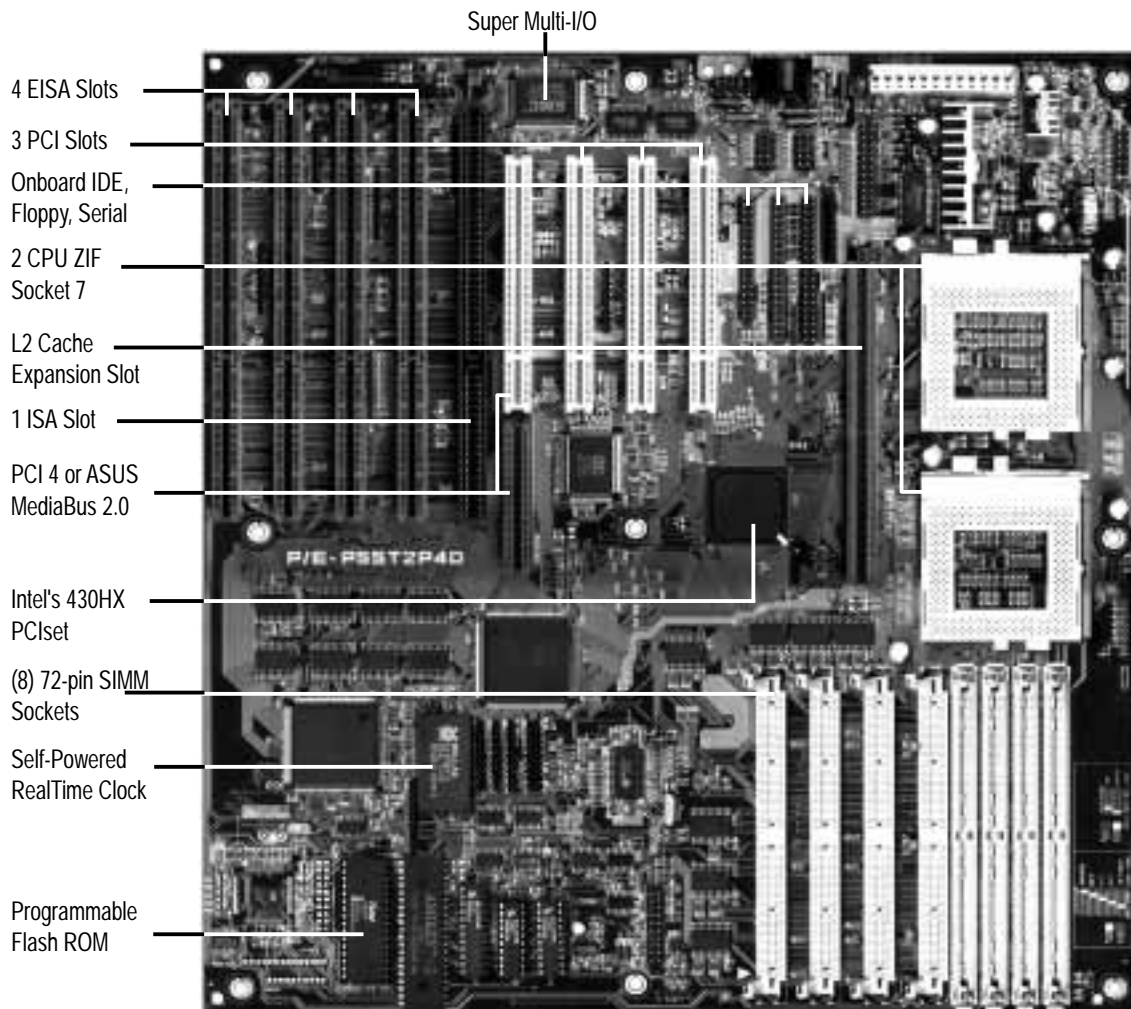
II. FEATURES

Features of This Motherboard

The P/E-P55T2P4D is carefully designed for the demanding corporate PC user who wants a high performance server motherboard that:

- **Easy Installation:** Is equipped with BIOS that supports auto detection of hard drives and Plug and Play to make setup of hard drives and expansion cards virtually automatic.

- **Multi-Processor/Multi-Speed Support:** Supports two Pentium CPU (75-200MHz). (See page 17)

- **Intel Chipset:** Features Intel's 430HX PCIset with EISA I/O subsystems.

- **Error Checking and Correcting (ECC):** Using Intel's 430HX PCIset together with parity DRAM modules can detect multi-bit memory errors and correct 1-bit memory errors.

- **Desktop Management Interface (DMI):** Supports DMI through BIOS which allows hardware to communicate within a standard protocol creating a higher level of compatibility (see section V).

- **L2 Cache:** This motherboard has 0KB cache onboard and uses a Pipelined Burst *Sychronous* cache module to upgrade to 256KB or 512KB **(See page 16 for compatible cache modules)**

- **Versatile DRAM Memory Support:** Supports eight 72-pin SIMMs of 4MB, 8MB, 16MB, 32MB, or 64MB to form a memory size between 8MB to 512MB. Supports both Fast Page Mode (FPM) and Extended Data Output (EDO) SIMMs (see page 14).

- **EISA, ISA, and PCI Expansion Slots:** Provides four 32-bit EISA slots, one 16-bit ISA slot, three 32-bit PCI slots, and one PCI/MediaBus 2.0 which allows the use of either a standard PCI card or the ASUS MediaBus Card.

- **ASUS MediaBus Rev 2.0:** Features an expansion slot extension shared with PCI Slot 4 for an optional high-performance expansion card which includes two functions in one easy-to-install card. **(For revision compatibility information, please refer to page 20.)**

- **Super Multi-I/O:** Provides two high-speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed from COM2 to the Infrared Module for wireless connections. Two floppy drives of either 5.25" or 3.5" (1.44MB or 2.88MB) are also supported without an external card. **The Japanese "Floppy 3 mode" (3.5" 1.2MB) floppy standard is also supported.**

- **NCR SCSI BIOS:** This motherboard has firmware that supports the optional ASUS PCI-SC200 SCSI controller cards. (see section VI)

II. FEATURES

- **PCI Bus Master IDE Controller:** Comes with an onboard PCI Bus Master IDE controller with two connectors that supports four IDE devices in two channels, provides faster data transfer rates, and supports Enhanced IDE devices such as CD-ROM drives. This controller supports PIO Modes 3 & 4 and Bus Master IDE DMA Mode 2. **BIOS supports IDE CD-ROM drive bootup.**

- **Optional IrDA and PS/2 Mouse Connector:** This motherboard supports an optional infrared port module for wireless interface and a PS/2 mouse cable set for connecting a PS/2 mouse.

Parts of the Motherboard

Super Multi-I/O

4 EISA Slots

3 PCI Slots

Onboard IDE, Floppy, Serial

2 CPU ZIF Socket 7

L2 Cache Expansion Slot

1 ISA Slot

PCI 4 or ASUS MediaBus 2.0

Intel's 430HX PCIset

(8) 72-pin SIMM Sockets

Self-Powered RealTime Clock

Programmable Flash ROM

Map of the Motherboard

III. INSTALLATION

Jumpers

Expansion Slots

Connectors

III. INSTALLATION

Installation Steps

Before using your computer, you must complete the following steps:

1. **Set Jumpers on the Motherboard**
2. **Install System Memory**
3. **Install the Central Processing Unit (CPU)**
4. **Install Expansion Cards**
5. **Connect Ribbon Cables, Cabinet Wires, and Power Supply**
6. **Setup the BIOS Software**

1. Jumpers

Several hardware settings are made through the use of jumper caps to connect jumper pins (JP) on the motherboard. See "Map of the Motherboard" on page 4 for locations of jumpers. The jumper settings will be described numerically such as [----], [1-2], [2-3] for no connection, connect pins 1&2, and connect pins 2&3 respectively. Pin 1 for our motherboards is always on top ▯ or on the left ▭ when holding the motherboard with the keyboard connector away from yourself. A "1" is written besides pin 1 on jumpers with three pins. The jumpers will also be shown graphically such as ▰▱ to connect pins 1&2 and ▱▰ to connect pins 2&3. Jumpers with two pins will be shown as ▰ for Short (On) and ▱ for Open (Off). For manufacturing simplicity, the jumpers may be sharing pins from other groups. Use the diagrams in this manual instead of following the pin layout on the board. Settings with two jumper numbers require that both jumpers be moved together. To connect the pins, simply place a plastic jumper cap over the two pins as diagramed.

> **WARNING:** Computer motheboards and components contain very delicate Integrated Circuit (IC) chips. To protect the motherboard and other components against damage from static electricity, you should follow some precautions whenever you work on your computer.
> 1. Unplug your computer when working on the inside.
> 2. Hold components by the edges and try not to touch the IC chips, leads, or circuitry.
> 3. Use a grounded wrist strap before handling computer components.
> 4. Place components on a grounded antistatic pad or on the bag that came with the component whenever the components are separated from the system.

III. INSTALLATION

Jumper Settings

1. **UART 2 Selection (JP24 & 25) (SMC37C665IR Only)**

   If your motherboard is using the SMC37C665IR chipset, besides changing the function of UART2 (serial, parallel, floppy, and infrared) in BIOS setup (see page 38), you must also change the following jumpers. If your motherboard is not using this chipset, UART2 is controlled through BIOS only and these jumpers will not be available on the motherboard.

UART2	COM2	Infrared
JP24	[1-2]	[2-3]
JP25	[1-2]	[2-3]

   UART 2 Selection (COM2 / Infrared)
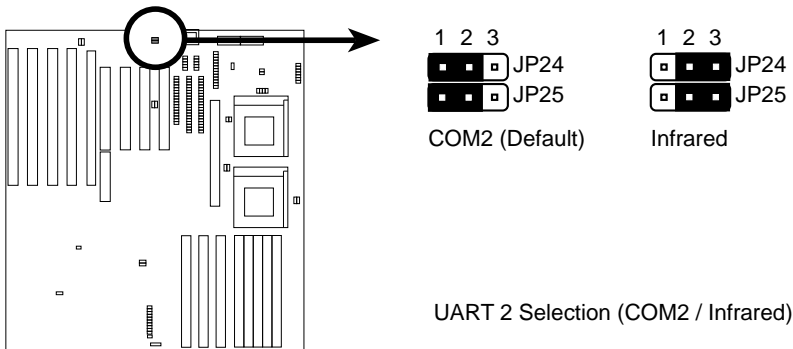
2. **ECP DMA Channel Selection (JP26&27) (SMC37C665IR/37C669)**

   If your motherboard is using the SMC37C665IR or SMC37C669 chipset, you can select DMA channels for the ECP function with the following jumpers. If your motherboard is not using the above chipsets, the DMA channel is controlled by BIOS and these jumpers will not be available.

DMA	JP27	JP26	
Channel 3	[2-3]	[2-3]	(Default)
Channel 1	[1-2]	[1-2]	

   ECP DMA Channel Selection (Channel 3 / Channel 1)
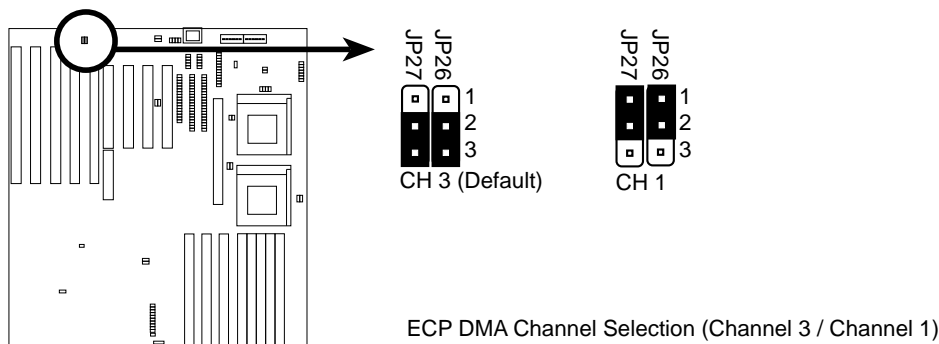
III. INSTALLATION

3-5. Processor Type

Depending on the type of processor that you install, you need to set these jumpers to select either Single Power Plane (such as the Intel P54C) or Split Power Planes (such as the Intel P55C) and set the different voltages under each type.

Power Type:		Single Power Plane	Single Power Plane	Split Power Planes	Split Power Planes	Split Power Planes	Split Power Planes
3. Voltage:		**STD**	**VRE**	**2.8**	**2.5**	**2.7**	**2.88**
	JP9	[open]	[open]	[short]	[short]	[short]	[short]
	JP10	[open]	[open]	[short]	[short]	[short]	[short]
	JP11	[short]	[short]	[open]	[open]	[open]	[open]
	JP12	[short]	[short]	[open]	[open]	[open]	[open]
	JP17	[1--2]	[1--2]	[2--3]	[2--3]	[2--3]	[2--3]
4. Vcore:	JP5	[open]	[open]	[open]	[open]	[open]	[open]
	JP6	[open]	[open]	[open]	[open]	[open]	[short]
	JP7	[open]	[open]	[open]	[open]	[short]	[open]
	JP8	[open]	[open]	[open]	[short]	[open]	[open]
	JP19	[open]	[open]	[short]	[open]	[open]	[open]
	JP20	[open]	[short]	[open]	[open]	[open]	[open]
	JP21	[short]	[open]	[open]	[open]	[open]	[open]
5. Vio:	JP3	[short]	[short]	[short]	[short]	[short]	[short]
	JP2	[open]	[open]	[open]	[open]	[open]	[open]
		(Default)					

NOTE: Processors using split power planes have not been tested. Support of processors using split power planes cannot be guranteed until each processor is available and fully tested.

III. INSTALLATION

3. Voltage Type (JP9, 10, 11, 12, 17)
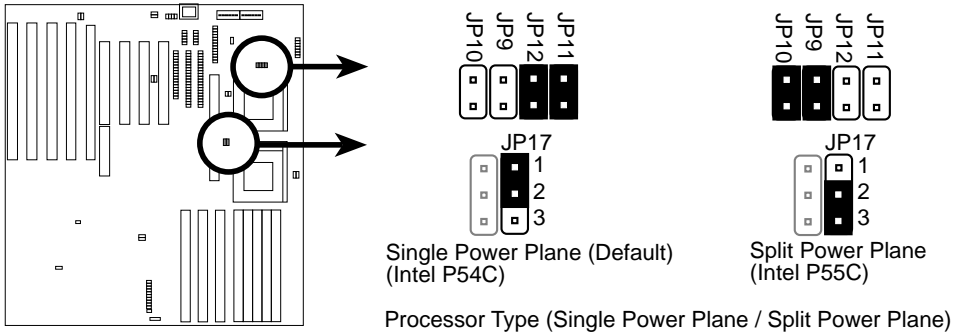
Single Power Plane (Default)
(Intel P54C)

Split Power Plane
(Intel P55C)

Processor Type (Single Power Plane / Split Power Plane)

4. Vcore (JP5, 6, 7, 8, 19, 20, 21)

Voltage Select for Vcore

STD 3.3V-3.465V
(Default)

VRE 3.4V-3.6V

Split 2.8V

Split 2.5V

Split 2.7V

Split 2.88V

5. Vio (JP2, 3)

STD 3.3V - 3.465V
(Default)

VRE 3.4V - 3.6V

Voltage Selection for Vio (STD / VRE)
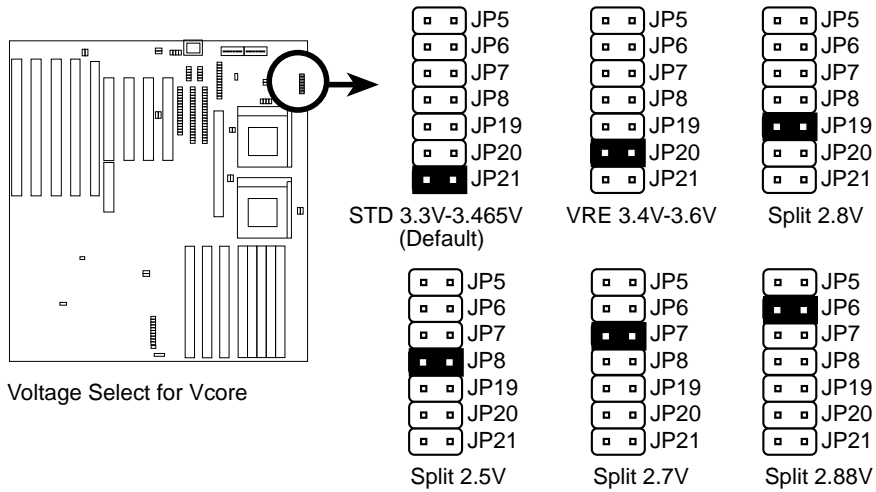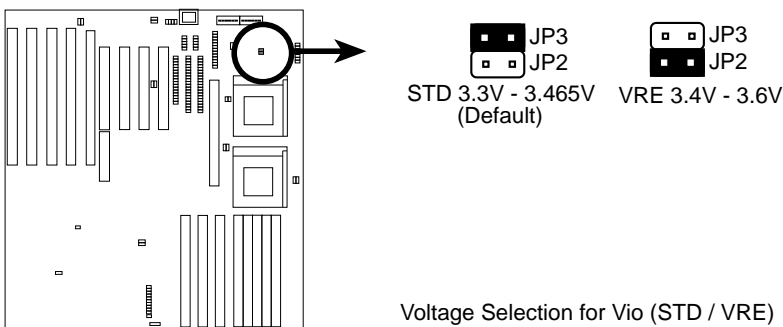
6. CPU to BUS Frequency Ratio (JP15 & 16)

These jumpers set the frequency ratio between the *Internal* frequency of the CPU and the *External* frequency (called the *BUS Clock*) within the CPU. These must be set together with the above jumpers *CPU External (BUS) Frequency Selection.*

7. CPU External (BUS) Frequency Selection (JP29 & 30)

These jumpers instructs the clock generator what frequency to send to the CPU. These allow the selection of the CPU's *External* frequency (or *BUS Clock*). The BUS Clock times the BUS Ratio equals the CPU's *Internal* frequency (the advertised CPU speed).

CPU : BUS Frequency Ratio (1.5x, 2.0x, 2.5x, 3.0x)

CPU External Clock (BUS) Frequency Selection (Rev 1.3)
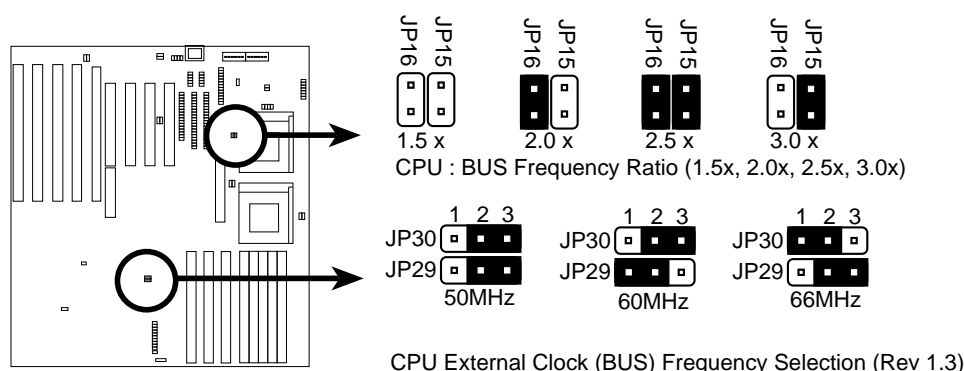
Set the above jumpers by the Internal speed of the Intel CPU as follows:

			(BUS Ratio)		(BUS Frequency)	
Internal	**Ratio**	**External**	**JP16**	**JP15**	**JP30**	**JP29**
200MHz	3.0x	66MHz	[open]	[short]	[1-2]	[2-3]
180MHz	3.0x	60MHz	[open]	[short]	[2-3]	[1-2]
166MHz	2.5x	66MHz	[short]	[short]	[1-2]	[2-3]
150MHz	2.5x	60MHz	[short]	[short]	[2-3]	[1-2]
133MHz	2.0x	66MHz	[short]	[open]	[1-2]	[2-3]
120MHz	2.0x	60MHz	[short]	[open]	[2-3]	[1-2]
100MHz	1.5x	66MHz	[open]	[open]	[1-2]	[2-3]
90MHz	1.5x	60MHz	[open]	[open]	[2-3]	[1-2]
75MHz	1.5x	50MHz	[open]	[open]	[2-3]	[2-3]

8. APIC Dual CPU Selection (JP18)

This turns on or off the Dual CPU support. Most operating systems allow dual CPU support to be enabled even though one CPU is installed which will allows upgrading to dual CPU's without having to reinstall the operating system.

Dual CPU   JP18

Enable   [1-2] (Default)

Disable   [2-3]

Enable (Default)   Disabled

APIC Dual CPU (Enable / Disable)
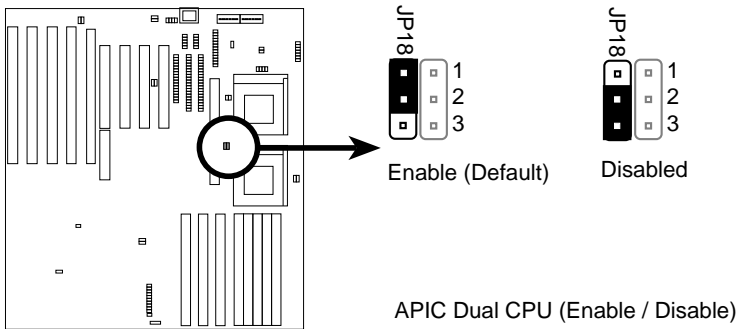
III. INSTALLATION

9. **Flash ROM Boot Block Programming (JP32)**

   This sets the operation mode of the boot block area of the BIOS Flash ROM to allow programming in the *Enabled* position for use with the "Flash Memory Writer" BIOS programming utility as described on page 47.

Programming	**JP32**
Disabled	[1-2] (Default)
Enabled	[2-3]

   1 2 3
   JP32
   Disabled (Default)

   1 2 3
   JP32
   Enabled

   Boot Block Programming (Disable / Enable)
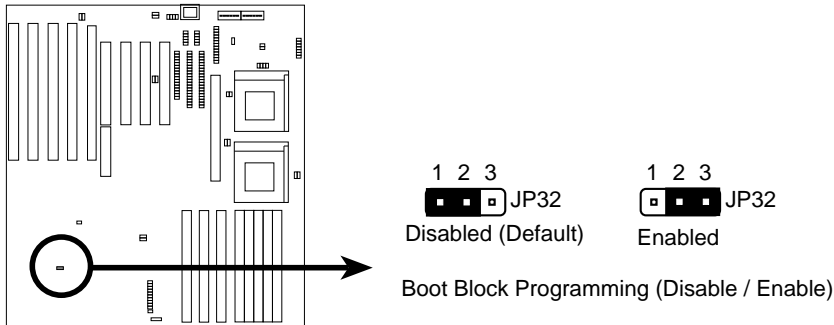
10. **CMOS RAM (JP34)**

    This clears the user-entered information stored in the Dallas Real Time Clock such as hard disk information and passwords. To clear the CMOS data: (1) Turn off the PC, (2) Short this jumper, (3) Power on the PC, (4) Turn off the PC, (5) Remove this jumper, (6) Power on the PC, (7) Hold down <Delete> during bootup and enter BIOS setup to re-enter user information.

Selections	**JP34**
Normal Operation	[open] (Default)
Clear CMOS Data	[short] (momentarily)

    JP34
    Operation (Default)

    JP34
    Clear CMOS Data

    CMOS RAM (Operation / Clear CMOS Data)
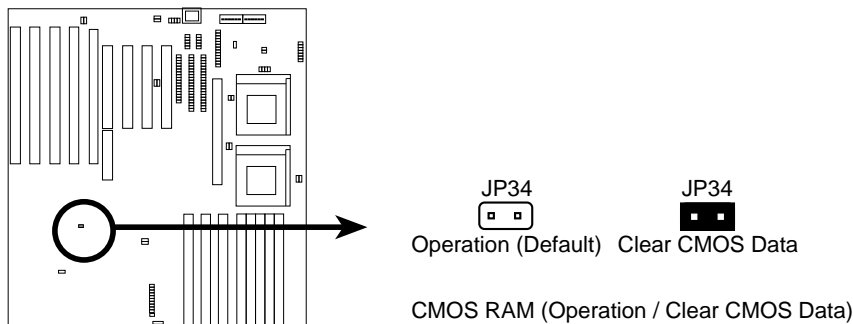
III. INSTALLATION

11. PCI Slot 1 Mode Selection (JP37, 38)

By default, the onboard IDE uses Programmable I/O (PIO) Mode and PCI Slot 1 uses BUS *Master* Mode so that BUS Master expansion cards on PCI Slot 1 can be used. If you want the onboard IDE to use BUS Master mode and are not planning to use a BUS Master card on PCI 1, then you may select *Slave* mode for PCI 1.

PCI 1	JP38	JP37
Master	[2-3]	[2-3] (default)
Slave	[1-2]	[1-2]

PCI 1 Master (Default)   PCI 1 Slave

PCI Slot 1 Mode Select (BUS Master / Slave)
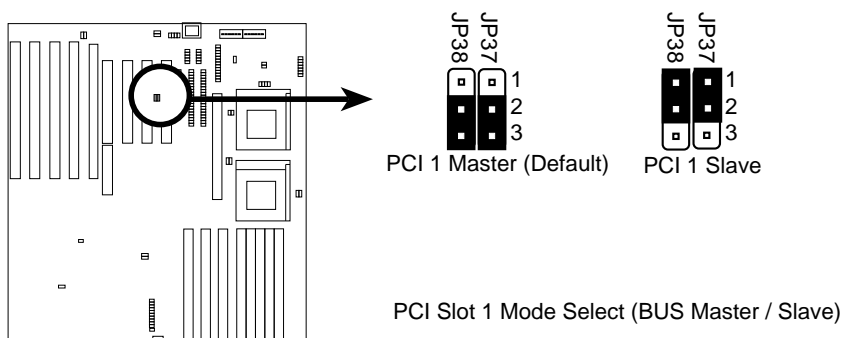
12. Total Level 2 Cache Size Setting (JP39)

There is no level 2 cache onboard, you can upgrade using ASUS Pipelined Burst Cache Module Rev 1.6 with TAG SRAM for either 256KB or 512KB cache size.

IMPORTANT: See page 16 "External Cache" for information concerning compatible cache types and installation.

Size	JP39
512KB	[1-2] (Default)
256KB	[2-3]

512KB (Default)   256KB

Total L2 Cache Size Setting (256KB / 512KB)
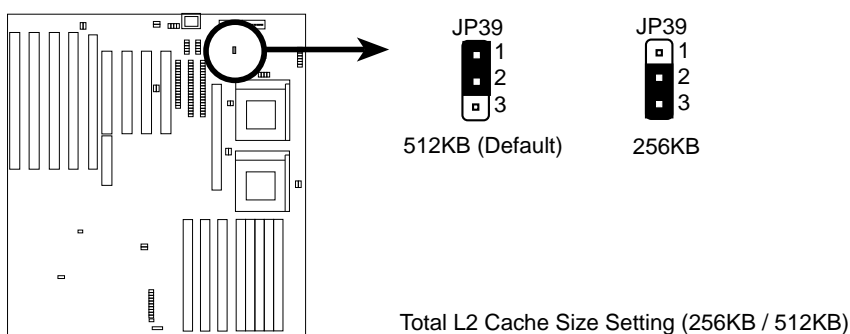
III. INSTALLATION

2. System Memory (DRAM & SRAM)

This motherboard supports eight 72-pin SIMMs of 4MB, 8MB, 16MB, 32MB, or 64MB to form a memory size between 8MB to 512MB. The DRAM can be either 60ns or 70ns Fast Page Mode (Asymmetric or Symmetric) or EDO. To support ECC, you must use *true* (opposed to phantom parity generated by logic chips) 36-bit parity-type DRAM (e.g. 8 chips + 4 parity chips) in pairs for all modules. Mixing 32-bit non-parity DRAM (e.g. 8 chips) and 36-bit DRAM (e.g. 12 chips) will work minus the ECC feature.

Install memory in any or all of the banks in any combination as follows:

Memory Bank	Memory Module		Total Memory
Bank 0 SIMM Slots 1&2	4MB, 8MB, 16MB, 32MB, 64MB 72-pin FPM or EDO SIMM	x2	
Bank 1 SIMM Slots 3&4	4MB, 8MB, 16MB, 32MB, 64MB 72-pin FPM or EDO SIMM	x2	
Bank 2 SIMM Slots 5&6	4MB, 8MB, 16MB, 32MB, 64MB 72-pin FPM or EDO SIMM	x2	
Bank 3 SIMM Slots 7&8	4MB, 8MB, 16MB, 32MB, 64MB 72-pin FPM or EDO SIMM	x2	
	Total System Memory	=	

> **IMPORTANT:** Each bank must have the same size memory installed in pairs.
> **IMPORTANT:** Memory setup is required in BIOS Chipset Setup "Auto Configuration" on page 36.
> **IMPORTANT:** Do not use memory modules with more than 24 chips per module. Modules with more than 24 chips exceed the design specifications of the memory subsystem and will cause unreliable operation.

III. INSTALLATION

DRAM Installation Procedures:

1. The SIMM will only fit in one orientation as shown because of a "Plastic Safety Tab" on one end of the SIMM sockets which matches the "Notched End" of the memory modules.

1 2 3 4 5 6 7 8

Bank 0   Bank 1   Bank 2 Bank 3

Notched End

72 Pin SIMM DRAM Sockets & Module
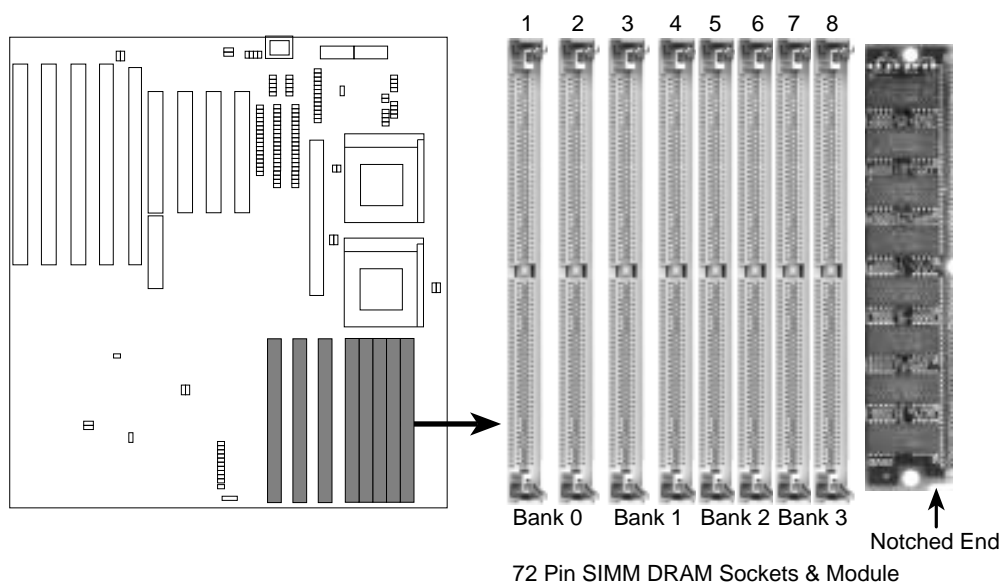
2. Press the memory module firmly into place starting from a 45 degree angle making sure that all the contacts are aligned with the socket.

3. With your finger tips, rock the memory module into a vertical position so that it clicks into place.

72 Pin DRAM in SIMM Socket

Metal Clip

Plastic Safety Tab (This Side Only)   Mounting Hole
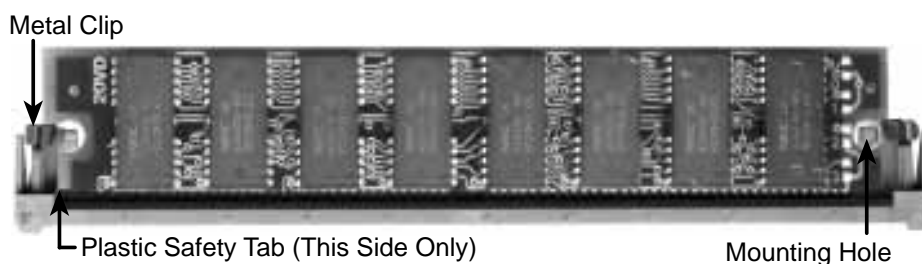
4. The plastic guides should go through the two "Mounting Holes" on the sides and the "Metal Clips" should snap on the other side.

5. To release the memory module, squeeze both "Metal Clips" outwards and rock the module out of the "Metal Clips".

III. INSTALLATION

Static RAM (SRAM) for Level 2 (External) Cache

The motherboard you purchase has no cache onboard. An "ASUS" or "COAST" cache module can be used to upgrade to 256KB or 512KB.

IMPORTANT: You must set jumper 2 "Total Level 2 Cache Size Setting" on page 13 when changes are made to your cache size.

42 Pins

38 Pins

Pipelined Burst Cache Module
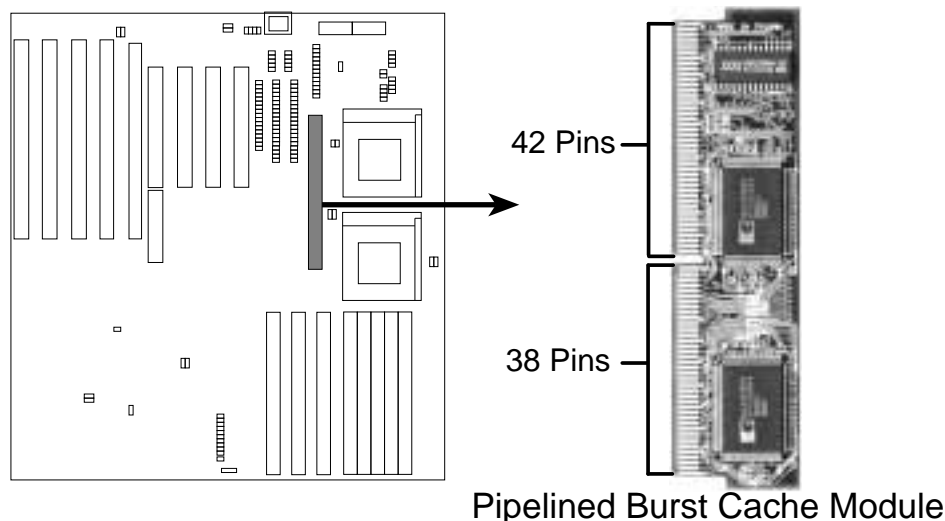
Insert the module as shown. Because the number of pins are different on either side of the break, the module will only fit in the orientation as shown.

Compatible Cache Modules for this Motherboard

SIMM Cache Module	0KB to 256/512KB
ASUS CM1 Rev 1.0	No
ASUS CM1 Rev 1.3	No
ASUS CM4 Rev 1.5	No
ASUS CM1 Rev 1.6 TAG	**Yes**
ASUS CM1 Rev 3.0	**To Be Qualified**
COAST 1.1	No
COAST 1.2	No
COAST 1.3	No
COAST 2.0	**To Be Qualified**
COAST 2.1	**To Be Qualified**
COAST 3.0	**To Be Qualified**

IMPORTANT: ASUS CM1 Rev 1.6 cache module must have a TAG RAM when it is used on this motherboard.

3. Central Processing Unit (CPU)

The motherboard provides two 321-pin ZIF Socket 7's that are backward compatible with ZIF Socket 5 processors. The CPU that came with the motherboard should have a fan attached to it to prevent overheating. Apply thermal conducting silicon grease to the CPU top and then attach the fan onto the CPU.

> **WARNING:** Without a fan, the CPU can overheat and cause damage to both the CPU and the motherboard. Purchase a CPU fan if one is not included.

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle. Insert the CPU with the correct orientation as shown. Use the notched corner of the CPU with the white dot as your guide. The white dot should point towards the end the of the lever. Notice that there is a blank area where one hole is missing from that corner of the square array of pin holes and a "1" printed on the motherboard next to that corner. Because the CPU has a corner pin for three of the four corners, the CPU will only fit in the one orientation as shown. The picture is for reference only; you should have a CPU fan that will cover the face of the CPU. With the added weight of the CPU fan, no force is required to insert the CPU. Once completely inserted, hold down on the fan and close the socket's lever.

IMPORTANT: You must set jumpers for "CPU to BUS Frequency Ratio" and jumpers for "BUS Frequency Selection" on page 10 depending on the CPU that you install.

ZIF Socket 7 with Pentium Processor
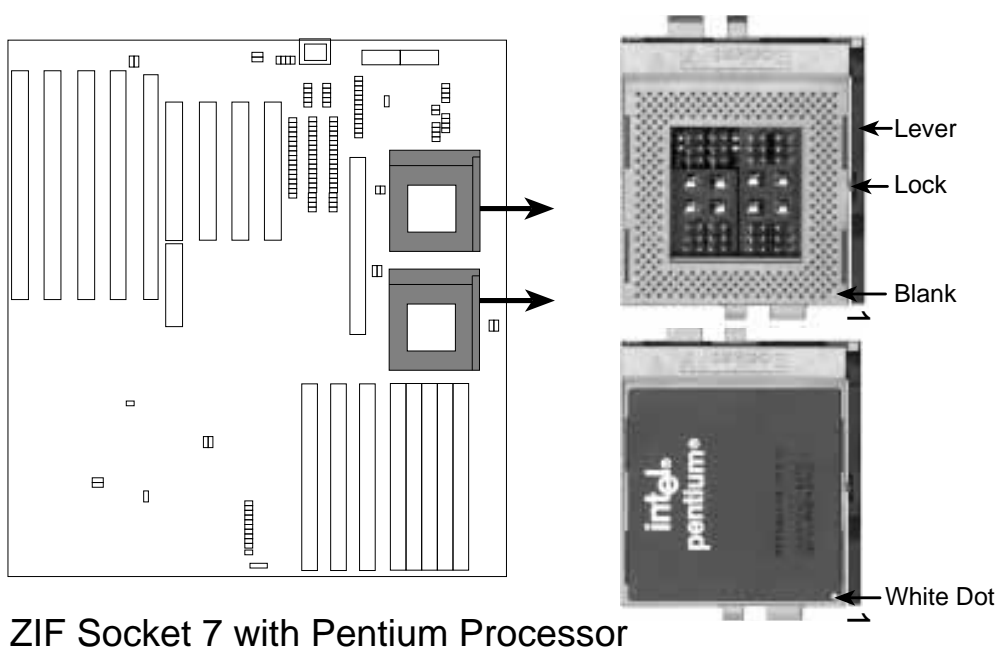
4. Expansion Cards

> **WARNING:** Make sure that you unplug your power supply when adding or removing expansion cards or other system components. Failure to do so may cause severe damage to both your motherboard and expansion cards.

First read your expansion card documentation on any hardware and software settings that may be required to setup your specific card.

NOTE: PCI Slot 4 has a MediaBus extension 2.0 (see page 20) which allows the installation of a PCI card or a MediaBus card (optional multifunctional card) but not both. For installation of the optional ASUS PCI-SC200 Fast-SCSI card, refer to section VI.

Expansion Card Installation Procedure:
1. Read the documentation for your expansion card.
2. Set any necessary jumpers on your expansion card.
3. Remove your computer's cover.
4. Remove the bracket on the slot you intend to use. Keep the bracket for possible future use.
5. Carefully align the card's connectors and press firmly.
6. Secure the card on the slot with the screw you removed in step 4.
7. Replace the computer's cover.
8. Setup the BIOS if necessary.
9. Run the EISA configuration utility if you add or remove any EISA expansion cards.
10. Install the necessary software drivers for your expansion card.

Assigning IRQs for Expansion Cards
Some expansion cards need to use an IRQ to operate. Generally an IRQ must be exclusively assigned to one use. In an standard design there are 16 IRQs available but most of them are already in use by parts of the system which leaves 6 free for expansion cards.

III. INSTALLATION

Both ISA and PCI expansion cards may need to use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, and any remaining IRQs are then used by PCI cards. Currently, there are two types of ISA cards. The original ISA expansion card design, now referred to as "Legacy" ISA cards, requires that you configure the card's jumpers manually and then install it in any available slot on the ISA bus. You may use Microsoft's Diagnostic (MSD.EXE) utility included in the Windows directory to see a map of your used and free IRQs. For Windows 95 users, the "Control Panel" icon in "My Computer," contains a "System" icon which gives you a "Device Manager" tab. Double clicking on a specific device give you "Resources" tab which shows the Interrupt number and address. Make sure that no two devices use the same IRQs or your computer will experience problems when those two devices are in use at the same time.

To simplify this process this motherboard has complied with the Plug and Play (PNP) specification which was developed to allow automatic system configuration whenever a PNP-compliant card is added to the system. For PNP cards, IRQs are assigned automatically from those available.

If the system has both Legacy and PNP ISA cards installed, IRQs are assigned to PNP cards from those not used by Legacy cards. The PCI and PNP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that does not work with the BIOS, you can contact your vendor for an ISA Configuration Utility.

An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PNP ISA cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI slot that has a card in it that requires an IRQ. To install a PCI card, you need to set something called the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA #, be sure that the jumpers on your PCI cards are set to INT A.

Assigning DMA Channels for ISA Cards

Some ISA cards, both Legacy and PNP may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PCI and PNP configuration section of the BIOS Setup utility.

IMPORTANT: In BIOS setup "PnP and PCI Setup," you should choose "Yes" for those IRQ's and DMA's you wish to reserve for Legacy (Non-PnP) ISA cards, otherwise conflicts may occur.

III. INSTALLATION

ASUS MediaBus Card

MediaBus allows a cost-efficient solution to a complete multimedia system. The advantages of using one add-on card is to reduce the slot requirements and compatibility problems in order to maximize the Plug and Play advantages. The add-on card inserts into the shared PCI 4 / MediaBus 2.0 Slot.

NOTE: This motherboard uses MediaBus Rev. 2.0. The previous MediaBus cards designed for MediaBus Rev. 1.2 will not fit into the MediaBus Rev 2.0 that is on this motherboard.

The difference between Rev. 1.2 and Rev. 2.0 is that the later revision has 72 pins instead of 68 pins so it does not have to use any PCI slot signals reserved for PCI cards, therefore the motherboard's PCI Slot 4 can meet standard specifications. The gap between the MediaBus extension and the PCI Slot 4 has been increased from 0.32" to 0.40" in order to prevent Rev. 1.2 MediaBus cards from being installed into the new motherboards and vice versa.

The following are MediaBus cards designed for **MediaBus 2.0** that *can* be used on this motherboard:

- PCI-AS2940UW   Ultra Fast/Wide SCSI & Audio MediaBus Card
- PCI-AV264CT-N   PCI Audio & Video MediaBus Card
- PCI-AV264VT   PCI Audio & Video MediaBus Card

The following are MediaBus cards designed for **MediaBus 1.2** and therefore ***cannot*** be used on this motherboard:

- PCI-AS7870   Fast/Wide SCSI & Audio MediaBus Card
- PCI-AV264CT   PCI Audio & Video MediaBus Card
- PCI-AV868   PCI Audio & Video MediaBus Card

* All the above Audio features Creative Technology, Ltd.
* All the above Video features ATI, Inc. (AV868 Video features S3, Inc.)
* All the above SCSI features Adaptec, Inc.

III. INSTALLATION

5. External Connectors

> **WARNING:** Some pins are used for connectors or power sources. These are clearly separated from jumpers in "Map of the Motherboard" on page 4. Placing jumper caps over these will cause damage to your motherboard.

IMPORTANT: Ribbon cables should always be connected with the red stripe on the Pin 1 side of the connector. The four corners of the connectors are labeled on the motherboard. Pin 1 is the side closest to the power connector on hard drives and floppy drives. IDE ribbon cable must be less than 18in. (46cm), with the second drive connector no more than 6in. (15cm) from the first connector.

1. **Keyboard Connector (5-pin female)**
    This connection is for a standard IBM-compatible keyboard. May also be known as a 101 enhanced keyboard.

    Keyboard Connector (5-pin female)

    Connector Plug from Keyboard
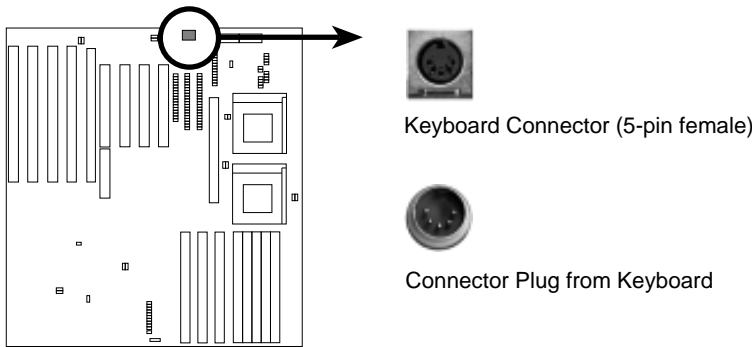
2. **PS/2 Mouse Connector (6-pin block)**
    If you are using a PS/2 mouse, you must purchase an optional PS/2 mouse set which connects to the 6 pin block and mounts to an open slot on your computer's case. When a PS/2 mouse is detected during bootup, IRQ12 will be used for the PS/2 mouse. If a PS/2 mouse is not detected, IRQ12 will be reserved for expansion cards.

    1 2 3 4
    5   8

    1 2 3 4
    5   8

    1: GND
    2: DATA
    3: NC
    4: VCC
    5: CLK
    8: NC

    PS/2 Mouse Module Connector
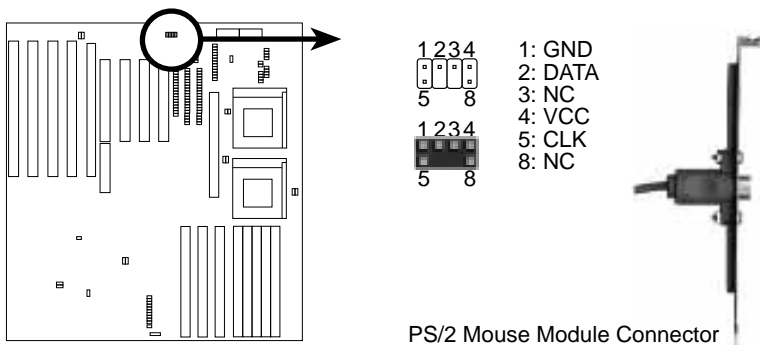
3. Parallel Printer Connector (26 Pin Block)

Connection for the included parallel port ribbon cable with mounting bracket. Connect the ribbon cable to this connection and mount the bracket to the case on an open slot. It will then be available for a parallel printer cable. **Note**: Serial printers must be connected to the serial port. You can enable the parallel port and choose the IRQ through BIOS Setup on page 38 "Onboard Parallel Port."

Pin 1
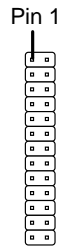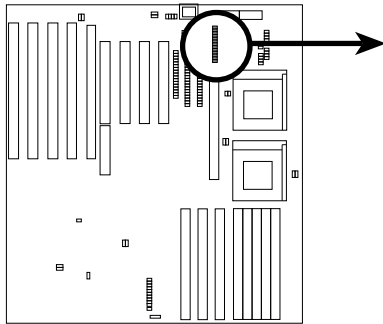
Onboard Parallel (Printer) Connector

4. Serial port COM1 and COM2 connectors (Two 10-pin blocks)

These connectors support the provided serial port ribbon cables with mounting bracket. Connect the ribbon cables to these connectors and mount the bracket to the case on an open slot. The two serial ports on the mounting bracket will then be used for pointing devices or other serial devices. See page 38 for BIOS configuration of "Onboard Serial Port"

Pin 1   Pin 1

COM 2   COM 1
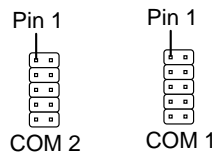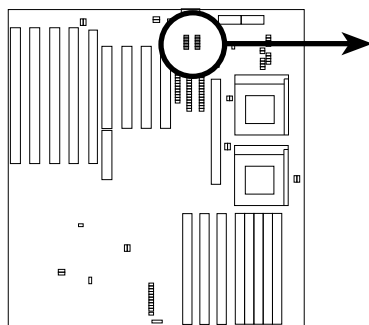
Onboard Serial Port Connectors

III. INSTALLATION

5. **Floppy drive connector (34-pin block)**
   This connector supports the provided floppy drive ribbon cable.
   After connecting the single end to the board, connect the two plugs
   on the other end to the floppy drives.

Pin 1

Floppy Drive Connector
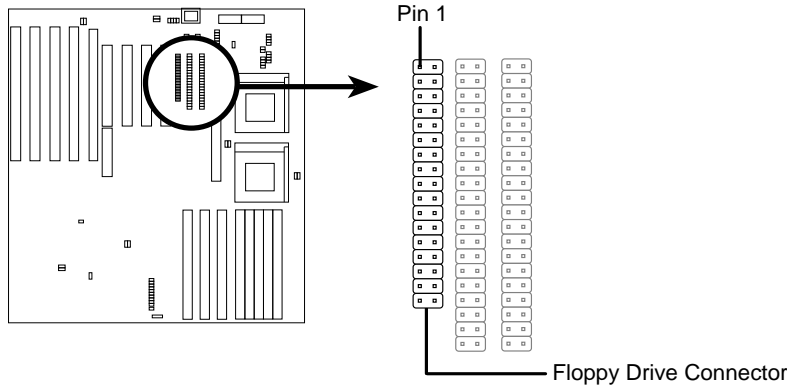
6. **Primary / Secondary IDE connectors (Two 40-pin Block)**
   This connector supports the provided IDE hard disk ribbon cable. After con-
   necting the single end to the board, connect the two plugs at the other end to
   your hard disk(s). If you install two hard disks, you must configure the second
   drive to Slave mode by setting its jumpers accordingly. Please refer to the
   documentation of your hard disk for the jumper settings. You may also config-
   ure two hard disks to be both Masters using one ribbon cable on the primary
   IDE connector and another ribbon cable on the secondary IDE connector.

Pin 1

Secondary IDE Connector
Primary IDE Connector
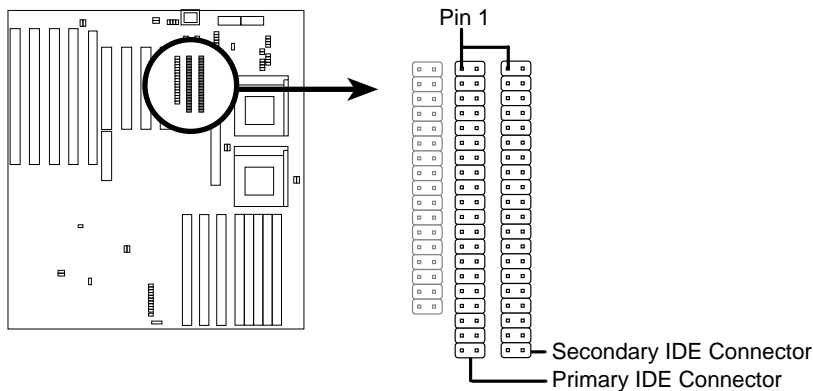
III. INSTALLATION

7. **Board Power Input (12-pin block)**

This connector connects to a standard 5 Volt power supply. To connect the leads from the power supply, ensure first that the power supply is not plugged. Most power supplies provide two plugs (P8 and P9), each containing six wires, two of which are black. Orient the connectors so that the black wires are located in the middle.

Using a slight angle, align the plastic guide pins on the lead to their receptacles on the connector. Once aligned, press the lead onto the connector until the lead locks into place.

Power Connector on Motherboard

Power Plugs from Power Supply
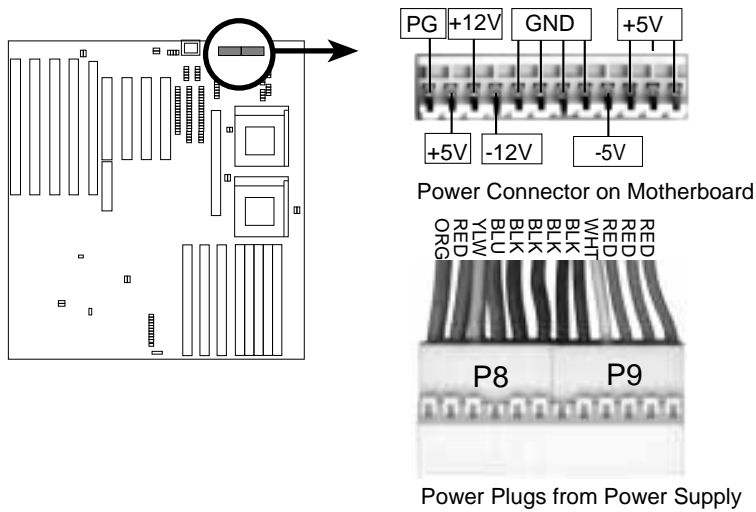
8. **IDE activity LED**

This connector connects to the hard disk activity indicator light on the case.

IDE (Hard Drive) LED
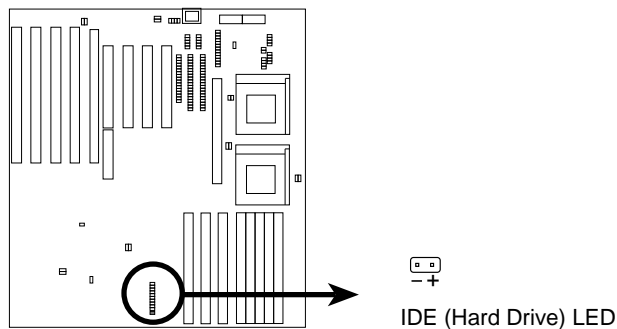
9. **Turbo LED lead (CON3)**

   The motherboard's turbo function is always on. The turbo LED connection is labeled here but the LED will remain constantly lit while the system power is on. You may wish to connect the Power LED from the system case to this lead. See the figure below.

10. **SMI suspend switch lead (CON3)**

    This allows the user to manually place the system into a suspend mode or "Green" mode where system activity will be instantly decreased to save electricity and expand the life of certain components when the system is not in use. This 2-pin connector (see the figure below) connects to the case-mounted suspend switch. If you do not have a switch for the connector, you may use the "Turbo Switch" since it does not have a function. SMI is activated when it detects a *short to open* moment and therefore leaving it shorted will not cause any problems. May require one or two pushes depending on the position of the switch. Wake-up can be controlled by settings in the BIOS but the keyboard will always allow wake-up (the SMI lead cannot wake-up the system). If you want to use this connector, "Suspend Switch" in the POWER MANAGEMENT SETUP of the BIOS software should be on the default setting of *Enable* (see "Suspend Switch" in **Power Management Setup** of Section IV).

11. **Reset switch lead (CON3)**

    This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

12. **Keyboard lock switch lead (CON3)**

    This 5-pin connector connects to the case-mounted key switch for locking the keyboard for security purposes. See the figure below.

13. **Speaker connector (CON3)**

    This 4-pin connector connects to the case-mounted speaker.

System Case Connections
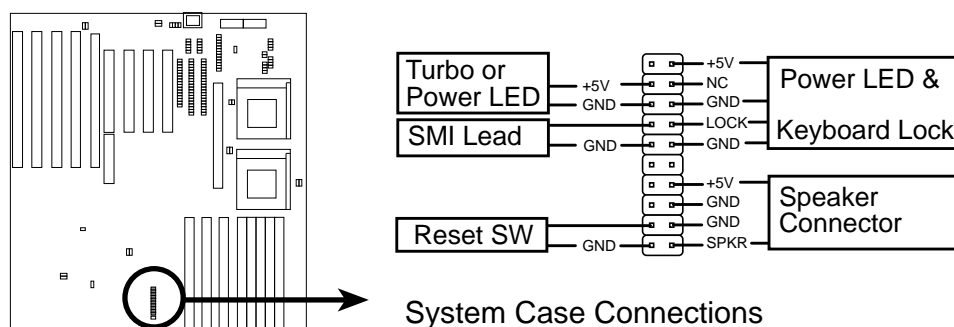
III. INSTALLATION

Power Connection Procedures

1. After all jumpers and connections are made, close the system case cover.

2. Make sure that all switches are in the off position as marked by ○.

3. Connect the power supply cord into the power supply located on the back of your system case as instructed by your system user's manual.

4. Connect the power cord into an power outlet that is equipped by a surge protector.

5. You may then turn on your devices in the following order:
    a. Your monitor
    b. External SCSI devices (starting with the last device on the chain)
    c. Your system power

6. The power LED on the front panel of the system case will light and the monitor LED as well. The system will then run power-on tests. While the tests are running, additional messages will appear on the screen. If you do not see anything within 30 seconds from the time you turn on the power, the system may have failed a power-on test. Recheck your jumper settings and connections or call your authorized dealer for assistance.

7. During power-on, hold down the <Delete> key to enter BIOS setup. Follow the next section "BIOS SOFTWARE" for instructions.

IV. BIOS SOFTWARE

6. BIOS Setup

The motherboard supports two types of programmable Flash ROM chips: 5 Volt and 12 Volt. Either of these memory chips can be updated when BIOS upgrades are released. Use the Flash Memory Writer utility to download the new BIOS file into the ROM chip as described in detail on page 47.

All computer motherboards provide a Setup utility program for specifying the system configuration and settings. If your motherboard came in a computer system, the proper configuration entries may have already been made. If so, invoke the Setup utility, as described later, and take note of the configuration settings for future reference; in particular, the hard disk specifications.

If you are installing the motherboard, reconfiguring your system or you receive a Run Setup message, you will need to enter new setup information. This section describes how to configure your system using this utility.

The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the system provides you with the opportunity to run this program. This appears during the Power-On Self Test (POST). Press the <Delete> key to call up the Setup utility. If you are a little bit late pressing the mentioned key(s), POST will continue with its test routines, thus preventing you from calling up Setup. If you still need to call Setup, reset the system by simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys, or by pushing the Reset button on the system case. You can also restart by turning the system off and then back on again.

When you invoke Setup, the main program screen will appear with the following options:

```
                       ROM EISA BIOS (PE55TP4D)
                          CMOS SETUP UTILITY
                         AWARD SOFTWARE, INC.
 ┌──────────────────────────────────────────────────────────────────┐
 │  STANDARD CMOS SETUP             SUPERVISOR PASSWORD               │
 │                                                                    │
 │  BIOS FEATURES SETUP             USER PASSWORD                     │
 │                                                                    │
 │  CHIPSET FEATURES SETUP          IDE HDD AUTO DETECTION            │
 │                                                                    │
 │  POWER MANAGEMENT SETUP          SAVE & EXIT SETUP                 │
 │                                                                    │
 │  PNP AND PCI SETUP               EXIT WITHOUT SAVING               │
 │                                                                    │
 │  LOAD BIOS DEFAULTS                                                │
 │                                                                    │
 │  LOAD SETUP DEFAULTS                                               │
 ├──────────────────────────────────────────────────────────────────┤
 │  Esc : Quit                      ↑ ↓ → ←   : Select Item           │
 │  F10 : Save & Exit Setup         (Shift)F2 : Change Color          │
 ├──────────────────────────────────────────────────────────────────┤
 │              Time, Date, Hard Disk Type...                         │
 └──────────────────────────────────────────────────────────────────┘
```

IV. BIOS
(BIOS Setup)

IV. BIOS SOFTWARE

NOTE: The "Load BIOS Defaults" option loads the most conservative settings for troubleshooting. "Load Setup Defaults", on the other hand, is for loading optimized defaults for regular use. Choosing defaults at this level, will modify all applicable settings.

A section at the bottom of the above screen displays the control keys for this screen. Take note of these keys and their respective uses. Another section just below the control keys section displays information on the currently highlighted item in the list.

Standard CMOS Setup

This "Standard CMOS Setup" option allows you to record some basic system hardware configuration and set the system clock and error handling. If the motherboard is already installed in a working system, you will not need to select this option anymore. However, if the configuration stored in the CMOS memory on the board gets lost or damaged, or if you change your system hardware configuration, you will need to renter the configuration values. The configuration values usually get lost or corrupted when the power of the onboard CMOS battery weakens.

```
                    ROM EISA BIOS (PE55TP4D)
                      STANDARD CMOS SETUP
                      AWARD SOFTWARE, INC.

    Date (mm:dd:yy) : Thu, May 16 1996
    Time (hh:mm:ss) : 15 : 48 : 58

    HARD DISKS          TYPE   SIZE    CYLS HEAD PRECOMP LANDZ SECTOR  MODE

    Primary Master   : Auto     0        0    0     0      0      0   AUTO
    Primary Slave    : None     0        0    0     0      0      0   ------
    Secondary Master : None     0        0    0     0      0      0   ------
    Secondary Slave  : None     0        0    0     0      0      0   ------

    Drive A : 1.44M, 3.5 in.
    Drive B : None                       ┌──────────────────────────────
    Floppy 3 Mode Support : Disabled     │     Base Memory:    640K
                                         │ Extended Memory: 64512K
    Video   : EGA/VGA                    │    Other Memory:   384K
    Halt On : All Errors                 │   Total Memory: 65536K

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

The above screen provides you with a list of options. At the bottom of this screen are the control keys for use on this screen. Take note of these keys and their respective uses.

User-configurable fields appear in a different color. If you need information on the selected field, press the <F1> key. The help menu will then appear to provide you with the information you need. The memory display at the lower right-hand side of the screen is read-only and automatically adjusts accordingly.

IV. BIOS SOFTWARE

Details of Standard CMOS Setup:

Date

To set the date, highlight the "Date" field and then press the page up/page down or +/- keys to set the current date. Follow the month, day and year format. Valid values for month, day and year are:

Month:	**1 to 12**
Day:	**1 to 31**
Year:	**up to 2099**

Time

To set the time, highlight the "Time" field and then press the page up/page down or +/- keys to set the current time. Follow the hour, minute and second format. Valid values for hour, minute and second are:

Hour:	**00 to 23**
Minute:	**00 to 59**
Second:	**00 to 59**

You can bypass the date and time prompts by creating an AUTOEXEC.BAT file. For information on how to create this file, please refer to the MS-DOS manual.

Hard Disks

This field records the specifications for all non-SCSI hard disk drives installed in your system. The onboard PCI IDE connectors provide Primary and Secondary channels for connecting up to four IDE hard disks or other IDE devices. Each channel can support up to two hard disks; the first of which is the "master" and the second is the "slave".

Specifications for SCSI hard disks need not to be entered here since they operate using device drivers and are not supported through the BIOS. If you install the optional PCI-SC200 SCSI controller card into the motherboard (see section VI for instructions). If you install other vendor's SCSI controller card, please refer to their respective documentations on how to install the required SCSI drivers.

To enter specifications for a hard disk drive, you must select first a "type". You can select "User" and specify the specifications yourself manually, or you can select from the provided predefined drive specifications. To select, simply press the <Page Up> or <Page Down> key to change the option listed after the drive letter.

IV. BIOS SOFTWARE

For an IDE hard disk drives, you can:

- Use the *Auto* setting for detection during bootup (see below)
- Use the IDE HDD AUTO DETECTION in the main menu to automatically enter the drive specifications, or you can:
- Enter the specifications yourself manually by using the "User" option

The entries for specifying the hard disk type include **CYLS** (number of cylinders), **HEAD** (number of read/write heads), **PRECOMP** (write precompensation), **LANDZ** (landing zone), **SECTOR** (number of sectors) and **MODE**. The **SIZE** field automatically adjusts according to the configuration you specify. The documentation that comes with your hard disk should provide you with the information regarding the drive specifications.

The **MODE** entry is for IDE hard disks only, and can be ignored for MFM and ESDI drives. This entry provides three options: *Normal, Large, LBA*, or *Auto* (see below). Set **MODE** to the *Normal* for IDE hard disk drives smaller than 528MB; set it to *LBA* for drives over 528MB that support Logical Block Addressing (LBA) to allow larger IDE hard disks; set it to *Large* for drives over 528MB that do not support LBA. *Large* type of drive can only be used with MS-DOS and is very uncommon. Most IDE drives over 528MB support the *LBA* mode.

Auto detection of hard disks on bootup (New Feature)
For each field: Primary Master, Primary Slave, Secondary Master, and Secondary Slave, you can select *Auto* under the TYPE and MODE fields. This will enable auto detection of your IDE drives during bootup. This will allow you to change your hard drives (with the power off) and then power on without having to reconfigure your hard drive type. If you use older hard drives which do not support this feature, then you must configure the hard drive in the standard method as described above.

IV. BIOS SOFTWARE

Drive A, Drive B

These fields record the types of floppy disk drives installed in your system. The available options for drives A and B are:

360KB, 5.25 in.
1.2MB, 5.25 in.
720KB, 3.5 in.
1.44MB, 3.5 in.
2.88MB, 3.5 in.
None

To enter the configuration value for a particular drive, highlight its corresponding field and then select the drive type using the left- or right-arrow key.

Floppy 3 Mode Support

This is the Japanese standard floppy drive. The standard stores 1.2MB in a 3.5" diskette. This is normally disabled but you may choose from either:

Drive A
Drive B
Both
Disabled (Default)

Video

Set this field to the type of video display card installed in your system. The options are:

EGA/VGA (Default)
Mono (for Hercules or MDA)
CGA 40
CGA 80

If you are using a VGA or any higher resolution card, choose the "EGA/VGA" option.

Halt On

This field determines which types of errors will cause the system to halt.

All Errors (Default)
No Errors
All, But Keyboard
All, But Diskette
All, But Disk/Key

IV. BIOS SOFTWARE

BIOS Features Setup

This "BIOS Features Setup" option consists of configuration entries that allow you to improve your system performance, or let you set up some system features according to your preference. Some entries here are required by the motherboard's design to remain in their default settings.

```
                  ROM EISA BIOS (PE55TP4D)
                    BIOS FEATURES SETUP
                    AWARD SOFTWARE, INC.

Virus Warning             : Disabled   Video  BIOS Shadow  : Enabled
CPU Internal Cache        : Enabled    C8000-CBFFF Shadow  : Disabled
External Cache            : Enabled    CC000-CFFFF Shadow  : Disabled
Quick Power On Self Test  : Enabled    D0000-D3FFF Shadow  : Disabled
Boot Sequence             : C,A        D4000-D7FFF Shadow  : Disabled
Swap Floppy Drive         : Disabled   D8000-DBFFF Shadow  : Disabled
Boot Up Floppy Seek       : Enabled    DC000-DFFFF Shadow  : Disabled
Floppy Disk Access Control : R/W
Boot Up NumLock Status    : On
Boot Up System Speed      : High
IDE HDD Block Mode        : Enabled
Typematic Rate Setting    : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)    : 250
Security Option           : System
PCI/VGA Palette Snoop     : Disabled   ESC : Quit         ↑↓→← : Select Item
OS/2 Onboard Memory > 64M : Disabled   F1  : Help          PU/PD/+/- : Modify
                                       F5  : Old Values  (Shift)F2 : Color
                                       F6  : Load BIOS  Defaults
                                       F7  : Load Setup Defaults
```

A section at the lower right of the screen displays the control keys you can use. Take note of these keys and their respective uses. If you need information on a particular entry, highlight it and then press the <F1> key. A pop-up help menu will appear to provide you with the information you need. To load the last set values, press the <F5> key. <F6> and <F7> load the BIOS default values and Setup default values, respectively.

Details of BIOS Features Setup:

Virus Warning
This field protects the boot sector and partition table of your hard disk against accidental modifications. Any attempt to write to them will cause the system to halt and display a warning message. If this occurs, you can either allow the operation to continue or use a bootable virus-free floppy disk to reboot and investigate your system. The default setting is "Disabled". This setting is recommended because conflicts with new operating systems. Installation of new operating systems require that you disable this to prevent write errors.

IV. BIOS
(BIOS Features)

IV. BIOS SOFTWARE

CPU Internal Cache / External Cache
These fields allow you to *Enable* or *Disable* the CPU's "Level 1" built-in cache and the "Level 2" secondary cache. By default, these fields are enabled. With Setup Defaults, the L2 cache is *Disabled*.

Quick Power On Self Test
This field speeds up the Power-On Self Test (POST) routine by skipping retesting a second, third, and forth time. Setup default setting for this field is *Enabled*. A complete test of the system is done on each test.

Boot Sequence
This field determines where the system looks first for an operating system. Options are *C,CDROM,A*; *CDROM,C,A*; *A,C*; *C,A* The setup default setting is to check first the hard disk and then the floppy drive; that is, *C, A*.

Swap Floppy Drive
When enabled, the BIOS swaps floppy drive assignments so that Drive A becomes Drive B, and Drive B becomes Drive A under DOS. By setup default, this field is set to *Disabled*.

Boot Up Floppy Seek
When enabled, the BIOS will seek the floppy "A" drive one time. By setup default, this field is set to *Disabled*.

Floppy Disk Access Control
This allows protection of files from the computer system to be copied to floppy drives by allowing the setting of *Read Only* to only allow reads from the floppy but not writes. The setup default *R/W* allows both reads and writes.

Boot Up NumLock Status
This field enables users to activate the Num Lock function upon system boot. The setup default setting for this field is *On*.

Boot Up System Speed
This has not function and should be left at the setup default of *High*.

IDE HDD Block Mode
This field enhances hard disk performance by making multi-sector transfers instead of one sector per transfer. Most IDE drives, except older versions, can utilize this feature. By setup default, this field is set to *Enabled*.

Typematic Rate Setting
When enabled, you can set the two typematic controls listed next. Setup default setting is *Disabled*.

Typematic Rate (Char/Sec)
This field controls the speed at which the system registers repeated keystrokes. Options range from 6 to 30 characters per second. Setup default setting is **6**.

Typematic Delay (Msec)
This field sets the time interval for displaying the first and second characters. Four delay rate options are available: 250ms, 500ms, 750ms and 1000ms. Setup default value is **250ms**.

Security Option
This field determines when the system prompts for the password. The default setting is **System**, where the system prompts for the User Password every time you boot up. The other option is *Setup*, where the system always boots up, and prompts for the Supervisor Password only when the Setup utility is called up. You can specify a password by using the *Supervisor Password* or *User Password* option from the main screen as explained later in this section.

PCI/VGA Palette Snoop
Some display cards that are non-standard VGA such as graphics accelerators or MPEG Video Cards may not show colors properly. The setting *Enabled* should correct this problem. Otherwise leave this on the setup default setting of **Disabled**.

OS/2 Onboard Memory > 64M
When using OS/2 operating systems with installed DRAM of greater than 64MB, you need to *Enable* this option otherwise leave this on the setup default of **Disabled**.

Video BIOS Shadow
This field allows you to change the video BIOS location from ROM to RAM. Relocating to RAM enhances system performance, as information access is faster than the ROM. Setup default setting is **Enabled**.

C8000-CBFFF to DC000-DFFFF
These fields are used for shadowing other expansion card ROMs. If you install other expansion cards with ROMs on them, you will need to know which addresses the ROMs use to shadow them specifically. Shadowing a ROM reduces the memory available between 640KB and 1024KB by the amount used for this purpose.

IMPORTANT: When using EISA/ISA add-on cards, if there is an expansion ROM, the shadow option of its corresponding address should be *Enabled*. Otherwise the system may fail to boot.

IV. BIOS
(BIOS Features)

IV. BIOS SOFTWARE

Chipset Features Setup

This "Chipset Features Setup" option controls the configuration of the board's chipset. Control keys for this screen are the same as for the previous screen.

```
                        ROM EISA BIOS (PE55TP4D)
                         CHIPSET FEATURES SETUP
                          AWARD SOFTWARE, INC.

 Auto Configuration      : Enabled    Onboard FDC Controller  : Enabled
 DRAM Read Burst Timing  : x222       Onboard FDC Swap A & B  : No Swap
 DRAM Write Burst Timing : x333       Onboard Serial Port 1   : COM1,3F8H
 RAS to CAS Delay        : 3T         Onboard Serial Port 2   : COM2,2F8H
 DRAM R/W Leadoff Timing : 6T/5T      Onboard Parallel Port   : 378H/IRQ7
 DRAM Turbo Read Leadoff : Disabled   Parallel Port Mode      : Normal
 DRAM Speculative Leadoff: Disabled   ECP DMA Select          : Disabled
 Turn-Around Insertion   : Disabled   UART2 Use Infrared      : Disabled
 Turbo Read Pipelining   : Disabled
 Peer Concurrency        : Enabled    Onboard PCI IDE Enable  : Both
 PCI Streaming           : Enabled    IDE 0 Master Mode       : Auto
 16-bit I/O Recovery Time: 1 BUSCLK   IDE 0 Slave  Mode       : Auto
 8-bit I/O Recovery Time : 1 BUSCLK   IDE 1 Master Mode       : Auto
 Video BIOS Cacheable    : Enabled    IDE 1 Slave  Mode       : Auto
 Memory Hole At 15M-16M  : Disabled
 EISA to PCI Line Buffer : Enabled    ESC : Quit        ↑↓→← : Select Item
 DRAM are 72 bits wide               F1  : Help       PU/PD/+/- : Modify
 Memory parity SERR# (NMI): Disabled  F5  : Old Values  (Shift)F2 : Color
 DRAM ECC/PARITY Select  : Parity     F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Auto Configuration
The default setting of *Enabled* sets the optimal timings for items 2-8 for 70ns or faster DRAM modules. See pages 12-13 for DRAM installation.

Peer Concurrency (Leave on default setting of *Enabled*)

PCI Streaming (Leave on default setting *Enabled*)

16-bit I/O Recovery Time
Timing for 16-bit ISA cards (Leave on default setting of *1 BUSCLK*)

8-bit I/O Recovery Time
Timing for 8-bit ISA cards (Leave on default setting of *1 BUSCLK*)

Video BIOS Cacheable
Allows the Video BIOS to be cached to allow faster execution. (Leave on default setting of *Enabled*)

Memory Hole at 15M - 16M
Enabling this features reserves 15MB to 16MB memory address space to ISA expansion cards that specifically require this setting. This makes the memory from 15MB and up unavailable to the system. Expansion cards can only access memory up to 16MB. The default is *Disabled*.

EISA to PCI Line Buffer
(Leave on default setting of *Enabled*)

IV. BIOS SOFTWARE

[DRAM and ECC]

If all your DRAM modules have parity chips (e.g. 8 chips + 4 parity chips), they are considered 36bits. This motherboard sums the memory per bank and therefore two modules will give 72bits and the following will be displayed:

> **DRAM are 72 bits wide**
> **Memory parity SERR# (NMI):**
> **DRAM ECC/PARITY Select:**

If your DRAM modules do not have parity chips (e.g. 8 chips), they are considered 32bits and the following will be displayed instead:

> **DRAM are 64 (not 72) bits wide**
> **Memory parity SERR# (NMI):**

The default of *Disabled* for **Memory parity SERR# (NMI)** will not show memory errors on your monitor. When using parity DRAM modules, you can select from the default of *Parity* or *ECC* (Error Checking and Correcting) to correct 1 bit memory errors that may occur in the memory. (See pages 12-13 for more information on DRAM memory modules.)

Onboard FDC Controller

The default of *Enabled* allows you to connect your floppy disk drives to the onboard floppy drive connector instead of a separate controller card. If you want to use a different controller card to connect the floppy drives, set this field to *Disabled*.

Onboard FDC Swap A: B:

This field reverses the drive letter assignments of your floppy disk drives. If you want to switch drive letter assignments, set this field to *Swap AB*, otherwise leave on default of *No Swap*. This works separately from the BIOS FEATURES SETUP "Swap Floppy Drive." This is functionally the same as physically interchanging the connectors of the floppy disk drives.

Onboard Serial Port 1 / Onboard Serial Port 2

These fields control the assignments for the motherboard's two onboard serial connectors. The following lists the available options:

> *COM1, 3F8H* (Onboard Serial Port 1 default)
> *COM2, 2F8H* (Onboard Serial Port 2 default)
> *COM3, 3E8H*
> *COM4, 2E8H*
> *Disabled* (Disables the onboard serial ports)

Onboard Parallel Port

This field sets the address of the onboard parallel port connector. You can select either: *3BCH / IRQ 7*, ***378H / IRQ 7*** (default)*, 278H / IRQ 5*, *Disabled*. If you install an I/O card with a parallel port, ensure that there is no conflict in the address assignments. The PC can support up to three parallel ports as long as there are no conflicts for each port.

Parallel Port Mode

This field allows you to set the operation mode of the parallel port. The default setting ***Normal***, allows normal-speed operation but in one direction only; *EPP* allows bidirectional parallel port operation at maximum speed; *ECP* allows the parallel port to operate in bidirectional mode and at a speed faster than the maximum data transfer rate; *ECP+EPP* allows normal speed operation in a two-way mode.

ECP DMA Select

This selection is available only if you select *ECP* or *ECP+EPP* in the **Parallel Port Mode**. Select either DMA Channel *1, 3,* or *Disable*. The setup default is DMA Channel ***3***.

UART2 Use Infrared

When enabled, this field activates the onboard infrared feature and sets the second serial UART to support the infrared module connector on the motherboard. If your system already has a second serial port connected to the onboard COM2 connector, it will no longer work if you enable the infrared feature. By default, this field is set to ***Disabled***, which leaves the second serial port UART to support the COM2 serial port connector. See page 26 for the Infrared Connector.

IMPORTANT: For SMC37C665IR chipset, you must also physically set jumpers on page 7 as well as change the chipset setting.

Onboard PCI IDE Enable

You can select to enable the *primary* IDE channel, *secondary* IDE channel, ***both*** (default), or *disable* both channels (for systems with only SCSI hard drives).

IDE 0 Master/Slave Mode, IDE 1 Master/Slave Mode

Each channel (0 and 1) has both a master and a slave making four IDE devices possible. Because each IDE device may have a different Mode timing (*0, 1, 2, 3, 4*), it is necessary for these to be independent. The default setting of ***Auto*** will allow auto-detection to ensure the optimal performance.

IV. BIOS SOFTWARE

Power Management Setup

This "Power Management Setup" option allows you to reduce power consumption. This feature turns off the video display and shuts down the hard disk after a period of inactivity.

```
                    ROM EISA BIOS (PE55TP4D)
                    POWER MANAGEMENT SETUP
                    AWARD SOFTWARE, INC.

Power Management   : User Define      IRQ3  (COM 2)       : Disable
Video Off Option   : Susp,Stby -> Off IRQ4  (COM 1)       : Disable
Video Off Method   : V/H SYNC+Blank   IRQ5  (LPT 2)       : Disable
Suspend Switch     : Enable           IRQ6  (Floppy Disk): Disable
Doze Speed (div by): 8                IRQ7  (LPT 1)       : Disable
Stdby Speed(div by): 32               IRQ8  (RTC Alarm)   : Disable
                                      IRQ9  (IRQ2 Redir)  : Disable
        ** PM Timers **               IRQ10 (Reserved)    : Disable
HDD Power Down     : Disable          IRQ11 (Reserved)    : Disable
Doze Mode          : Disable          IRQ12 (PS/2 Mouse)  : Disable
Standby Mode       : Disable          IRQ13 (Coprocessor): Disable
Suspend Mode       : Disable          IRQ14 (Hard Disk)   : Disable
                                      IRQ15 (Reserved)    : Disable
        ** PM Events **
IRQ3  (Wake-Up)    : Disable
IRQ4  (Wake-Up)    : Enable           ESC : Quit          ↑↓→← : Select Item
IRQ8  (Wake-Up)    : Disable          F1  : Help          PU/PD/+/- : Modify
IRQ12 (Wake-Up)    : Enable           F5  : Old Values  (Shift)F2 : Color
                                      F6  : Load BIOS  Defaults
                                      F7  : Load Setup Defaults
```

Details of Power Management Setup:

Power Management

This field acts as the master control for the power management modes. *Max Saving* puts the system into power saving mode after a brief period of system inactivity; *Min Saving* is almost the same as *Max Saving* except that this time the system inactivity period is longer; *Disabled* disables the power saving features; and *User Defined* allows you to set power saving options according to your preference.

IMPORTANT: Advanced Power Management (APM) should be installed to keep the system time updated when the computer enters suspend mode activated by the BIOS Power Management. For DOS environments, you need to add DEVICE=C:\DOS\POWER.EXE in you CONFIG.SYS. For Windows 3.1x and Windows 95, you need to install Windows including the APM feature. A battery and power cord icon labeled "Power" will appear in the "Control Panel." Choose "Advanced" in the Power Management Field.

Video Off Option

This field determines when to activate the video off feature. The settings are **Susp, Stby-> Off** (default), *suspend -> off, always on*, and *all modes -> off*.

Video Off Method

This field defines the video off features. The first option *V/H SYNC + Blank*, which is the default setting, blanks the screen and turns off vertical and horizontal scanning; *DPMS* (acronym for Display Power Management System) allows the BIOS to control the video display card if it supports the DPMS feature; *Blank Only* only blanks the screen. Use the latter for monitors that do not support the "Green" feature.

Take note that a screen saver software does not work with this feature. While the monitor is shut off, this software cannot display.

Suspend Switch

This field enables or disables the SMI connector on the motherboard. This connector connects to the lead from the Suspend switch mounted on the system case. Default setting for this field is **Enabled**.

Doze Speed, Stdby Speed

These two fields set the CPU speed during each mode. The number indicates what the normal CPU speed is divided by.

PM Timers

This section controls the time-out settings for the Power Management scheme. The fields included in this section are "HDD Power Down", which places the hard disk into its lowest power consumption mode, and the Doze, Standby and Suspend system inactivation modes.

The system automatically "wakes up" from any power saving mode when there is system activity such as when a key is pressed from the keyboard, or when there is activity detected from the enabled IRQ channels.

HDD Power Down shuts down any IDE hard disk drives in the system after a period of inactivity. This time period is user-configurable to *1-15 Mins* or **Disable**. This feature does not affect SCSI hard drives.

The **Doze Mode, Standby Mode,** and **Suspend Mode** fields set the period of time after which each of these modes activate. At *Max Saving*, these modes activate sequentially (in the given order) after one minute; at *Min Saving* after one hour.

PM Events

This section sets the wake-up call of the system. If activity is detected from any enabled IRQ channels in the left-hand group, the system wakes up from suspended mode. You can enable power management for IRQs 3 ~ 15 individually in the list at the right of the screen. The power management feature will work on the enabled IRQ channels.

Take note that a Microsoft serial mouse or compatible will use either COM1 (IRQ4) or COM2 (IRQ3), and a PS/2 mouse will use IRQ12. If you know which IRQ your mouse is using, you can enable the Wake-up Event for that IRQ here and the system will wake up when you move the mouse or click its button.

IRQ3 to IRQ15

You can set IRQs 3 - 15 individually. Activity detected from any enabled IRQ channel will wake up the system.

PNP and PCI Setup

This "PNP and PCI Setup" option configures the PCI bus slots. All PCI bus slots on the system use INTA#, thus all installed PCI cards must be set to this value.

```
                    ROM EISA BIOS (PE55TP4D)
                       PNP AND PCI SETUP
                      AWARD SOFTWARE, INC.

  Slot 1 (RIGHT) IRQ : Auto      DMA  1 Used By ISA : No/ECU
  Slot 2 IRQ         : Auto      DMA  3 Used By ISA : No/ECU
  Slot 3 IRQ         : Auto      DMA  5 Used By ISA : No/ECU
  Slot 4 (LEFT) IRQ  : Auto
  PCI Latency Timer  :  32 PCI Clock   ISA MEM Block BASE : No/ECU

                                 NCR SCSI BIOS       : Auto
  IRQ  3 Used By ISA : No/ECU
  IRQ  4 Used By ISA : No/ECU
  IRQ  5 Used By ISA : No/ECU
  IRQ  7 Used By ISA : No/ECU
  IRQ  9 Used By ISA : No/ECU
  IRQ 10 Used By ISA : No/ECU
  IRQ 11 Used By ISA : No/ECU
  IRQ 12 Used By ISA : No/ECU
  IRQ 14 Used By ISA : No/ECU   ESC : Quit         ||←→ : Select Item
  IRQ 15 Used By ISA : No/ECU   F1  : Help         PU/PD/+/- : Modify
                                F5  : Old Values  (Shift)F2 : Color
                                F6  : Load BIOS  Defaults
                                F7  : Load Setup Defaults
```

The first four fields on the screen set how IRQ is assigned for each PCI slot. The default setting for each field is "Auto", which uses auto-routing to determine IRQ use. The other options are manual settings of "14" or "15" for each slot.

PCI Latency Timer

The default setting of "32 PCI Clock" enables maximum PCI performance for this motherboard.

IV. BIOS
(Plug & Play / PCI)

IRQ xx Used By ISA
These fields indicate whether or not the displayed IRQ for each field is being used by a Legacy (non-PnP) EISA/ISA card. Two options are available: *No/ECU* and *Yes*. The first option, the default value, indicates either that the displayed IRQ is not used or an EISA Configuration Utility (ECU) is being used to determine if an EISA/ISA card is using that IRQ. If you install a Legacy EISA/ISA card that requires a unique IRQ, and you are not using an ECU, you must set the field for that IRQ to *Yes*.

For example: If you install a Legacy EISA/ISA card that requires IRQ 10, then set **IRQ10 Used By ISA** to *Yes*.

DMA x Used By ISA
These fields indicate whether or not the displayed DMA channel for each field is being used by a Legacy (non-PnP) EISA/ISA card. Available options include: *No/ECU* and *Yes*. The first option, the default setting, indicates either that the displayed DMA channel is not used or an ECU is being used to determine if an EISA/ISA card is using that channel. If you install a Legacy EISA/ISA card that requires a unique DMA channel, and you are not using an ECU, you must set the field for that channel to *Yes*.

ISA MEM Block BASE
This field allows you to set the base address and block size of a Legacy EISA/ISA card that uses any memory segment within the C800H and DFFFH address range. If you have such a card, and you are not using an ECU to specify its address range, select a base address from the six available options; the **ISA MEM Block SIZE** field will then appear for selecting the block size. If you have more than one Legacy EISA/ISA card in your system that requires to use this address range, you can increase the block size to either 8K, 16K, 36K, or 64K.

If you are using an ECU to accomplish this task, leave **ISA MEM Block BASE** to its default setting of *No/ECU*.

IV. BIOS SOFTWARE

Load BIOS Defaults

This "Load BIOS Defaults" option allows you to load the troubleshooting default values permanently stored in the BIOS ROM. These default settings are non-optimal and disable all high performance features. To load these default settings, highlight "Load BIOS Defaults" on the main screen and then press the <Enter> key. The system displays a confirmation message on the screen. Press the <Y> key and then the <Enter> key to confirm. Press the <N> key and then the <Enter> key to abort. This feature does not affect the fields on the Standard CMOS Setup screen.

Load Setup Defaults

This "Load Setup Defaults" option allows you to load the default values to the system configuration fields. These default values are the optimized configuration settings for the system. To load these default values, highlight "Load Setup Defaults" on the main screen and then press the <Enter> key. The system displays a confirmation message on the screen. Press the <Y> key and then the <Enter> key to confirm. Press the <N> key and then the <Enter> key to abort. This feature does not affect the fields on the Standard CMOS Setup screen.

```
                    ROM EISA BIOS (PE55TP4D)
                      CMOS SETUP UTILITY
                     AWARD SOFTWARE, INC.

    STANDARD CMOS SETUP              SUPERVISOR PASSWORD

    BIOS FEATURES SETUP              USER PASSWORD

    CHIPSET FEATURES SETUP           IDE HDD AUTO DETECTION

    POWER MANAGEMENT SETUP           SAVE & EXIT SETUP

    PNP AND PCI SETUP     Load SETUP Defaults (Y/N)? y   SAVING

    LOAD BIOS DEFAULT

    LOAD SETUP DEFAULTS

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

           Load Setup Defaults except Standard CMOS SETUP
```
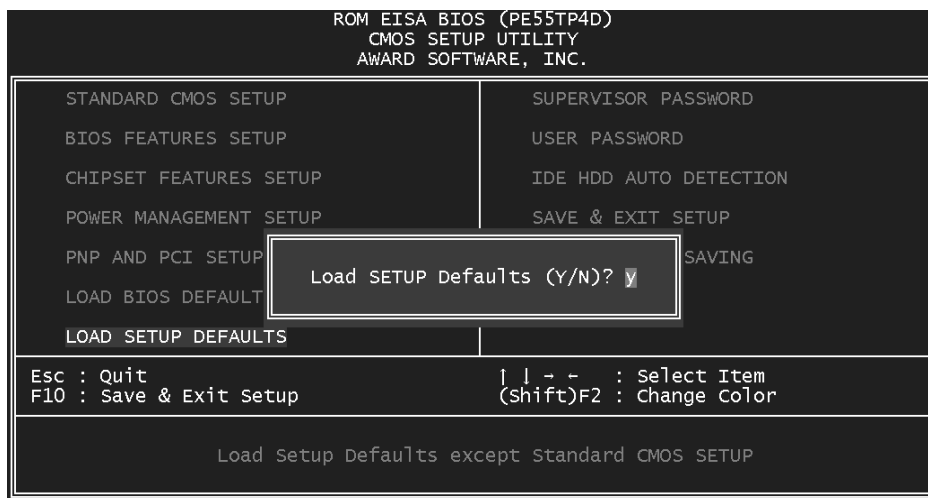
IV. BIOS
(Load Defaults)

IV. BIOS SOFTWARE

Supervisor Password and User Password

These two options set the system passwords. "Supervisor Password" sets a password that will be used to protect the system and the Setup utility; "User Password" sets a password that will be used exclusively on the system. By default, the system comes without any passwords. To specify a password, highlight the type you want and then press the <Enter> key. A password prompt appears on the screen. Taking note that the password is case sensitive, and can be up to 8 alphanumeric characters long, type in your password and then press the <Enter> key. The system confirms your password by asking you to type it again. After setting a password, the screen automatically reverts to the main screen.

```
                     ROM EISA BIOS (PE55TP4D)
                       CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
 ┌─────────────────────────────────────────────────────────────┐
 │  STANDARD CMOS SETUP            SUPERVISOR PASSWORD           │
 │                                                              │
 │  BIOS FEATURES SETUP            USER PASSWORD                 │
 │                                                              │
 │  CHIPSET FEATURES SETUP         IDE HDD AUTO DETECTION        │
 │                                                              │
 │  POWER MANAGEMENT SETUP         SAVE & EXIT SETUP             │
 │                                                              │
 │  PNP AND PCI SETUP              EXIT WITHOUT SAVING           │
 │                         ┌──────────────────────────┐         │
 │  LOAD BIOS DEFAULTS     │ Enter Password:  ******** │         │
 │                         └──────────────────────────┘         │
 │  LOAD SETUP DEFAULTS                                         │
 ├─────────────────────────────────────────────────────────────┤
 │  Esc : Quit                   ↑ ↓ → ←  : Select Item         │
 │  F10 : Save & Exit Setup      (Shift)F2 : Change Color       │
 ├─────────────────────────────────────────────────────────────┤
 │                  Change/Set/Disable Password                 │
 └─────────────────────────────────────────────────────────────┘
```

To implement the password protection, specify in the "Security Option" field of the BIOS Features Setup screen when the system will prompt for the password. If you want to disable either password, press the <Enter> key instead of entering a new password when the "Enter Password" prompt appears. A message confirms the password has been disabled.

NOTE: If you forget the password, see page 12 for procedures on clearing the CMOS.

IV. BIOS
(Passwords)

IV. BIOS SOFTWARE

IDE HDD Auto Detection

This "IDE HDD Auto Detection" option detects the parameters of an IDE hard disk drive, and automatically enters them into the Standard CMOS Setup screen.

```
                     ROM EISA BIOS (PE55TP4D)
                        CMOS SETUP UTILITY
                       AWARD SOFTWARE, INC.


  HARD DISKS       TYPE   SIZE   CYLS   HEAD   PRECOMP   LANDZ   SECTOR  MODE

  Primary Master  :


             Select Primary Master Option (N=Skip) : N

     OPTIONS      SIZE    CYLS    HEAD    PRECOMP   LANDZ   SECTOR    MODE

      2(Y)        849      823     32         0      1646      63      LBA
       1          849     1647     16     65535      1646      63    NORMAL
       3          849      823     32     65535      1646      63    LARGE

   Note:  Some OSes (like SCO-UNIX) must use "NORMAL" for installation
                           ESC : Skip
```

Up to four IDE drives can be detected, with parameters for each listed inside the box. To accept the optimal entries, press the <Y> key or else select from the numbers displayed under the OPTIONS field (2, 1, 3 in this case); to skip to the next drive, press the <N> key. If you accept the values, the parameters will appear listed beside the drive letter on the screen. The process then proceeds to the next drive letter. Pressing the <N> key to skip rather than to accept a set of parameters causes the program to enter zeros after that drive letter.

Remember that if you are using another IDE controller that does not feature Enhanced IDE support for four devices, you can only install two IDE hard disk drives. Your IDE controller must support the Enhanced IDE features in order to use Drive E and Drive F. The onboard PCI IDE controller supports Enhanced IDE, with two connectors for connecting up to four IDE devices. If you want to use another controller that supports four drives, you must disable the onboard IDE controller in the Chipset Features Setup screen.

When auto-detection is completed, the program automatically enters all entries you accepted on the field for that drive in the Standard CMOS Setup screen. Skipped entries are ignored and are not entered in the screen.

If you are auto-detecting a hard disk that supports the LBA mode, three lines will appear in the parameter box. Choose the line that lists LBA for an LBA drive. Do not select Large or Normal.

IV. BIOS
(Hard Drive Detect)

The auto-detection feature can only detect one set of parameters for a particular IDE hard drive. Some IDE drives can use more than one set. This is not a problem if the drive is new and there is nothing on it.
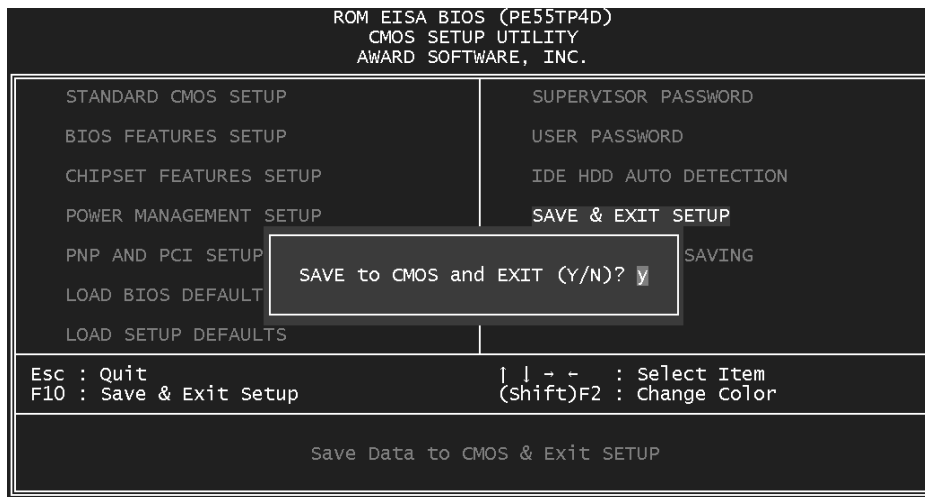
IMPORTANT: If your hard drive was already formatted on an older previous system, incorrect parameters may be detected. You will need to enter the correct parameters manually or use low-level format if you do not need the data stored on the hard drive.

If the parameters listed differ from the ones used when the drive was formatted, the drive will not be readable. If the auto-detected parameters do not match the ones that should be used for your drive, do not accept them. Press the <N> key to reject the presented settings and enter the correct ones manually from the Standard CMOS Setup screen.

Save and Exit Setup

Select this option to save into the CMOS memory all modifications you specify during the current session. To save the configuration changes, highlight the "Save & Exit Setup" option on the main screen and then press the <Enter> key.

```
                    ROM EISA BIOS (PE55TP4D)
                      CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.

   STANDARD CMOS SETUP            SUPERVISOR PASSWORD

   BIOS FEATURES SETUP           USER PASSWORD

   CHIPSET FEATURES SETUP        IDE HDD AUTO DETECTION

   POWER MANAGEMENT SETUP        SAVE & EXIT SETUP

   PNP AND PCI SETUP    ┌──────────────────────┐ SAVING
                        │                      │
   LOAD BIOS DEFAULT    │ SAVE to CMOS and EXIT (Y/N)? y │
                        │                      │
   LOAD SETUP DEFAULTS  └──────────────────────┘

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

                 Save Data to CMOS & Exit SETUP
```

Exit Without Saving

Select this option to exit the Setup utility without saving the modifications you specify during the current session. To exit without saving, highlight the "Exit Without Saving" option on the main screen and then press the <Enter> key.

IV. BIOS SOFTWARE

Flash Memory Writer Utility

This motherboard comes with a diskette which contains the following files:

README.TXT
A Readme text file containing information about the utility. To access or print out the contents of this file, you can use any text editor program.

DMICFG.EXE
Desktop Management Interface Utility. See section V for basic instructions.

T25Ixxxx.AWD
A BIOS file for this motherboard. xxxx here is a 4-digit version number; larger values denote newer BIOS versions, while smaller numbers denote older versions.

PFLASH.EXE
This is the Flash Memory Writer utility. The Flash Memory Writer utility updates the BIOS by uploading a new BIOS file to the programmable flash ROM chip on the motherboard. This BIOS file is included in the support diskette, and may be newer than the BIOS on the motherboard. To determine whether or not the provided BIOS file is newer than the current motherboard BIOS, compare the diskette's BIOS file name with the last four numbers of the code displayed on the upper left-hand corner of your screen during bootup. If the number of the BIOS file in the support diskette is larger, continue with this section to reprogram the motherboard BIOS. If the number is smaller, do not continue with this Flash Memory Writer section.

Before reprogramming the motherboard BIOS, you must first:

1. Enable "Boot Block Programming" (see page 12).

2. Make sure the system is running in real mode. This utility will not operate if the system is under protected mode or virtual mode. This means that you cannot reprogram the motherboard BIOS under the Windows environment or with any memory management software, including HIMEM.SYS. If you have any memory management software running, disable them first. The following describes the easiest way to ensure that your system memory is free from these programs:

- Boot from a floppy disk formatted with the "FORMAT A:/S" command without creating CONFIG.SYS and AUTOEXEC.BAT files.

- If you are using MS-DOS 6.x, you can bypass the AUTOEXEC.BAT and CONFIG.SYS by pressing <F5> when "Starting MS-DOS . . . " line is displayed on the screen.

- For Windows 95 users, press <F8> to enter the Microsoft Windows 95 Startup Menu and then choose "Safe mode command prompt only"

Once you have accomplished the above tasks, you can run the Flash Memory Writer utility. You can copy the contents of the \FLASH directory to your hard disk drive or to a backup floppy disk. When copying the files, ensure that the BIOS file is on the same directory as the utility. To run, change to the directory containing PFLASH.EXE and then at the DOS prompt, type:

PFLASH <Enter>

The Flash Memory Writer Utility Screen:

```
                        ASUSTeK PNP BIOS
                     FLASH MEMORY WRITER V1.3
               Copyright (C) 1995, ASUSTek COMPUTER Inc.


  Flash Type -- SST 29EE010

  Current BIOS Revision: #401A0-0103

  Choose one of the following:

  1. Save Current BIOS To File

  2. Update BIOS Main Block From File

  3. Advanced Features


  Enter Choice: [ 1]



  Press ESC To Exit
```

IMPORTANT: Flash Type may also be "INTEL 28F001BXT." If "unknown" is after "Flash type --," then this ROM chip is not programmable or not supported with the PnP BIOS and therefore cannot be programmed by the Flash Memory Writer.

This screen provides three command options, which you can invoke by typing the corresponding number of the command and pressing <Enter> key. The following describes each command:

IV. BIOS SOFTWARE

1. Save Current BIOS to File
This option allows you to copy the contents of the Flash memory chip into a file in the \FLASH directory. This gives you a backup copy of the original motherboard BIOS in case you need to re-install it. In such cases where the data on the chip get lost or corrupted, you can reprogram the chip using this backup copy. We strongly recommend that you perform this procedure.

2. Update BIOS Main Block from File
This option updates the BIOS from a file on the disk. This can either be a new file or a backup file created by the "Save Current BIOS to File" option. This will not update the Boot Block if the Boot Block is different. You will be prompted with the following if advanced features if necessary.

Boot Block of New BIOS is different from old one !!!
Please Use 'Advanced Feature' to flash whole bios !!!

3. Advanced Features
Selecting this option brings up the Advanced Features screen for clearing the PnP configuration record and updating the motherboard BIOS.

To terminate the program and return to the DOS prompt, press the <Esc> key. Selecting the third option displays the Advanced Features screen.

```
                         Advanced Features


        Flash Type -- SST 29EE010

        Current BIOS Revision: #401A0-0103

        Choose one of the following:

        1. Clear PNP ESCD Parameter Block

        2. Update BIOS Including Boot Block and ESCD



        Enter Choice: [ 2]




        Press ESC To Exit
```

Clear PNP ESCD Parameter Block
This option erases the Plug-and-Play (PnP) configuration record.

Update BIOS Including Boot Block and ESCD
This option updates the Boot Block, the motherboard BIOS and the PnP ESCD Parameter Block from a new BIOS file in the \FLASH directory.

IV. BIOS SOFTWARE

To select an option, type its corresponding number in the provided space and then press the <Enter> key. Follow these procedure to update the PnP motherboard BIOS.

1. For security reasons, back up your existing system BIOS using the "Save Current BIOS to File" option. If anything goes wrong with the updating process, you can still recover the original BIOS. To back up, select the first command option from the Flash Memory Writer screen. Specify a file name when prompted and then press the <Enter> key. The program then creates a file in the \FLASH directory containing the current BIOS.

2. Download the new BIOS by selecting the second command option from the Advanced Features screen. The program displays a second screen prompting you for the name of the BIOS file. Type in the complete name of the file, including the file name extension, and then press the <Enter> key. The utility then downloads the new BIOS file. The following message appears:

   ```
   DO NOT TURN OFF THE SYSTEM IF THERE IS A PROBLEM!
   ```

   If you encounter problems while downloading the new BIOS, DO NOT turn off your system since this might prevent your system from booting up. Just repeat the process, and if the problem still persists, download the original BIOS file you created in step 1 above.

3. After successfully downloading the new BIOS file, exit the Flash Memory Writer utility and **then turn off your system**. Set the jumper back to its default setting of Programming "Disabled."

4. Turn on the system and hold down <DEL> to enter BIOS Setup. You must load "**Setup Default**" as described on page 43 to affect the new BIOS.

WARNING: If the Flash Memory Writer utility was not able to successfully download a complete BIOS file, your system may not be able to boot up. If this happens, your system will require service from your vendor.

V. DESKTOP MANAGEMENT

Desktop Management Interface (DMI)

Introducing the DMI utility

This motherboard supports DMI within the BIOS level and provides a DMI Utility to maintain the Management Information Format Database (MIFD). DMI is able to auto-detect and record information pertinent to a computer's system such as the CPU type, CPU speed, and internal/external frequencies, and memory size. The onboard BIOS will detect as many system information as possible and store those collected information in a 4KB block in the motherboard's Flash EPROM and allow the DMI to retrieve data from this database. Unlike other BIOS software, the BIOS on this motherboard uses the same technology implemented for Plug and Play to allow dynamic real-time updating of DMI information versus creating a new BIOS image file and requiring the user to update the whole BIOS. This DMI utility also allows the system integrator or end user to add additional information into the MIFD such as serial numbers, housing configurations, and vendor information. Those information not detected by the motherboard BIOS and has to be manually entered through the DMI Utility and updated into the MIFD. This DMI utility provides the same reliability as PnP updating and will prevent the refreshing failures associated with updating the entire BIOS.

System Requirements

The motherboard BIOS must support DMI. The following motherboards do not support DMI:
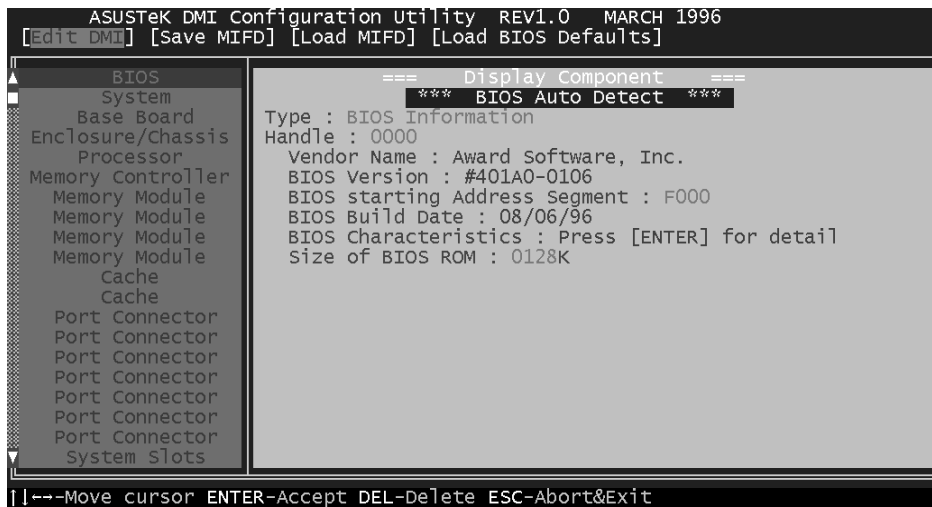
- P/I-P6RP4   (not supported)
- PCI/E-P54NP4   (not supported)
- PCI/I-P54NP4D   (not supported)

The DMI Utility (DMICFG.EXE) must be ran in real mode in order for the program to run, the base memory must be at least 180K. Memory managers like HIMEM.SYS (required by windows) must not be installed. You can boot up from a system diskette without AUTOEXEC.BAT and CONFIG.SYS files, "REM" HIMEM.SYS in the CONFIG.SYS, or press <F5> during bootup to bypass your AUTOEXEC.BAT and CONFIG.SYS files.

V. DESKTOP MANAGEMENT

Using the DMI utility

Edit DMI (or delete)

```
         ASUSTeK DMI Configuration Utility  REV1.0   MARCH 1996
        [Edit DMI] [Save MIFD] [Load MIFD] [Load BIOS Defaults]

          BIOS            ===    Display Component    ===
         System                 ***  BIOS Auto Detect  ***
       Base Board        Type : BIOS Information
    Enclosure/Chassis    Handle : 0000
       Processor            Vendor Name : Award Software, Inc.
   Memory Controller       BIOS Version : #401A0-0106
     Memory Module         BIOS starting Address Segment : F000
     Memory Module         BIOS Build Date : 08/06/96
     Memory Module         BIOS Characteristics : Press [ENTER] for detail
     Memory Module         Size of BIOS ROM : 0128K
         Cache
         Cache
     Port Connector
     Port Connector
     Port Connector
     Port Connector
     Port Connector
     Port Connector
     Port Connector
     System Slots

    ↑↓←→-Move cursor ENTER-Accept DEL-Delete ESC-Abort&Exit
```

Use the ←→ (left-right) cursors to move the top menu items and the ↑↓ (up-down) cursor to move between the left hand menu items. The bottom of the screen will show the available keys for each screen. Press enter at the menu item to enter the right hand screen for editing. "Edit component" appears on top. The reversed color field is the current cursor position and the blue text are available for editing. The orange text shows auto-detected information and are not available for editing. The blue text "Press [ENTER] for detail" contains a second pop-up menu is available, use the + - (plus-minus) keys to change the settings. Enter to exit *and save*, ESC to exit *and not save*.

If the user has made changes, ESC will prompt you to answer Y or N. Enter Y to go back to the left-hand screen *and save*, enter N to go back to left-hand screen and *not save*. If editing has not been made, ESC will send you back to the left hand menu without any messages.

Notes:

A heading, *** BIOS Auto Detect *** appears on the right for each menu item on the left that has not been modified by the user

A heading, *** User Modified *** will appear on the right for menu items that has been modified by the user.

V. DESKTOP MANAGEMENT

Save MIFD

You can save the MIFD (normally only saved to flash ROM) to a file by entering the drive and path here. If you want to cancel save, you may press ESC and a message "Bad File Name" appears here to show it was not saved.

Load MIFD

You can load the disk file to memory by entering a drive and path and file name.

Load BIOS Defaults

You can load the BIOS defaults from a MIFD file and can clear all user modified and added data. You must reboot your computer in order for the defaults to be saved back into the Flash BIOS.

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VI. PCI-SC200 SCSI Card

NCR SCSI BIOS and Drivers

Aside from the system BIOS, the Flash memory chip on the motherboard also contains the NCR SCSI BIOS. This SCSI BIOS works in conjunction with the optional PCI-SC200 SCSI controller card to provide a complete PCI Fast SCSI-2 interface.

All SCSI devices you install to your system require driver software to function. The NCR SCSI BIOS directly supports SCSI hard disks under the DOS, Windows and OS/2 environments. It also uses device drivers from the DOS floppy disk included in the PCI-SC200 controller card package to support hard disks and other SCSI devices working under DOS, Windows, Windows NT, Novell NetWare and OS/2. These drivers provide higher performance than the direct BIOS support. To use these drivers, you must install them into your system and add them to your system configuration files. Driver support for SCSI devices used with SCO UNIX is also provided. These drivers are included in the second SCO UNIX floppy disk. Windows 95 support is also available using the device drivers included within the Windows software. The PCI-SC200 adapter is auto detected as PCI NCRC810 SCSI HOST ADAPTER and uses the NCRC810.MPD driver.

For information about these drivers and their usage, see the Readme files included in the driver packages. You can print out the contents of these files using any text editor program.

The next few pages will instruct you on the installation of the PCI-SC200 Fast SCSI Card.
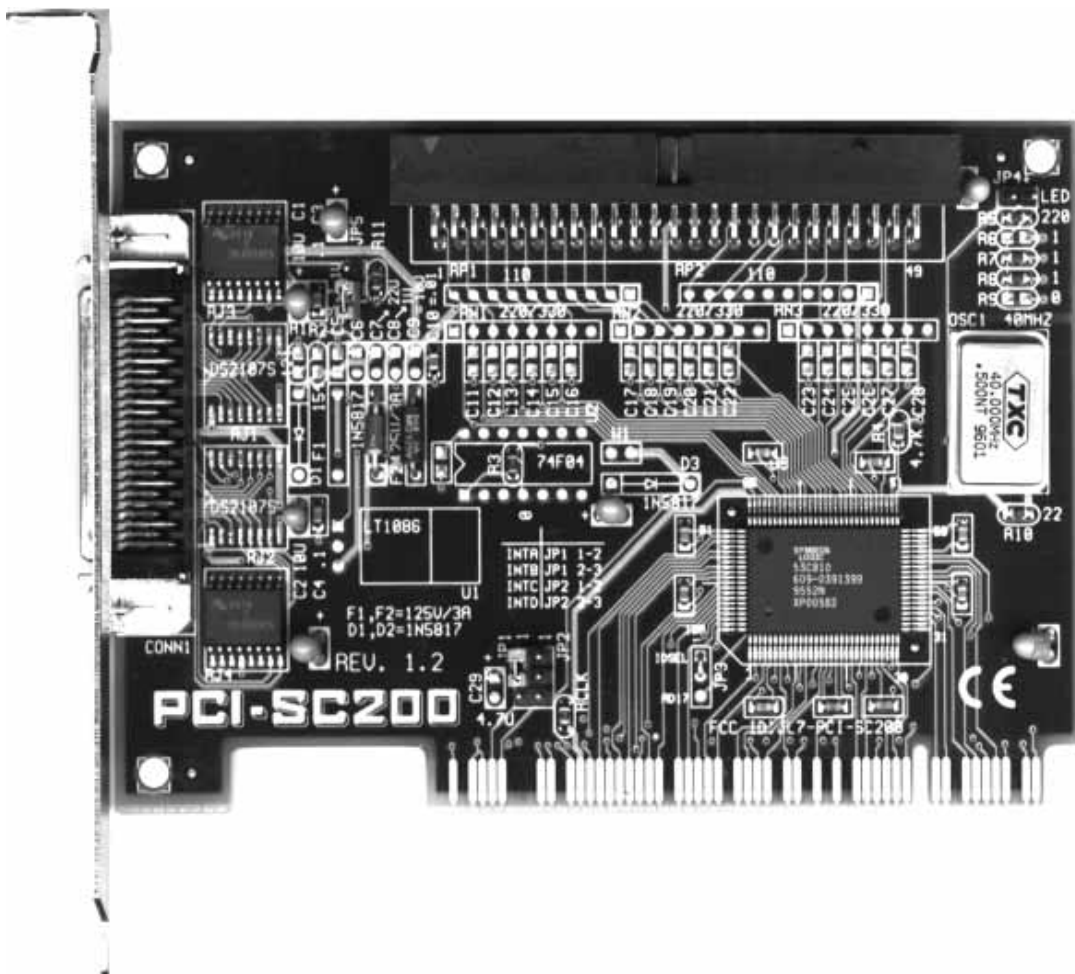
VI. PCI-SC200 SCSI Card

The PCI-SC200 SCSI Interface Card

Your motherboard may have come with an optional SCSI (Small Computer System Interface) controller card, the PCI-SC200. The card is also available separately. This card works with the SCSI BIOS on the motherboard. Together, they provide a complete PCI Fast SCSI-2 interface. With the card installed in your system you can connect SCSI devices installed in your system case to the internal connector on the card. You also have the additional option of connecting external SCSI devices to the external SCSI-2 connector on the card.

If you get the PCI-SC200 later on as an option, you will need to install it yourself. The setup procedure is explained here.
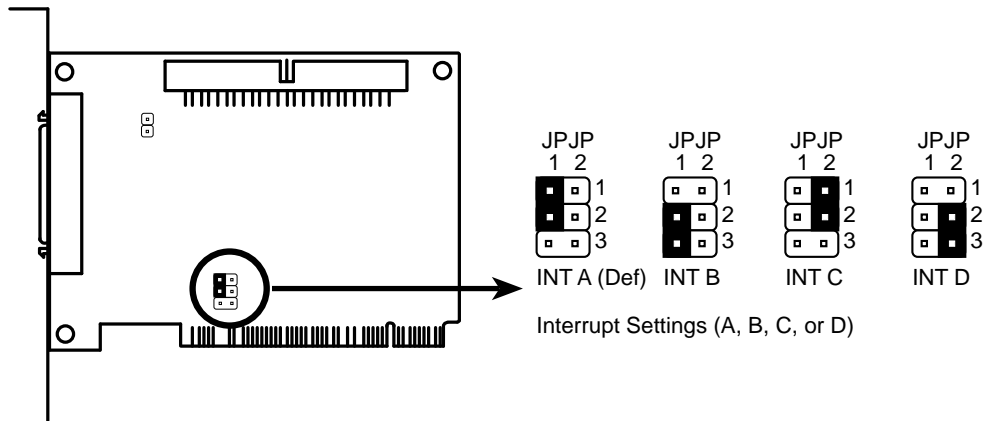
Setting Up the PCI-SC200

There are two jumper settings you may need to make on the card to set it up. One setting assigns the PCI INT interrupt, the other sets the card's termination.

VI. PCI-SC200 SCSI Card

Setting the INT Assignment

You must use PCI INT A setting in order to properly assign the card's interrupt. On the PCI-SC200, you assign the INT by setting jumper JP1 or JP2. The default setting for the card already is INT A, so you do not need to change the setting to use the PCI-SC200 with this motherboard.


Interrupt Settings (A, B, C, or D)

Terminator Settings

SCSI devices are connected together in a "chain" by cables. Internal devices connect to the PCI-SC200 with a fifty-pin flat ribbon cable. External devices connect to the external port with a SCSI-2 cable. If there are more than one internal or external devices, additional devices are connected with cables to form a "daisy chain." The SCSI chain must be "terminated" at both ends, or the devices in the chain will not work properly.

Many SCSI devices use a set of terminating resistors to terminate the device. The PCI-SC200 has "active" termination that you set using jumper JP5. If you need to terminate the PCI-SC200, you do it by setting the jumper. The are two settings, "terminated" and "not terminated," as shown below.

VI. PCI-SC200 SCSI Card

JP 5   JP 5

Terminated (Default)   Not Terminated

Terminator Setting (Terminated / Not Terminated)
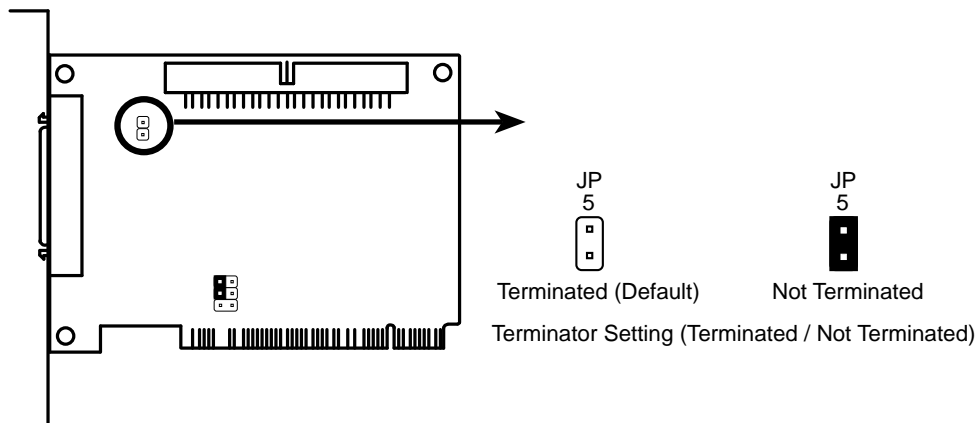
Decide whether or not you need to terminate the PCI-SC200 based on its position in the SCSI chain. Only the devices at each end of the chain need to be terminated. If you have **only** internal or **only** external devices connected to the PCI-SC200, then you **must** terminate the PCI-SC200. If you have **both** internal and external devices connected, you **must not** terminate the card. See the following example which illustrates this concept.

SCSI Device 1   SCSI Device 2

Termination Required
(JP5 Open)

Termination Required
(End Device)

SCSI Device 3   SCSI Device 4

No Termination Required
(JP5 Short)

Termination Required
(End Device)

Termination Required
(End Device)

SCSI Device 2   SCSI Device 1