ASUS® P/I P65UP5
Baseboard for CPU Cards

USER'S MANUAL

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The product name and revision number are both printed on the board itself. Manual revisions are released for each board design represented by the digit before and after the period of the manual revision number. Manual updates are represented by the third digit in the manual revision number.

For previous or updated manuals, BIOS, drivers, or product release information, contact ASUS at http://www.asus.com.tw or through any of the means indicated on the following page.

Product Name:	**P/I-P65UP5**
Manual Revision:	**2.04**
Release Date:	**July 1997**

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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 baseboard
IV. **SCSI Cards:**   Installation of ASUS SCSI cards (optional)

Item Checklist

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

☑   ASUS P/I-P65UP5 baseboard

☑   C-P6ND, C-P55T2D, or C-PKND CPU card

☑   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

☑   This user's manual

☐   Infrared module (optional)

☐   USB cable with mounting bracket set (optional)

☐   ASUS PCI-SC200 Fast SCSI or PCI-SC860 Ultra-Fast SCSI card (optional)

☐   ASUS I-A16C audio card and manual* (optional)

*Online help is provided with the Creative 16X audio drivers. A separate manual is provided for the Creative 16C Series audio drivers.
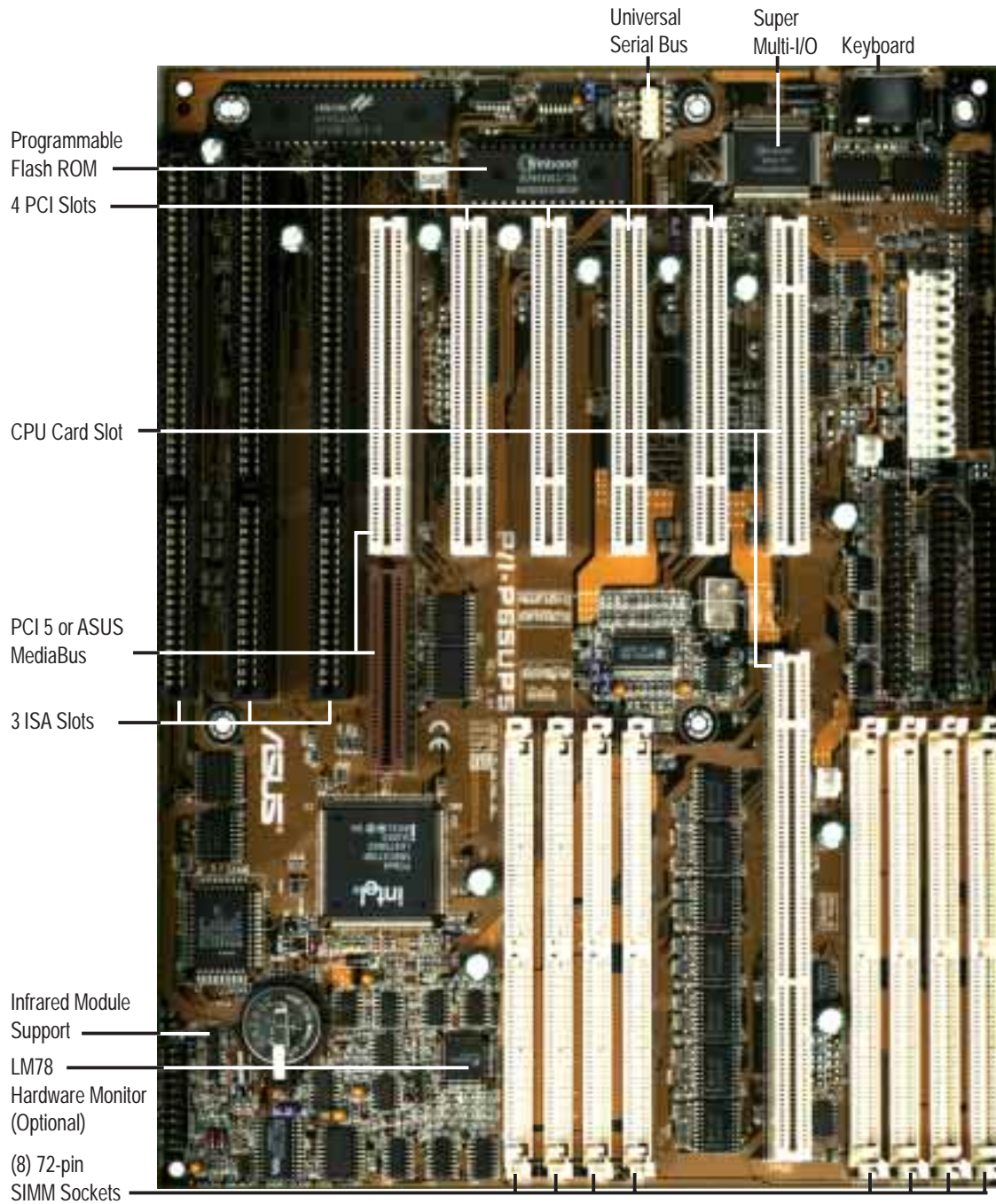
II. FEATURES

Features of the ASUS P/I-P65UP5 Baseboard

The P/I-P65UP5 is carefully designed for the demanding PC user who wants great versatility in a computer system. This baseboard:

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

- **Desktop Management Interface (DMI):** Supports DMI through BIOS, which allows hardware to communicate within a standard protocol creating a higher level of compatibility. (Requires DMI-enabled components.)

- **Versatile Processor Support:** Supports dual 75–233MHz Pentium, 150–200MHz Pentium Pro, 233–333MHz Pentium II processors.

- **Versatile DRAM Memory Support:** Supports eight 72-pin SIMMs of 4MB, 8MB, 16MB, 32MB, 64MB to form a memory size between 8MB to 512MB. Supports both Fast Page Mode (FPM), and Extended Data Output (EDO) SIMMs. Burst Extended Data Output (BEDO) supported with the C-P6ND CPU card.

- **ISA and PCI Expansion Slots:** Provides three 16-bit ISA slots, four 32-bit PCI slots, and one PCI/MediaBus shared slot for either a standard PCI card or ASUS MediaBus Card.

- **ASUS MediaBus:** Features an expansion slot extension shared with PCI Slot 5 for an optional high-performance expansion card, which includes two functions in one easy-to-install card.

- **Super Multi-I/O:** Provides two high-speed UART-compatible serial ports and one parallel port with EPP and ECP capabilities. Supports two of either 5.25- or 3.5-inch disk drives (1.44MB or 2.88MB) without an external card.

- **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, supports PIO Modes 3 and 4 and Bus Master IDE DMA Mode 2, and supports Enhanced IDE devices such as Tape Backup and CD-ROM drives. **Supports Japanese standard "Floppy 3 mode" (3.5-inch disk drive: 1.2MB) and LS-120 floppy disk drives (3.5-inch disk drive: 120 MB, 1.44MB, 720K). BIOS supports IDE CD-ROM or SCSI device boot-up.**

- **Optional IrDA Module:** Supports an optional infrared port module for wireless file transfers and communication.

- **SCSI BIOS:** Supports optional ASUS SCSI controller cards through onboard firmware.

- **Intelligence:** Supports Fan Status Monitoring and Alarm, Temperature Monitoring and Alert, Voltage Monitoring and Alert, System Resources Alert, and Virus Write Protection through the optional onboard LM78 Hardware Monitor and Intel® LANDesk Client Manager (LDCM) software.

II. FEATURES

Parts of the ASUS Baseboard

Universal Serial Bus

Super Multi-I/O

Keyboard

Programmable Flash ROM

4 PCI Slots

CPU Card Slot

PCI 5 or ASUS MediaBus

3 ISA Slots

Infrared Module Support

LM78 Hardware Monitor (Optional)

(8) 72-pin SIMM Sockets

III. INSTALLATION

ASUS Baseboard Layout

Keyboard

Universal Serial Bus

Serial Ports
COM 1
COM 2

Parallel Port
Board Power Input
P9
P8

FANPWR3

FANPWR1

JP1 — Multi-i/O Enable/Disable

ISA Slot 3
ISA Slot 2
ISA Slot 1

PCI Slot 5 / MediaBus
PCI Slot 4
PCI Slot 3
PCI Slot 2
PCI Slot 1

CPU Card Slot

Floppy Drives
Primary IDE
Secondary IDE

JP2
JP3
BUS Freq.

CPU Card Slot

FANPWR2

SIMM Socket 2 (Bank 0)
SIMM Socket 4 (Bank 1)
SIMM Socket 6 (Bank 2)
SIMM Socket 8 (Bank 3)

SIMM Socket 1 (Bank 0)
SIMM Socket 3 (Bank 1)
SIMM Socket 5 (Bank 2)
SIMM Socket 7 (Bank 3)

CR2032 3Volts
Lithium Cell

IDE LED
Infrared Con
Case Connector

BIOS Power

JP9
Battery Test

Hardware
Monitor
LM78
Chassis Conn.

JP7 — RTC RAM
Operation/Clear CMOS

The items in outline are only available on the baseboard with onboard LM78 Hardware Monitor.

III. INSTALLATION

Jumpers

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2) JP4   p. 13 Flash ROM Boot Block Programming (Protect/Prog)
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4) JP7, JP9   p. 15 Real Time Clock RAM (Operation/Clear CMOS)

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2) SIMM1–SIMM8   p. 17 72-Pin SIMM Sockets
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11) RESET (CON1)   p. 26 Reset Switch Lead (2 pins)
12) PWR LED (CON1)   p. 26 System Power LED Lead (3 pins)
13) KEYLOCK (CON1)   p. 26 Keyboard Lock Switch Lead (2 pins)
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16) USB   p. 27 USB Module Connector (18-pin block)
17) CHASSIS (optional)   p. 27 Chassis Open Alarm Connector (3-pin block)

III. INSTALLATION
(Board Layout)

III. INSTALLATION

Installation Steps

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

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

1. Jumpers

Several hardware settings are made through the use of jumper caps to connect jumper pins (JP) on the baseboard. See "Baseboard Layout" on page 10 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 baseboards is always on top or on the left when holding the baseboard 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 motherboards, baseboards and components, such as SCSI cards, contain very delicate Integrated Circuit (IC) chips. To protect them 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. Use a grounded wrist strap before handling computer components. If you do not have one, touch both of your hands to a safely grounded object or to a metal object, such as the power supply case.
> 3. Hold components by the edges and try not to touch the IC chips, leads or connectors, or other 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. On-Board Multi-I/O Selection (JP1)

You can disable the onboard Multi-I/O (floppy, serial, parallel, and IrDA) individually through BIOS *or* entirely with the following jumper to use your own multi-I/O card.

Multi-I/O	JP1
Enable	[1-2] (Default)
Disable	[2-3]

JP1
1
2
3
Enable (Default)

JP1
1
2
3
Disable
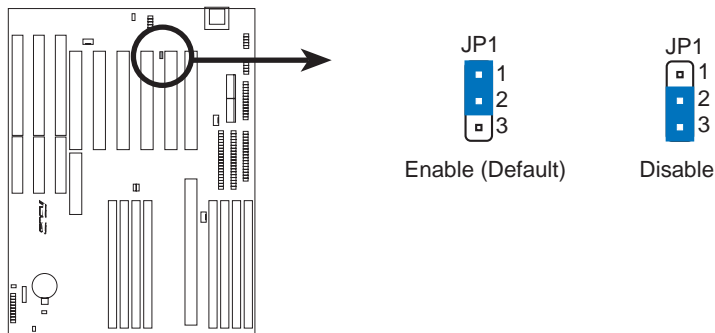
Multi I/O Setting

2. Flash ROM Boot Block Programming (JP4)

This sets the operation mode of the boot block area of the BIOS Flash ROM to allow programming in the *Prog* (*Prog*ram or enabled) position.

Programming	JP4
Protect (Disabled)	[1-2] (Default)
Prog (Enabled)	[2-3]

JP4
1
2
3
Protect (Default)

JP4
1
2
3
Prog

Boot Block Programming

3. CPU External (BUS) Frequency Selection (JP2, JP3)

These jumpers tells 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 multiplied by the BUS Ratio equals the CPU's *Internal* frequency (the advertised CPU speed).

BUS Freq.	JP3	JP2
66MHz	[1-2]	[2-3]
60MHz	[2-3]	[1-2]
50MHz	[1-2]	[1-2]

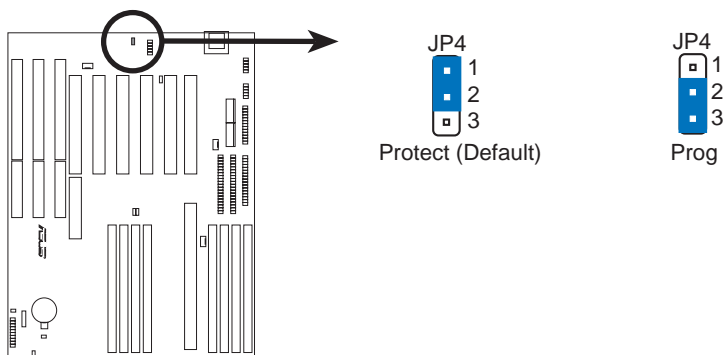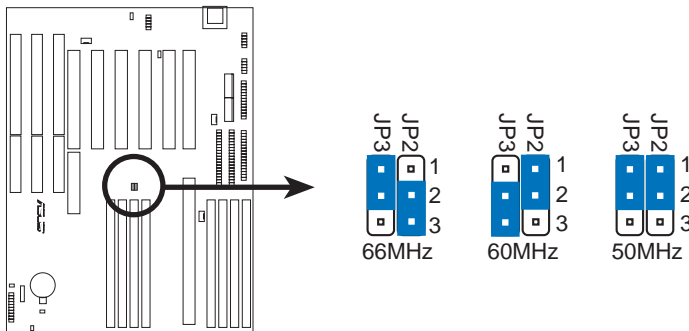**CPU External Clock (BUS) Frequency Selection**

Intel Pentium Pro (P6) Processor:

CPU	BUS	(CPU Card BUS Ratio)				(Chipset Freq on CPU Card)			(CPU Ext. Freq on Baseboard)	
Internal	Ratio	JP13	JP14	JP15	JP16	JP6	JP7	Freq.	JP3	JP2
200MHz	3.0x	[ON]	[ON]	[OFF]	[ON]	[ON]	[OFF]	66MHz	[1-2]	[2-3]
180MHz	3.0x	[ON]	[ON]	[OFF]	[ON]	[OFF]	[ON]	60MHz	[2-3]	[1-2]
166MHz	2.5x	[ON]	[OFF]	[ON]	[ON]	[ON]	[OFF]	66MHz	[1-2]	[2-3]
150MHz	2.5x	[ON]	[OFF]	[ON]	[ON]	[OFF]	[ON]	60MHz	[2-3]	[1-2]

Intel Pentium (P5) Processor:

CPU	BUS	(CPU Card BUS Ratio)				(CPU Ext. Freq on Baseboard)	
Internal	Ratio		JP15	JP16	Freq.	JP3	JP2
200MHz	3.0x		[ON]	[OFF]	66MHz	[1-2]	[2-3]
166MHz	2.5x		[ON]	[ON]	66MHz	[1-2]	[2-3]
150MHz	2.5x		[ON]	[ON]	60MHz	[2-3]	[1-2]
133MHz	2.0x		[OFF]	[ON]	66MHz	[1-2]	[2-3]
120MHz	2.0x		[OFF]	[ON]	60MHz	[2-3]	[1-2]
100MHz	1.5x		[OFF]	[OFF]	66MHz	[1-2]	[2-3]
90MHz	1.5x		[OFF]	[OFF]	60MHz	[2-3]	[1-2]
75MHz	1.5x		[OFF]	[OFF]	50MHz	[1-2]	[1-2]

Intel Pentium II Processor:

CPU Internal	BUS Ratio	(CPU Card BUS Ratio) JP1	JP2	JP3	JP4
266MHz	4.0x	[short]	[short]	[open]	[short]
233MHz	35x	[open]	[open]	[short]	[short]

Ext. Freq.	(CPU Ext. Freq on Baseboard) JP3	JP2
66MHz	[1-2]	[2-3]
66MHz	[1-2]	[2-3]

4. **Real Time Clock (RTC) RAM (JP7)**

   This clears the user-entered information stored in the CMOS RAM of the Real Time Clock such as hard disk information and passwords. To clear the RTC data: (1) Turn off your computer and unplug the AC power, (2) Move this jumper to *Clear CMOS*, (3) Power on the computer, (4) Turn off the PC, (5) Remove this jumper, (6) Power on the computer, (7) Hold down <Delete> during bootup and enter BIOS setup to re-enter user preferences.

   > **WARNING!** You must unplug the power cord to your power supply to ensure that there is no power to your baseboard. The CMOS RAM containing the BIOS setup information *may* be cleared by this action. You *must* enter BIOS to "Load Setup Defaults" and re-enter any user information after removing and reapplying this jumper.

Selections	JP7
Operation	[open] (Default)
Clear CMOS	[short] (momentarily)

RTC RAM

JP9 — Battery Test

JP7 — Operation Open (Default)

JP7 — Clear CMOS Short
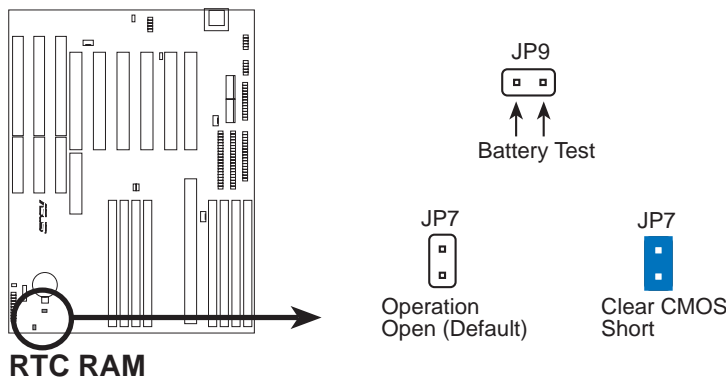
   Battery Test Jumper (JP9)
   You can test the battery's current by removing the jumper and attaching a current meter to pins 1 and 2.

III. INSTALLATION (Jumpers)

III. INSTALLATION

2. System Memory (DRAM/SDRAM & SRAM)

This baseboard supports eight 72-pin SIMMs (Single Inline Memory Modules) of 4MB, 8MB, 16MB, 32MB, 64MB to form a memory size between 8MB to 512MB. The DRAM can be either 60ns or 70ns Fast Page Mode (Asymmetric or Symmetric), Extended Data Output (EDO), or Burst Extended Data Output (BEDO) (with C-P6ND only). SIMMs must be installed in pairs so that each bank contains two of the same size memory modules. To support ECC, you must use *true* (opposed to phantom parity generated by TTL chips) 36-bit parity-type SIMM (e.g. 8 chips + 4 parity chips) in pairs for all modules. Mixing 32-bit non-parity SIMM (e.g. 8 chips) and 36-bit SIMM (e.g. 12 chips) will work minus the ECC feature.

IMPORTANT: Memory setup is required in "Auto Configuration" in the CHIPSET FEATURES SETUP of Section IV BIOS software. Each bank must have the same size memory installed in pairs.

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

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

NOTE: Memory on socket 1 has a clearance of 5.0 cm when the C-PKND and C-P6ND CPU cards are installed and 5.5 cm when the C-P55T2D CPU card is installed.

NOTE: SIMM numbers are not in sequence, (2, 4, 6, 8, 1, 3, 5, 7 from left to right.)

IMPORTANT: Each bank must have the same size memory installed in pairs. 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 be unstable.

III. INSTALLATION

DRAM Memory Installation Procedures

IMPORTANT: Install memory modules in symmetric pairs.

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

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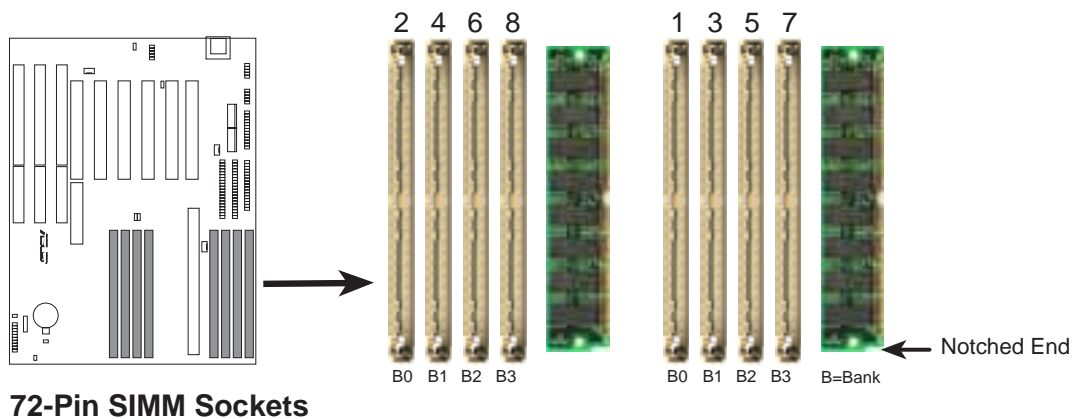
2. Press the memory module firmly into place starting from a 45 degree angle making sure that all the contacts are aligned with the slot.

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

4. The plastic guides should go through the two mounting holes on the sides and the clips should snap on the other side.

5. To release the memory module, squeeze both clips outward and rock the module out of the clips.

III. INSTALLATION

## 3. Central Processing Unit

The P/I-P65UP5 baseboard provides a CPU card slot that can be used with any ASUS CPU cards, which are available separately. You must purchase any one of these CPU cards (see next page for a brief description) to complete the system's board.

System Case

The system case must be either a mid- to full-size tower or desktop (for C-P6ND and C-P55T2D CPU cards) or server (C-PKND) case to give a clearance as follows:
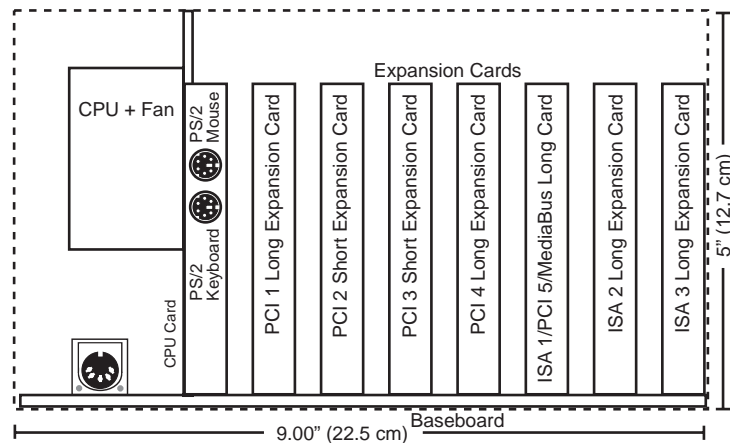
System Cabinet Clearance Area Requirement for the C-P6ND/C-P55T2D CPU Cards
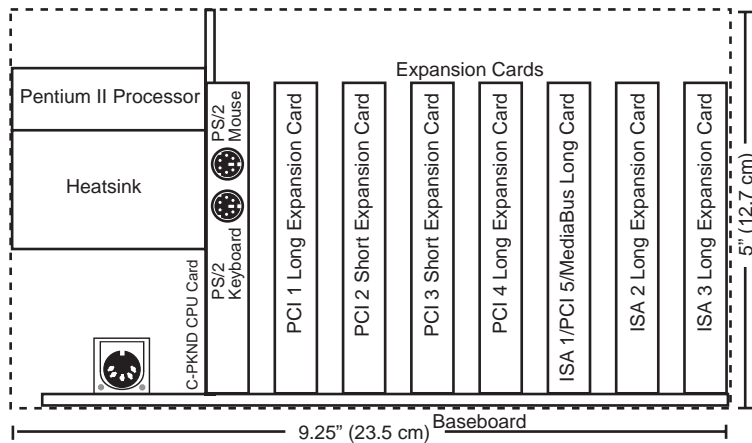
System Cabinet Clearance Area Requirement for the C-PKND CPU Card

The P/I-P65UP5 baseboard is a standard 3/4 baby AT size 11 x 8.75" and will fit almost all system cases, but the CPU card will require that the floppy disk and CD-ROM drives not be hanging over the baseboard. Depending on the height of the SIMM memory modules and the CPU fan and/or heatsink, the area above the SIMM memory modules may not be available. For both the C-P6ND and C-P55T2D CPU cards, be sure that your case has a minimum area clearance of 11 x 9.25 x 5" (28.5 x 23.5 x 12.7 cm), and for the C-PKND CPU card, 13.5 x 9.25 x 5" (34.3 x 23.5 x 12.7 cm).
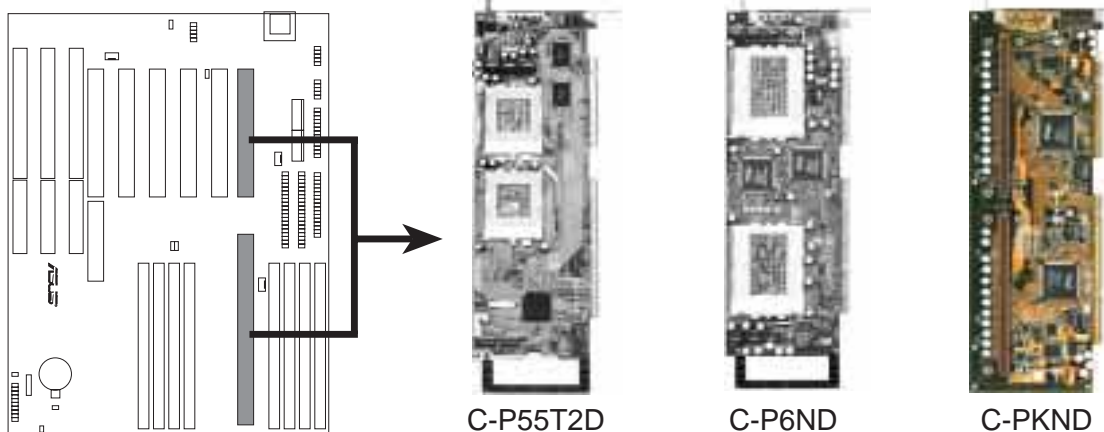
III. INSTALLATION

One end of the CPU card has a bracket, which should slide into the system case front panel. Be sure that the system case can support a long PCI card on the first slot and that a groove is available for the bracket. Refer to your respective CPU card's documentation for details.

General Installation Procedures for the ASUS CPU Card:
1. Remove the CPU card from its packaging without touching the integrated circuit (IC) chips, connectors, and other components. Place it onto the antistatic bag.
2. Follow instructions in the CPU card manual on installing the processor/s, support bracket, and setting jumpers.
3. Remove the expansion slot cover for the first slot.
4. Carefully align the CPU card over the CPU Card Slot (CPU SLOT A and CPU SLOT B).
5. Be sure that the card is perpendicular to the baseboard. Firmly press one end of the card halfway in, the other end halfway in, then the first end completely in, and finally, the second end completely in. Be sure that all the connectors are evenly inserted into the slots.
6. Screw in the metal bracket to the system case.

> **WARNING!** Move the system carefully and only with the power off because the CPU card is heavy as well as delicate.

C-P55T2D   C-P6ND   C-PKND

CPU Card Slot

NOTE: The BIOS on the CPU cards are different. When adding a CPU card, find the BIOS chip that came with the CPU card and replace it with the one on the baseboard, if one is present.

4. Expansion Cards

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

NOTE: PCI Slot 5 has a MediaBus extension, which allows the installation of either a PCI card or a MediaBus card (optional multifunctional card).

> **WARNING!** 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 baseboard and expansion cards.

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 system'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 system's cover.
8. Set up the BIOS if necessary (such as *IRQ xx Used By ISA: Yes* in PNP AND PCI SETUP)
9. Install the necessary software drivers for your expansion card.

Assigning IRQs for Expansion Cards

IMPORTANT: PCI Slots 4 & 5 share the same IRQ. If using PCI cards on both slots 4 & 5, make sure that the drivers support "Share IRQ" or that one card does not need an IRQ assignment. Conflicts will arise on PCI Slots 4 & 5 that will make the system unstable.

Some expansion cards need to use an IRQ to operate. Generally an IRQ must be exclusively assigned to one use. In a standard design there are 16 IRQs available but most of them are already in use, leaving 6 IRQs free for expansion cards.

Both ISA and PCI expansion cards may require to use IRQs. System IRQs are available to cards installed in the ISA expansion bus first, then any remaining IRQs are available to 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 Diagnostics (MSD.EXE) utility located in the Windows directory to see a map of your used and free IRQs. If you use Windows 95, the **Resources** tab under **Device Manager** displays the resource settings being used by a particular device (to gain access, double-click the **System** icon under the **Control Panel** program). Ensure that no two devices share the same IRQs or your computer will experience problems when those two devices are in use at the same time.

To simplify this process, the baseboard complies 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 section of the BIOS setup utility can be used to assign which IRQs are being used by legacy cards. For older legacy cards that do not work with the BIOS, you may 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 contains a card requiring an IRQ. To install a PCI card, you need to set the INT (interrupt) assignment. Since all the PCI slots on this baseboard use an INTA #, set the jumpers on your PCI cards to INT A.

III. INSTALLATION
(DMA Channels)

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 baseboard are handled the same way as the IRQ assignment process described earlier. You can select a DMA channel in the PCI and PnP configuration section of the BIOS Setup utility.

IMPORTANT: To avoid conflicts, reserve the necessary IRQs and DMAs for legacy ISA cards (under PNP AND PCI SETUP of the BIOS SOFTWARE, choose *Yes* in *IRQ xx Used By ISA* and *DMA x Used By ISA* for those IRQs and DMAs you want to reserve).

5. External Connectors

> **WARNING!** Some pins are used for connectors or power sources. These are clearly differentiated from jumpers as shown in the baseboard layout on page 10. Placing jumper caps over these pins will cause damage to your baseboard.

IMPORTANT: Connect ribbon cables such that the red stripe is on the pin 1 side of the connector. The four corners of the connectors are labeled on the baseboard. Pin 1 is the side closest to the power connector on hard and floppy disk 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 connector is for either a standard IBM-compatible, 101/102-key, or 104-key (Windows 95-compatible) keyboard. Use either the AT keyboard connector on the baseboard or PS/2 keyboard connector on the CPU card.

Keyboard Connector (5-pin female)

PS/2 Keyboard Port (CPU Card)

Connector Plug from Keyboard
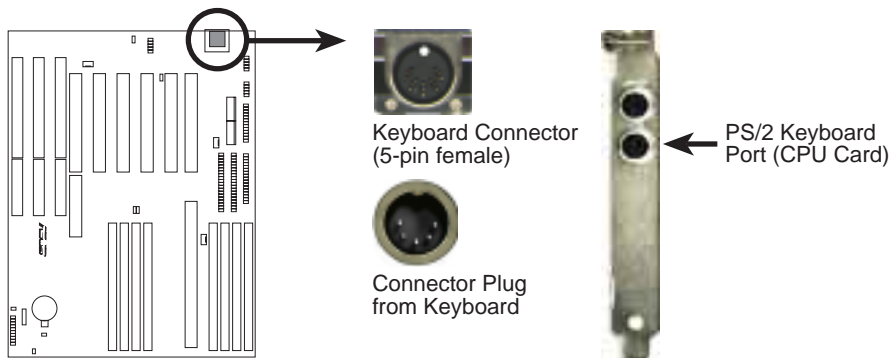
2. **Floppy Disk Drive Connector (34-pin block)**
   This connector supports the provided floppy drive ribbon cable. After connecting the single end to the board, connect the two plugs on the other end to the floppy drives. **(Pin 5 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 5 plugged).**

Pin 1   Orient the red stripe on the floppy ribbon cable to Pin 1

Floppy Drive Connector
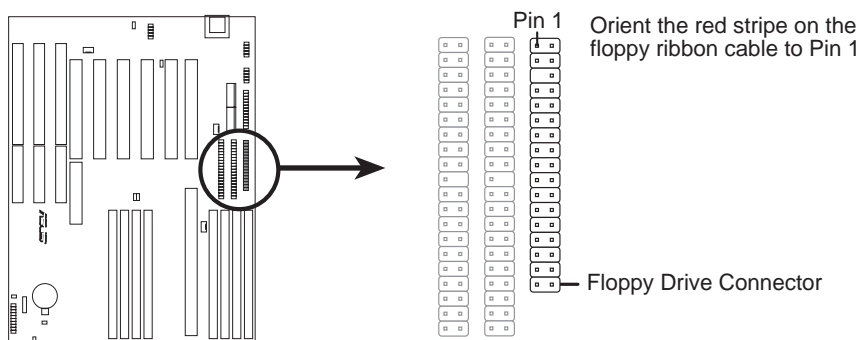
III. INSTALLATION

3. Parallel Printer Connector (26-Pin Block)

This connector supports the included parallel port ribbon cable with mounting bracket. Connect the ribbon cable to this connector and mount the bracket to the case on an open slot. You can make available the parallel port and choose the *IRQ Onboard Parallel Port* in **Chipset Features** of the BIOS SOFTWARE. **(Pin 26 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 26 plugged)**
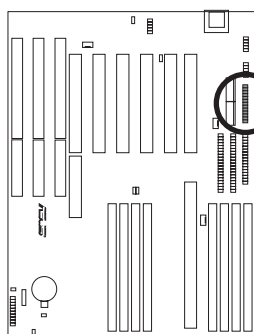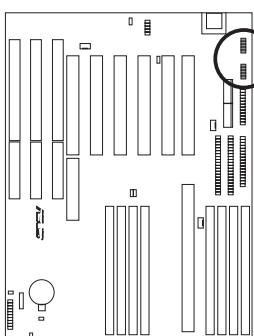
Pin 1 ── Orient the red stripe on the parallel ribbon cable to Pin 1

For the parallel port connector to be available, connect the included parallel (25-pin female) cable set to a free expansion port.

TIP: You may also remove the bracket connectors and mount them directly to the case to save expansion slot space.

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. You can make available the serial port and choose the *IRQ Onboard Serial Port* in **Chipset Features** of the BIOS SOFTWARE. **(Pin 10 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 10 plugged)**

Pin 1 ── Orient the red stripe on the serial ribbon cable to Pin 1

COM 1

Pin 1 ──

For the serial port connectors to be available, connect the included serial cable set from COM1 (using 9-pin male) and COM2 (using 25-pin male) to a free expansion port.

COM 2

TIP: You may also remove the bracket connectors and mount them directly to the case to save expansion slot space.

Serial Port Connectors

III. INSTALLATION

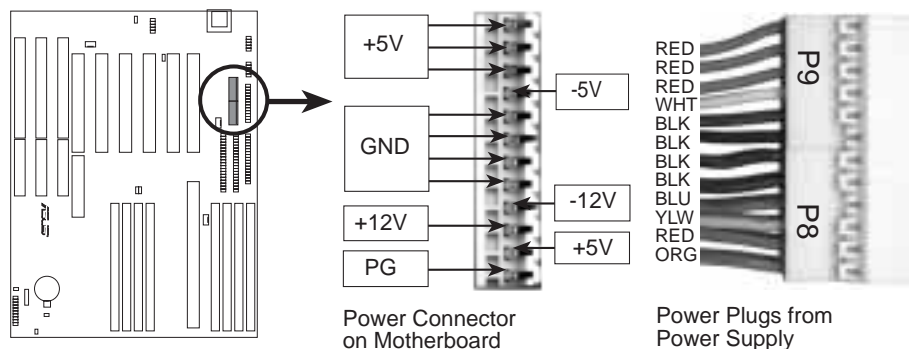**5. Primary/Secondary IDE Connectors (Two 40-pin Block)**

These connectors support the provided IDE hard disk ribbon cable. After connecting 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 on one connector (channel), then you must configure a second drive as Slave mode by setting its jumper according to your hard disk jumper diagram. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another on the secondary IDE connector. A new BIOS feature allows SCSI hard drive bootup (see "HDD Sequence SCSI/IDE First" in the BIOS FEATURES SETUP of the BIOS software). **(Pin 20 is removed to prevent inserting in the wrong orientation when using ribbon cables with pin 20 plugged).**

Pin 1 — Orient the red stripe on the IDE ribbon cable to Pin 1

Secondary IDE Connector
Primary IDE Connector
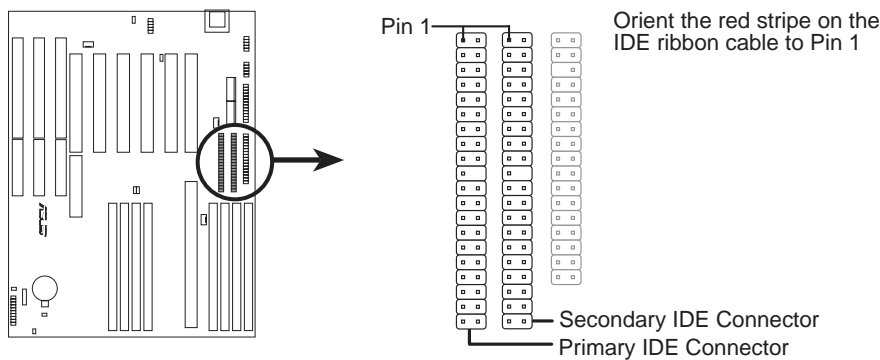
IDE (Hard Disk Drive) Connectors

6. Power Connector (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.

+5V
-5V
GND
+12V   -12V
PG   +5V

Power Connector
on Motherboard

RED
RED
RED
WHT
BLK
BLK
BLK
BLK
BLU
YLW
RED
ORG

P9
P8

Power Plugs from
Power Supply

AT Power Connector

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.
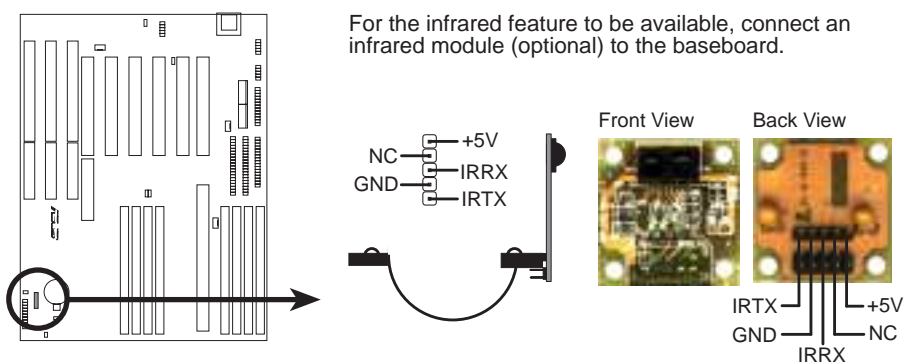
7. IDE Activity LED (IDE LED)

This connector connects to the hard disk activity indicator light on the system cabinet. Read and write activity by devices connected to the Primary or Secondary IDE connectors will cause the LED to light up.

TIP: If the case-mounted LED does not light, try reversing the 2-pin plug.

IDE LED
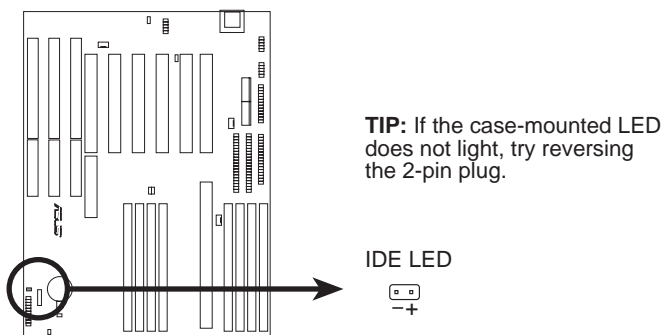
IDE Activity LED Lead

8. IrDA-compliant Infrared Module Connector (IR)

This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to a small opening on system cases that support this feature. You must also configure the setting through BIOS setup in **Chipset Features** to select whether UART2 is directed for use with COM2 or IrDA. Use the five pins (as defined by Intel) as shown below (Back View) and connect a ribbon cable from the module to the baseboard according to the pin definitions. The ribbon cable that may be supplied may either have five or ten pins (for other standards). If using a ten-pin ribbon cable, use only the top five row of the ribbon cable plug.

For the infrared feature to be available, connect an infrared module (optional) to the baseboard.

+5V
NC
IRRX
GND
IRTX

Front View   Back View

IRTX   +5V
GND   NC
IRRX

Infrared Module Connector

III. INSTALLATION (Connectors)

9. Turbo LED Switch (TB LED)

The baseboard'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.

10. SMI Suspend Switch Lead (SMI)

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 connects to the case-mounted suspend switch. If the switch is not available, you can use the turbo switch. SMI is activated when it detects a *short to open* moment; leaving it shorted, therefore, will not cause any problems. This may require one or two presses depending on the switch's position. Wake-up can be controlled through the BIOS but the keyboard will always wake up (the SMI lead cannot wake up) the system. If you want to use this connector, the "Suspend Mode" under **Power Management Setup** of the BIOS SOFTWARE must be set to *Enable*.

11. Reset Switch Lead (RESET)

This 2-pin connector connects to the case-mounted reset switch to allow the restarting of your computer without having to turn off it off. This is a preferred method of restarting to prolong the life of the system's power supply.

12. System Power LED (KEYLOCK)

This 3-pin connector connects the system power LED, which lights when the system is powered on and blinks when it is in sleep mode.

13. Keyboard Lock Switch Lead (KEYLOCK)

This 2-pin connector connects to the case-mounted key switch to allow keyboard locking.

14. Speaker Connector (SPEAKER)

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

System Panel Connectors
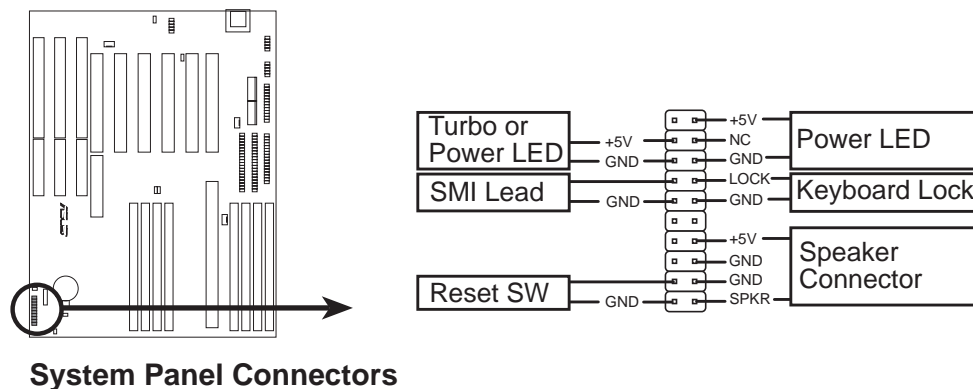
III. INSTALLATION

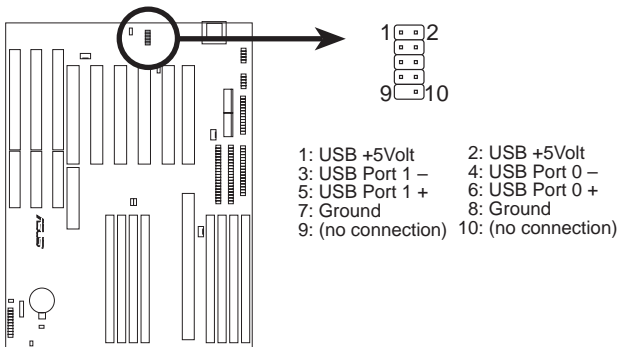**15. Power Supply, CPU Fan Connectors (FANPWR1, FANPWR2, FANPWR3)**

This connector supports a 3-pin CPU cooling fan of 500Amp (6watts) or less with a minimum of 3,500RPM. Depending on the fan manufacturer, the wiring and plug may be different. The red wire should be *positive* and the black wire should be *ground*.

Power Supply Fan

Ground
+12 Volts
(NC)

CPU Fan Power (2)

(NC)
+12 Volts
Ground
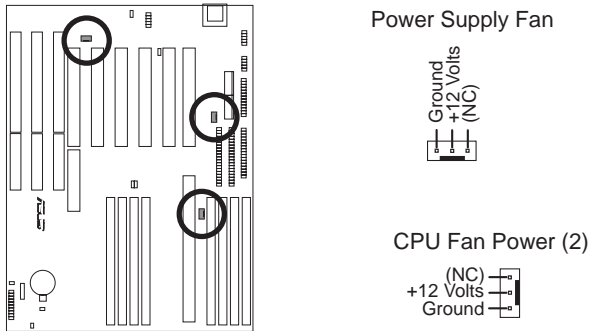
Power Supply, CPU Fan Power
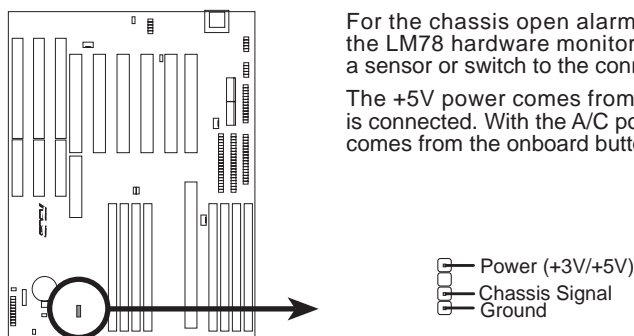
16. USB Module Connector (USB)

If you want to use the universal serial bus (USB), you need to purchase an external connector set. The external connector connects to the 9-pin block.

1   2
9   10

1: USB +5Volt
3: USB Port 1 –
5: USB Port 1 +
7: Ground
9: (no connection)

2: USB +5Volt
4: USB Port 0 –
6: USB Port 0 +
8: Ground
10: (no connection)

USB Module Connector

17. Chassis Open Alarm Connector (CHASSIS) (with optional LM78)

This lead is for an open chassis monitor. A high level signal to the chassis signal lead will indicate to the system that the chassis has been opened.

For the chassis open alarm feature to work, you must have the LM78 hardware monitor (optional) onboard and connect a sensor or switch to the connector.

The +5V power comes from the power supply, when the A/C is connected. With the A/C power disconnected, the +3V power comes from the onboard button cell battery.

Power (+3V/+5V)
Chassis Signal
Ground

Chassis Connector (optional)

IV. ASUS PCI SCSI Cards

Symbios SCSI BIOS and Drivers

Aside from the system BIOS, the Flash memory chip on the baseboard also contains the Symbios SCSI BIOS. This Symbios SCSI BIOS works in conjunction with the optional ASUS PCI-SC200 controller card to provide Fast SCSI-2 interface when using compatible SCSI devices or the ASUS PCI-SC860 SCSI controller cards to provide Ultra-Fast SCSI-2 interface when using Ultra-Fast SCSI-2 devices.

All SCSI devices you install on your system require driver software to function. The Symbios 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 ASUS PCI-SC200 and ASUS PCI-SC860 controller card packages to support hard disks and other SCSI devices working under DOS, Microsoft Windows, Microsoft Windows NT, Novell NetWare and IBM 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 ASUS PCI-SC200 and ASUS PCI-SC860 are Plug and Play adapters that are autodetected by BIOS and current operating systems that support Plug and Play features.

For information about these drivers and their usage, view the Readme files included in the driver packages.

ASUS PCI-SC200 & PCI-SC860 SCSI Cards

The ASUS PCI-SC200 or the ASUS PCI-SC860 may be bundled with your baseboard or purchased separately. Both cards provide the option of connecting internal or external SCSI devices for a total of 7 devices on each SCSI card.

Setting Up the ASUS PCI-SC200 & PCI-SC860

There are two jumper settings you may need to make on the ASUS PCI-SC200 to set it up. One setting assigns the PCI INT interrupt, the other sets the card's termination. The ASUS PCI-SC860 has no jumper settings (see Terminator Requirements").

Setting the INT Assignment for the ASUS PCI-SC200

You must use PCI INT A setting to properly assign the ASUS PCI-SC200's interrupt. On the ASUS 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 ASUS PCI-SC200 with this baseboard.

Interrupt Settings (A, B, C, or D)
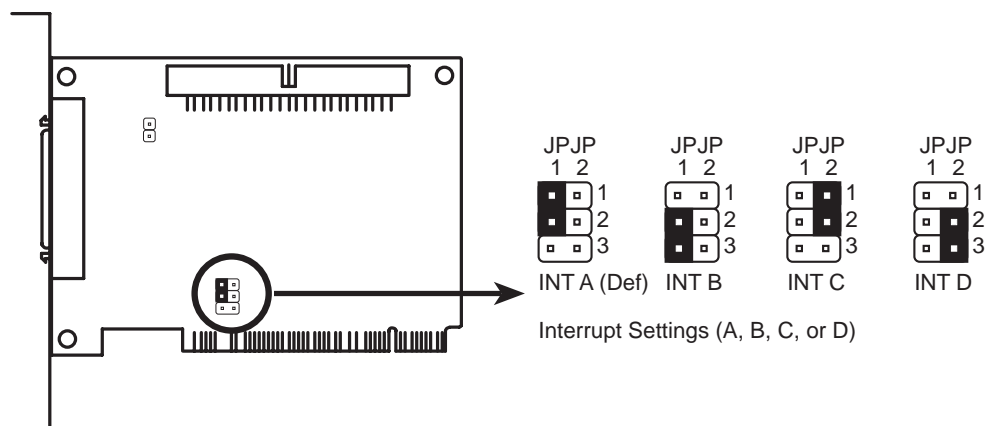
Terminator Requirements for SCSI Devices

SCSI devices are connected together in a "chain" by cables. Internal devices connect to the ASUS PCI-SC200 or ASUS PCI-SC860 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." Terminating the devices on the ends of the SCSI Bus "chain" is necessary for SCSI devices to work properly. Termination of the devices between the ends must be *Disabled*.

IV. ASUS PCI SCSI Cards

Terminator Settings for the ASUS PCI-SC860

Many SCSI devices including the ASUS PCI-SC860 use a set of onboard active resistors to terminate the devices at the ends automatically. Automatic termination requires that the SCSI devices be connected in a straight linear connection or "chain." Connect SCSI devices to one or two of the SCSI connectors in a linear "chain" for auto termination of the ASUS PCI-SC860 to be effective. Other formations will cause your SCSI devices to not mount properly. You must use the **end** of the ribbon cable when using the internal connector(s) to keep a linear path.

Additional Note: The Symbios Logic SCSI Configuration Utility is a powerful tool. If, while using it, you somehow disable all your controllers or cannot enter the configuration utility, pressing "Ctrl-A" after memory count during reboot allows you to recover and reconfigure.

Terminator Settings for the ASUS PCI-SC200

The ASUS PCI-SC200, on the other hand, has "active" termination that you must set using jumper JP5. There are two settings, "terminated" and "not terminated," as shown below.

JP5 Terminated (Default)   JP5 Not Terminated

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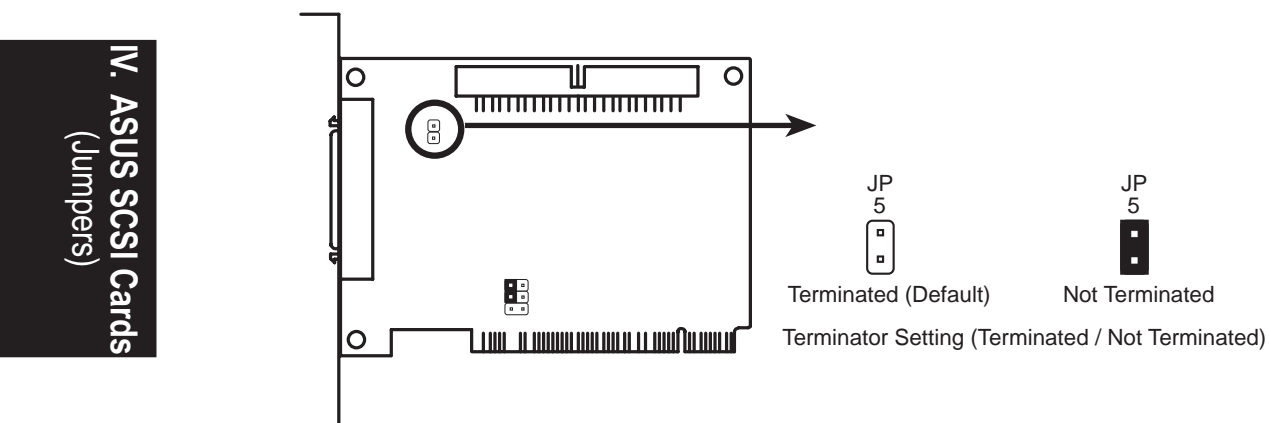
Decide whether or not you need to terminate the ASUS PCI-SC200 based on its position in the SCSI chain. Only the devices at each end of the chain need to be terminated. If you have **only** internal or **only** external devices connected to the ASUS PCI-SC200, then you **must** terminate the ASUS PCI-SC200.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

IV. ASUS PCI SCSI Cards
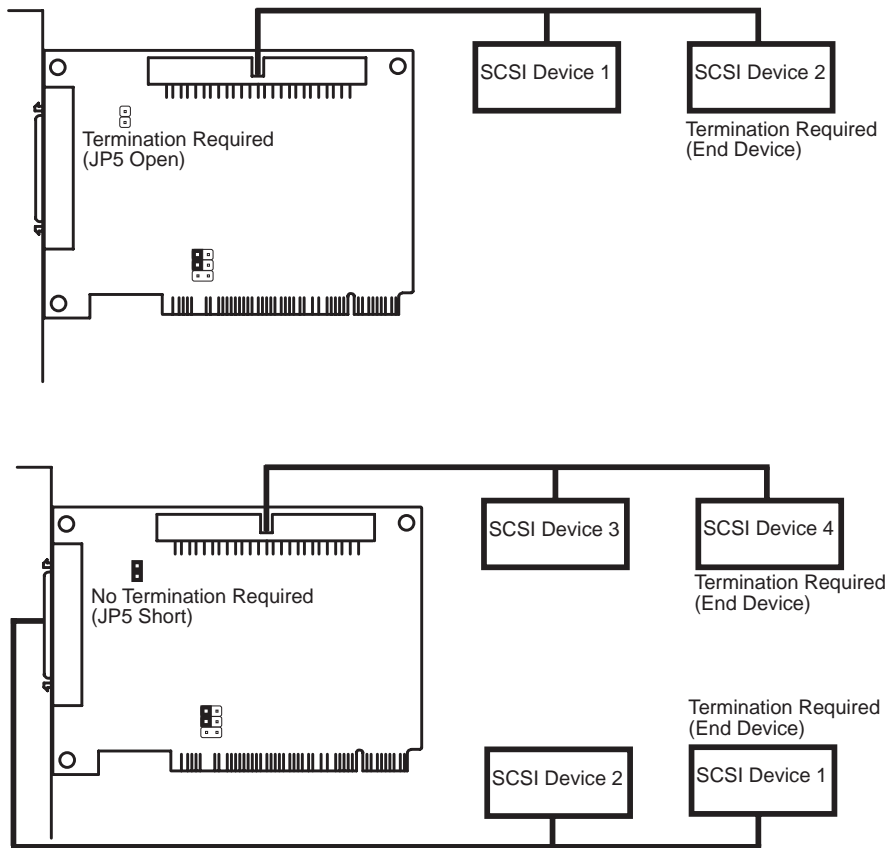
SCSI ID Numbers for SCSI Devices

All SCSI devices, including the ASUS PCI-SC200 and ASUS PCI-SC860 interface card must have a SCSI identification number that is not in use by any other SCSI device. There are eight possible ID numbers, 0 through 7. The ASUS PCI-SC200 and ASUS PCI-SC860 cards have fixed SCSI IDs of 7. The SCSI ID serves two purposes:

- It uniquely defines each SCSI device on the bus.
- It determines which device controls the bus when two or more devices try to use it at the same time.

SCSI IDs on one channel do not interfere with the IDs on another channel. This applies to two SCSI host adapters that implement different buses as well as dual channels on a single host adapter. You can connect up to seven SCSI devices to the interface card. You must set a SCSI ID number (ID 0 to ID 6) for each device. SCSI devices vary in how they set the ID number. Some use jumpers, others have some kind of selector switch. Refer to the manual for any device you install for details on how to set its ID number.

SCSI ID Priority

The ASUS PCI-SC200 and ASUS PCI-SC860 are 8bit single-channel SCSI cards. SCSI ID 7 has the highest priority, and SCSI ID 0 has the lowest priority.

V. ASUS I-A16C Audio Card

NOTE: The ASUS I-A16C 16-bit ISA audio card comes with certain motherboard or baseboard packages and is not sold separately.

ASUS I-A16C Audio Features

- Creative Labs ViBRA 16C PnP Audio Chip
- Full Duplex Support
- 16/8 bit PCM 5KHz to 44.1KHz
- Wave Table Upgradeable

- Software Includes:
  DOS/Window 3.1/Windows 95 Drivers
  Wave Editor, Wave OLE, Quick CD
  Mixer Control, Quick Player

> **WARNING!** Be cautious when unpacking and handling the audio card. Refer to page 12 for some precautionary measures.

Layout and Connectors
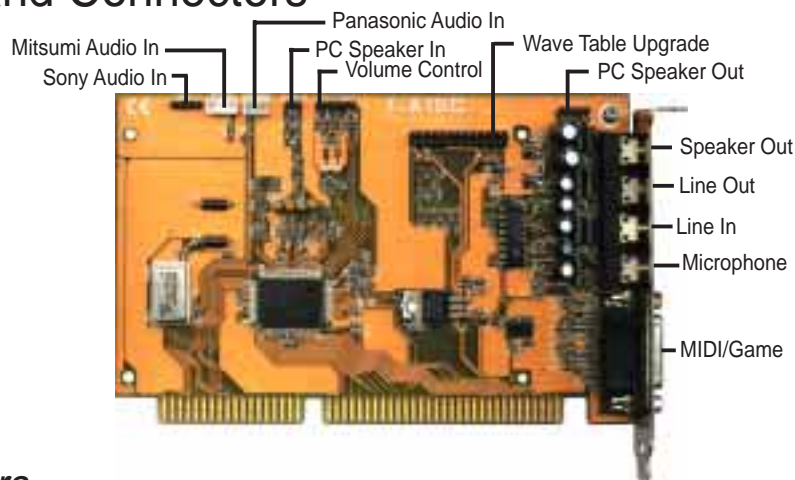
Connectors

The audio input connectors are used when you wish to control software mixer settings (for example, bass, treble, volume) for audio CDs that are played with your CD-ROM. If the "Audio Out" from the CD-ROM is not connected to the "Audio In" on the card, you can only use the direct output located in the front panel of the CD-ROM and adjust volume level by the knob.

CD-Audio Connector Pin Definitions

Sony Audio In		*Mitsumi Audio In*		*Panasonic Audio In*	
Pin	**Definition**	**Pin**	**Definition**	**Pin**	**Definition**
1	Right Signal	1	Ground	1	Left Signal
2	Ground	2	Left Signal	2	Ground
3	Ground	3	Ground	3	Right Signal
4	Left Signal	4	Right Signal	--	----

PC Speaker In		*PC Speaker Out*		*Volume Control*	
Pin	**Definition**	**Pin**	**Definition**	**Pin**	**Definition**
1	Mono Signal	1	Right Signal	1	Ground
2	Ground	2	Ground	2	Volume Up
--	----	3	Left Signal	3	Ground
--	----	4	Ground	4	Volume Down
--	----	--	----	5	Ground