

PAM-0063I

High Performance
Pentium PCI
All In One Mainboard
User's Guide



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Unpacking the Mainboard

The PAM-0063I Mainboard comes packed in a sturdy cardboard shipping carton. The packing contains:

- The PAM-0063I Mainboard
- IDE, Floppy Drive and I/O Cables
- This user's Manual
- VGA System and Sound System Driver Floppies

Note: Do not remove the mainboard from its original packing until ready to install.

The PAM-0063I Mainboard is easily damaged by static electricity. Observe the following precautions while unpacking and installing the mainboard.

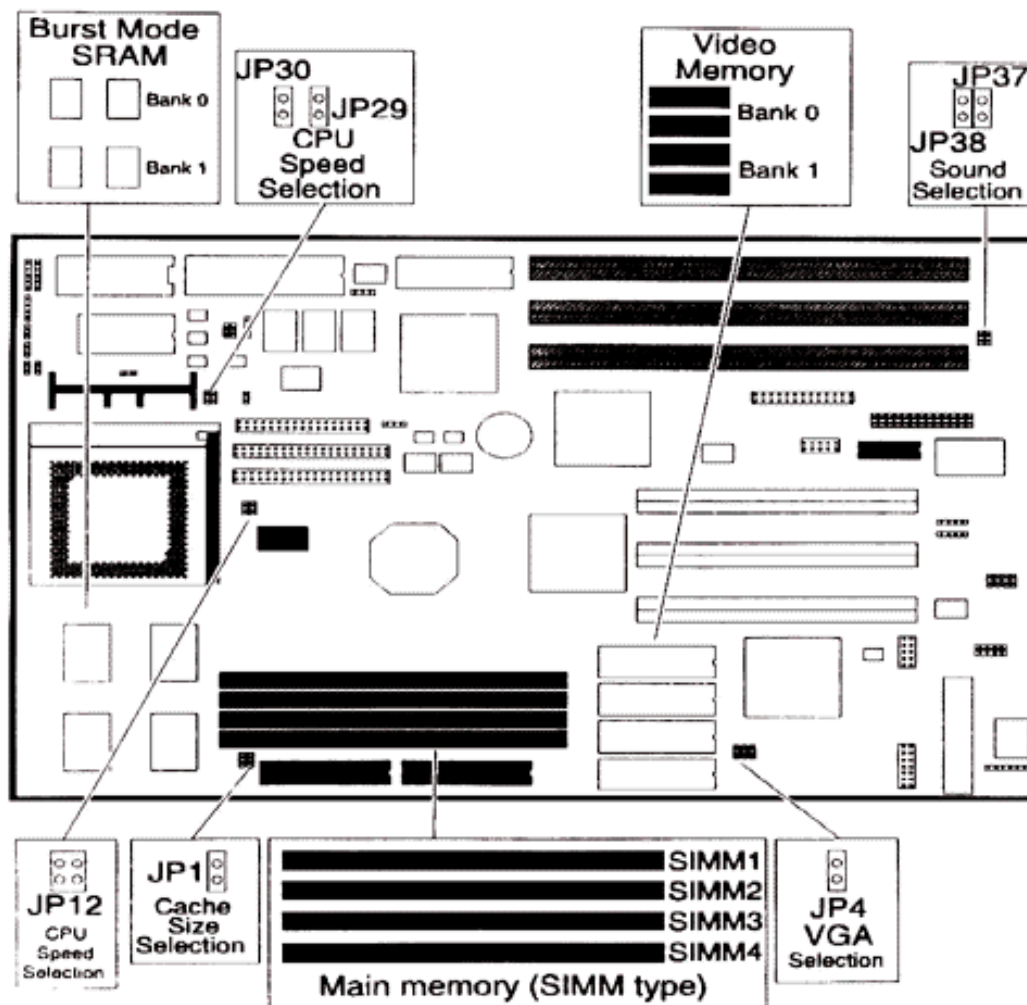
1. Touch an unpainted area of the system before handling the mainboard or any component. Doing so discharges the static charge user's body may have built.
2. Remove the mainboard from its anti-static wrapping and place it on a ground surface, component side up.
3. Inspect the mainboard for damage. Shipping may have loosened components from their sockets. If any component appears loose, press carefully to seat it firmly in its socket.

Do not apply power supply if the mainboard appears damaged. If there is damage to the board, or items are missing, contact dealer immediately.

Note: Jumper (Shunt) Convention of PAM-0063I:

Red : Clock setting **Yellow** : Cache size setting
Black : Others

Jumper Setting Reference



CPU Speed Selection: JP12, JP29, JP30

Cache Size Selection: JP1

Sound Enable: JP37, JP38

VGA Enable: JP4

1. Clock Selection: JP12, JP29, JP30

CPU Speed	JP12		JP29	JP30
	1-2	3-4		
75Mhz	Short	Short	Open	Open
90Mhz	Open	Short	Open	Open
100Mhz	Short	Open	Open	Open
120Mhz	Open	Short	Short	Open
133Mhz	Short	Open	Short	Open
150Mhz	Open	Short	Short	Short
166Mhz	Short	Open	Short	Short
200Mhz	Short	Open	Open	Short

2. SRAM Size JP1

Cache Size	JP1
256Kb	Open
512Kb	Short

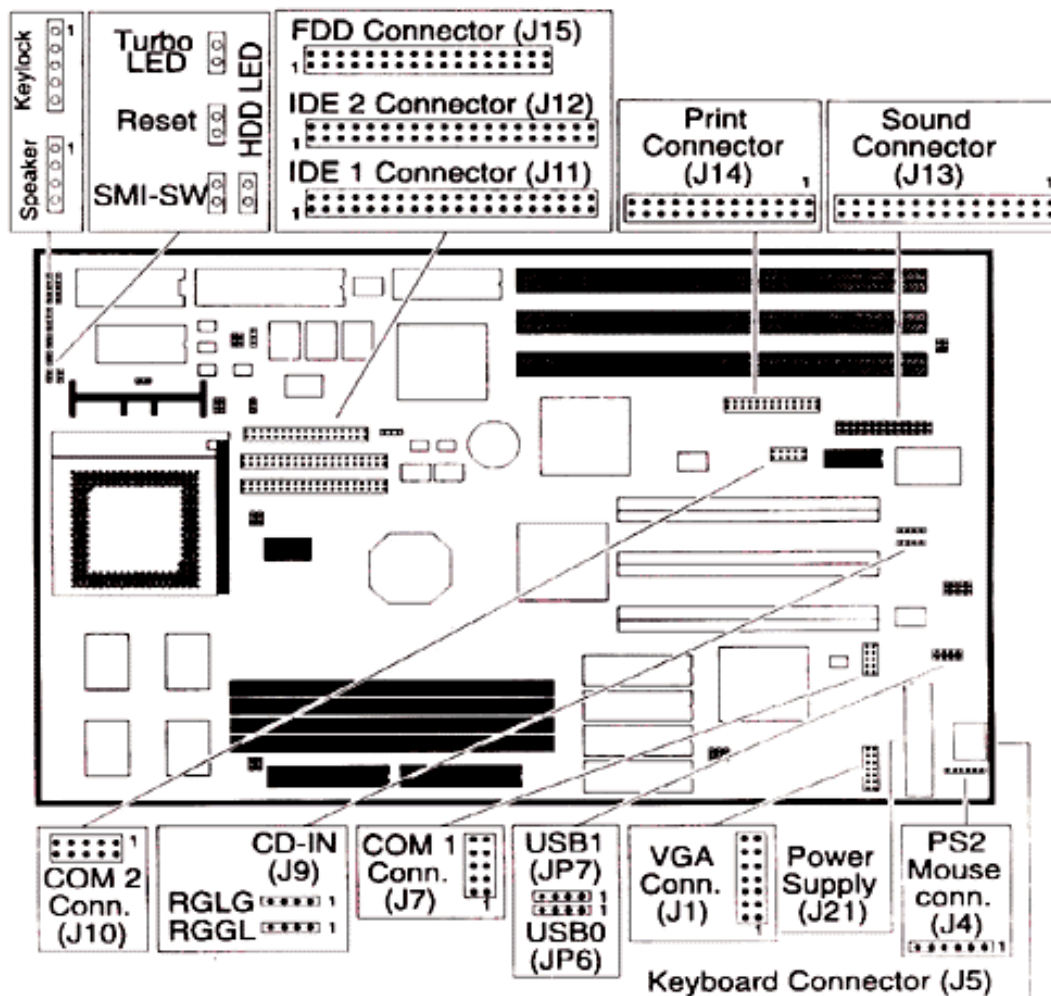
3. VGA System Enable/Disable JP4

VGA	JP4
Enable	Open
Disable	Short

4. Sound System Enable/Disable JP37, JP38

Sound	JP37	JP38
Enable	Short	Short
Disable	Open	Open

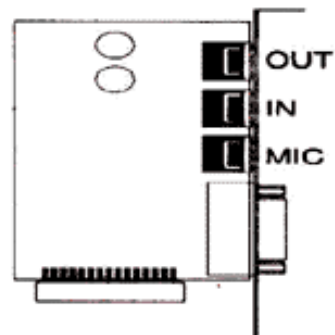
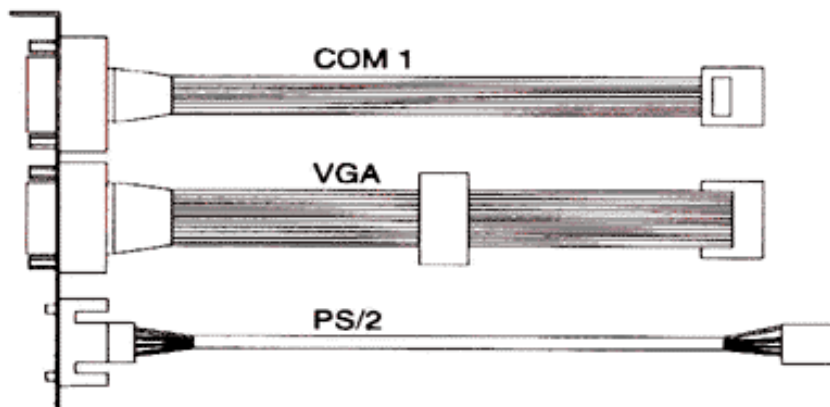
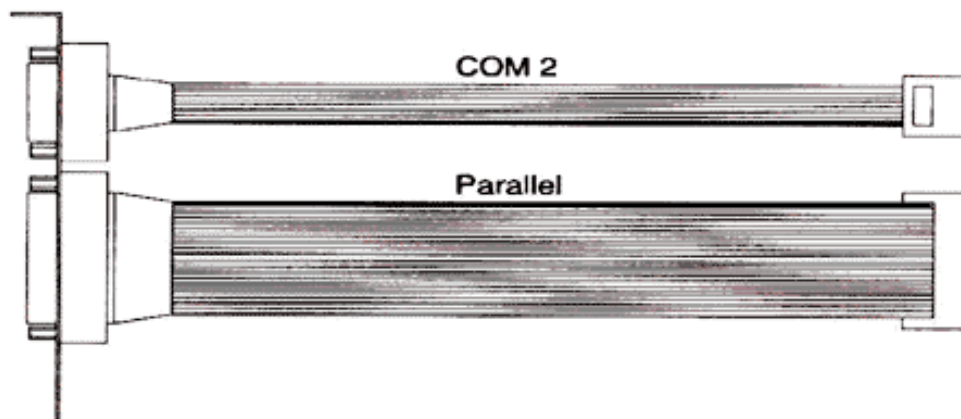
Connector Locations



J11:	IDE1	J12:	IDE2	J15:	FDD
J14:	Parallel	J7:	COM1	J10:	COM2
J1:	VGA	J9:	CD-IN	J4:	PS/2 Mouse
JP6:	USB0	JP7:	USB1	J21:	Power
J13:	Sound				

DTK PAM-0063I

Bracket Connectors



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Chapter 1 Introduction

The PAM-0063I Mainboard is designed based on the latest PCI (*Peripheral Component Interconnect local Bus*) standard that provides the highest performance with the basic elements to build an advanced computer. The energies saving functions also achieve the highest energy efficiency. The PAM-0063I Mainboard was developed around Pentium microprocessor with 64-bit access to data transfer. The PCI Local bus features even enhances the system performance. The PAM-0063I Mainboard can run with speeds 75 to 200Mhz.

1.1 Key Features

System Function

- 100% IBM PC-AT Compatible
- 100% PCI Local Bus standard
- Three PCI 32-bit local bus and five 16-bit ISA slots for maximum system configuration
- Support PCI Local Bus Master/Slave Mode.

Green Function

- True green functions: support SMM, SMI and CPU stop clock functions
- Four power saving states: Normal, Standby, Suspend and Off

BIOS System

- On board supports Flash ROM BIOS which can be re-programmed through utility software
- Supports BIOS and Video ROM shadow function, also support shadow RAM cacheable for higher performance

Onboard VGA System

- 64-bit Windows Accelerator
- 100% PCI Local Bus standard
- Support up to 1280 * 1024high Resolution

Main Memory

- Memory configurations from 2Mb to 256Mb are possible using combination of 256K*36 to 16Mb*36 SIMM module. (32-Bits non-parity 72-pin SIMM Module also available)
- Support both Fast Page Mode and Extended Data Output (EDO) Mode DRAM Modules
- ECC (Error Correction Code) assure data integrity and error free
- Hidden DRAM Refresh for higher system performance

Cache system

- Programmable Cache Coherent algorithms: Write-Through and Write-back.
- Optional cache memory size of 256/512Kb
- Pipelined Burst Mode SRAM to achieve the highest Pentium system performance

Onboard Multi I/O

- On board Multi-I/O supports two serial, one parallel ports and floppy drive controller
- Serial ports are 16550 Fast UART compatible
- Parallel port has EPP and ECP capabilities

Onboard PCI IDE

- On board supports PCI Master IDE Controller, two connectors support up to four IDE devices such as HDD, CD ROM drive and Tape Back-up drives...
- PCI Master IDE controller supports PIO Mode 3 and 4 devices, I/O data transfer rate can be up to 17Mb/s.

Onboard Sound Function

- On board supports PCI Master IDE Controller, two connectors support up to four IDE devices such as HDD, CD ROM drive and Tape Back-up drives...
- PCI Master IDE controller supports PIO Mode 3 and 4 devices, I/O data transfer rate can be up to 17Mb/s.

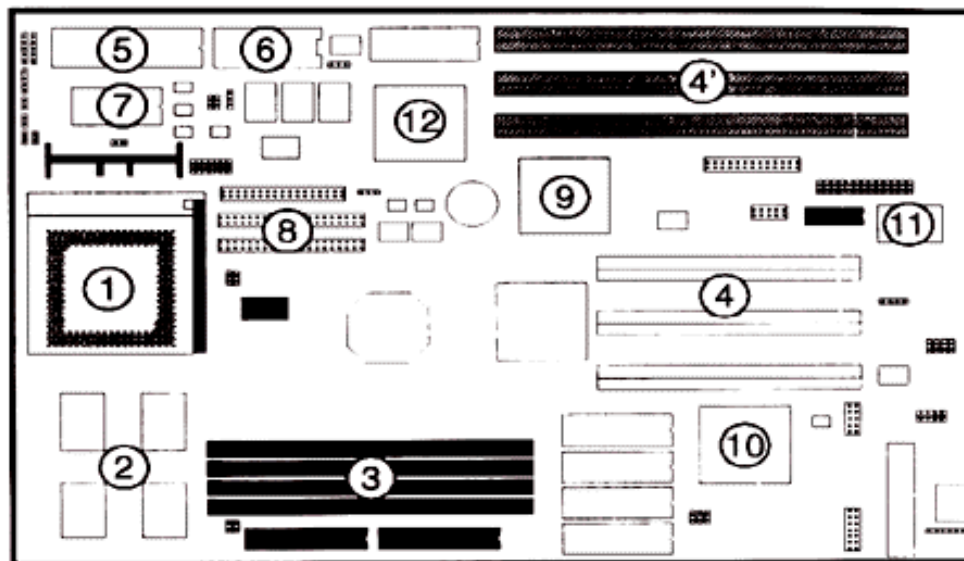
Onboard MPEG Function

- Optional Hardware MPEG1 to achieve high quality video play back function

- Software MPEG economical play back function

1.2 Mainboard Components

This section gives a brief description of key components on the mainboard. Please refer following fig for component locations.



Key Components of PAM-0063I Mainboard

- (1) **System Microprocessor**
The system microprocessor is a high-performance 64-bit Pentium microprocessor, by different jumper settings the system board can run at 75/90/100/120/133/150/166/200Mhz.
- (2) **Cache Memory**
The on-board L2 cache memory consists of two/four pieces of Burst Mode SRAM, the size can be 256/512Kb by different jumper settings and different types of SRAM used.

- (3) **Main Memory**
Four SIMM (Single In-line Memory Module) sockets are provided. Memory can be configured up to 256Mb of main memory.
- (4) **PCI (Peripheral Component Interconnect) Local Bus Slot**
There are three 32-bit PCI slots for add-on cards, all slots support Master/Slave Mode.
- (4') **PC-AT (ISA) Slots**
There are three 16-bit ISA slots for add-on cards.
- (5) **Keyboard Controller**
The 8042 is a single chip computer that interfaces the system and keyboard.
- (6) **System BIOS**
The BIOS (Basic Input/Output System) controls the I/O operations between I/O devices and Mainboard. It is a 1Mb Flash ROM therefore it can be programmable through Flash ROM utility.
- (7) **CMOS RAM and RTC (Real Time Clock)**
The CMOS stores all the system setup configuration data, built-in battery keeps all the data. The RTC keeps all the time and keeps running even at power down period.
- (8) **PCI IDE**
These two on board PCI IDE connectors support PCI Master IDE mode, they can support up to four IDE devices such as HDD, CD ROM drives and Tape Back-up drives, they also support PIO Mode 3 and 4 devices.
- (9) **Multi I/O**
On board Multi-I/O supports two serial, one parallel ports and floppy drive controller. Serial ports are 16550 Fast UART compatible. Parallel port has EPP and ECP capabilities

(10) PCI VGA System

The onboard VGA system applies Peripheral Component Interconnect (PCI) Local Bus system, 64-bit data width to bring you high-resolution, TrueColor capability, high-performance, and compatibility with most software and hardware.

(11) Sound System

The onboard Creative Lab's Sound system offer the best sound quality.

(12) MPEQ System

The optional onboard MPEG system for high quality play back function.

Chapter 2

Hardware Configuration

Before installing the PAM-0063I Mainboard into the system chassis, user may find it convenient to configure the mainboard's hardware first. This chapter describes how to set the jumpers for different functions.

2.1 Power Precautions

Before configure the system, user must be sure to work with an unplugged mainboard. User should take the following precautions:

- Turn off the power supply, unplug the power cord.
- Unplug all the cables that connect to the mainboard to any external devices.

2.2 Jumper settings

Configure the hardware options by setting the jumper switches on the mainboard. Set a jumper switch as follows:

- Short a jumper by placing the jumper cap over two pins of the jumper switch.
- Open a jumper switch by removing the jumper cap.



Pins 1 and 2 are shorted with a jumper cap.



Pins 2 and 3 are shorted with a jumper cap.

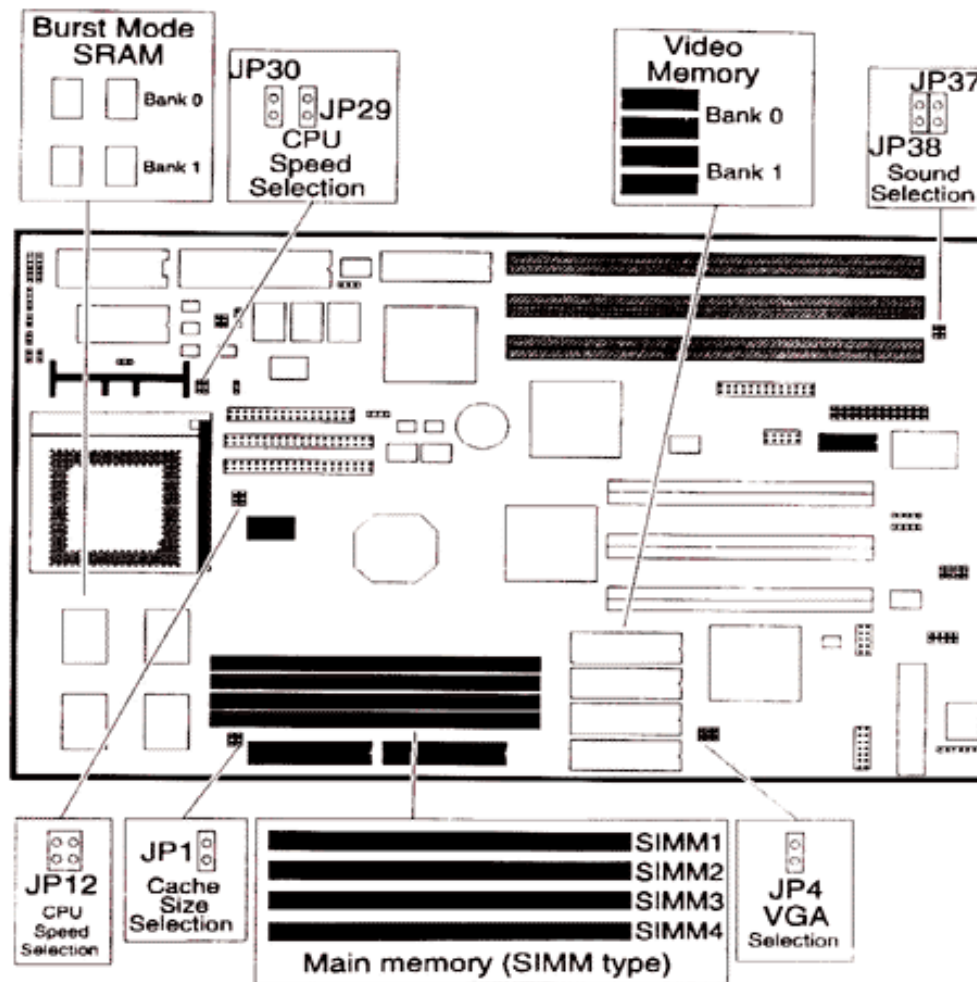


The jumper is shorted when the jumper cap is placed over the two pins of the jumper.



The jumper is open when the jumper cap is removed from jumper.

2.3 Jumper and Memory Bank Locations



- CPU Speed Selection: JP12, JP29, JP30
 Cache Size Selection: JP1
 Sound Enable: JP37, JP38
 VGA Enable: JP4

Jumper and Memory Bank Locations

2.4 JP12, JP29, JP30-Clock Jumper Setting

The PAM-0063I Mainboard supports CPU speed from 75 to 200Mhz by different combination of jumper settings. Please refer to following table for different clock speed:

Clock Selection: **JP12, JP29, JP30**

CPU Speed	JP12		JP29	JP30
	1-2	3-4		
75Mhz	Short	Short	Open	Open
90Mhz	Open	Short	Open	Open
100Mhz	Short	Open	Open	Open
120Mhz	Open	Short	Short	Open
133Mhz	Short	Open	Short	Open
150Mhz	Open	Short	Short	Short
166Mhz	Short	Open	Short	Short
200Mhz	Short	Open	Open	Short

2.5 JP1 - Cache Size Selection

The PAM-0063I Mainboard has a built-in cache controller. It requires external SRAM as Tag and data memory. The caching scheme is direct mapping with either write-back or write-through algorithm. The mainboard allows 256/512Kb cache or no cache configuration. Cache size is selectable through jumpers and the BIOS setup program.

SRAM Size **JP1**

Cache Size	JP1
256Kb	Open
512Kb	Short

2.6 Enable/Disable On-Board VGA and Sound System

The On-Board VGA and Sound can be disabled if necessary. Following charts explained how to enable and disable them:

DTK PAM-0063I _____ **Hardware Configuration**

VGA System Enable/Disable JP4

VGA	JP4
Enable	Open
Disable	Short

Sound System Enable/Disable JP37, JP38

Sound	JP37	JP38
Enable	Short	Short
Disable	Open	Open

2.7 Main Memory Installation

The PAM-0063I Mainboard lets user to upgrade system memory via SIMM sockets on the mainboard. On-board memory is located in two banks: Bank 0 and Bank 1.

Two SIMM sockets are provided in each bank. User can install either 1M, 4M, 8M, 16M or 32M SIMM in each bank. SIMM module speed requires for best performance depends on the CPU speed, which requires 70ns or faster SIMM.

Note : Same type of SIMM Module should be used in same bank.

Chapter 3 Mainboard Installation

Once the PAM-0063I mainboard's hardware has been configured, the user is now ready to install the mainboard into the system chassis. This chapter describes what are needed to assemble an advanced computer system based on the PAM-0063I mainboard.

3.0 Jumper (Shunt) Convention of PAM-0063I:

Red : Clock setting
Yellow : Cache size setting
Black : Others

3.1 What are Needed

The following components and tools are the minimum required to build a working computer system.

3.1.1 Components

The following components are recommended:

- * Case with standard chassis and hardware. The PAM-0063I Mainboard fits most AT compatible cases.
- * Standard AT power supply.
- * 8 Ohm speaker.
- * Floppy disk drive(s) (360KB, 1.2MB, or 1.44MB).
- * Hard disk drive.
- * Flat ribbon cables to connect the disk drive controller and the disk drive(s).
- * AT-compatible keyboard.

3.2 Power Supply Requirements

Need a clean, steady power source to get the best performance from the system. For reliable performance, make sure the power supply provides a voltage range of 5.25 volts maximum to 4.75 volts minimum. If the area has noisy power transmission, use a line noise filter between the power source and the computer.

User must make sure the power supply can afford the total power required by all the devices in the system. Check the power requirements of the floppy disk drives, hard disk drives, and any additional board that will use.

3.3 Installing the Mainboard

Before starting, check the location of the mounting holes in the case and on the mainboard.

Caution: Static electricity can damage the mainboard.

Install the PAM-0063I mainboard as follows:

1. Review the section on static electricity precautions at the beginning of this manual.
2. Place the case on an anti-static mat and remove the cover. Remove the nylon stand-offs and screws for mounting the mainboard.
3. Put the front of the case to the right and the rear to left. The mainboard occupies the section of the case nearest the user; the power supply goes on the far side.
4. Align the mounting holes on the case to the mounting holes on the mainboard. Make sure to access the keyboard connector once the board is installed.
5. From the bottom of the mainboard, insert stand-offs into the proper holes on the board, and attach the mounting screws to the bottom of the case.

Note: Some cases do not use stand-offs and mounting screws; in this case user can fasten the mainboard into the case with regular screws.

6. Place the mainboard into the case and fasten the board securely with regular screws.

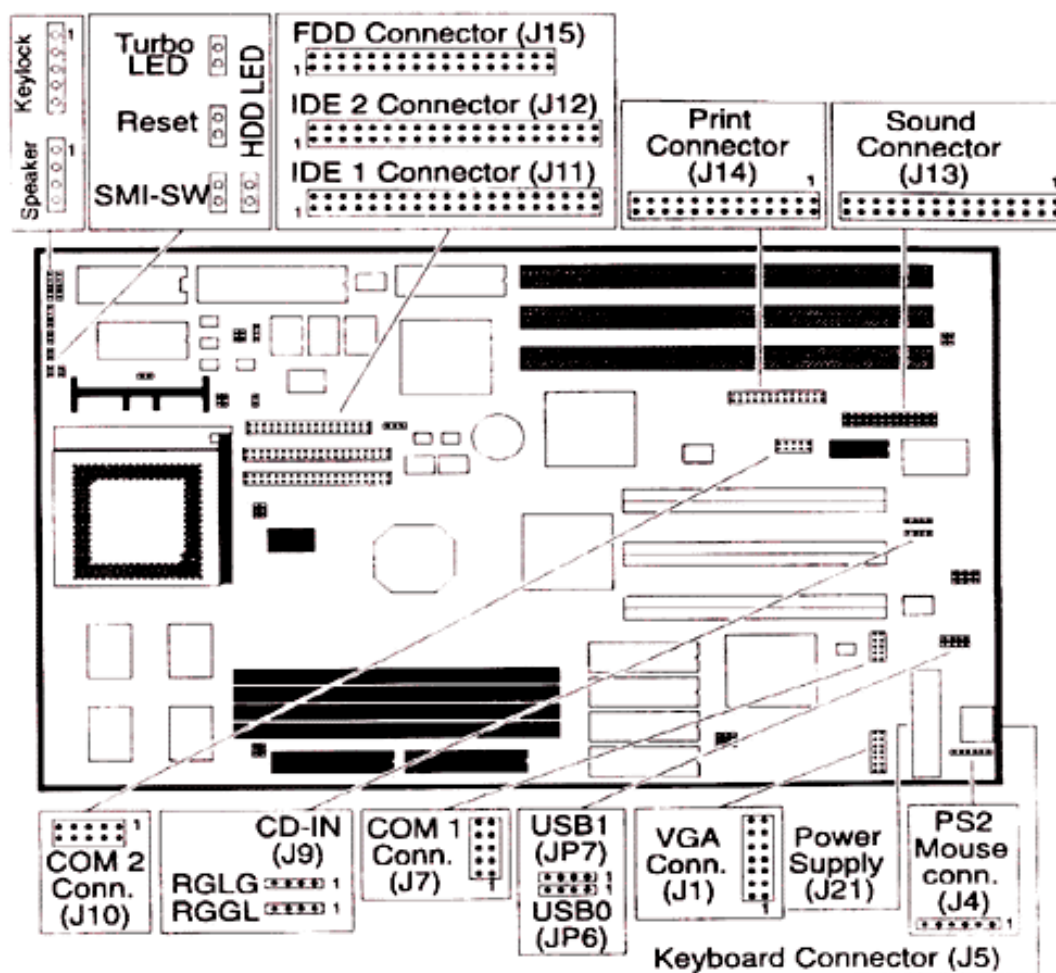
3.4 Connection the Mainboard

Once the mainboard have been fastened into the system case, the next step is to connect the internal cables. The internal cables are wire leads with plastic female connectors that attach to the connectors. The mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and other parts of the computer.

A description of each connector and its connector pins follows. See following fig. for the location of the connectors on the mainboard.

Note: Before making connectors on the board, make sure that power to the system is turned off.

3.5 Connector Locations



- | | | | | | |
|------|----------|------|-------|------|------------|
| J11: | IDE1 | J12: | IDE2 | J15: | FDD |
| J14: | Parallel | J7: | COM1 | J10: | COM2 |
| J1: | VGA | J9: | CD-IN | J4: | PS/2 Mouse |
| JP6: | USB0 | JP7: | USB1 | J21: | Power |
| J13: | Sound | | | | |

3.5.1 J21-Power Supply Connector

The power supply connector has two six-pin male header connectors. Plug the dual connectors from the power directly onto the board connector.

Pin	Discription
1	Power Good (Orange)
2	+5 VDC (Red)
3	+12 VDC (Yellow)
4	-12 VDC (Blue)
5	Ground (Black)
6	Ground (Black)
7	Ground (Black)
8	Ground (Black)
9	-5 VDC (White)
10	+5 VDC (Red)
11	+5 VDC (Red)
12	+5 VDC (Red)

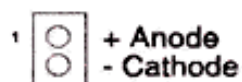
3.5.2 Keylock Connector

keylock connector enables and disables the keyboard.



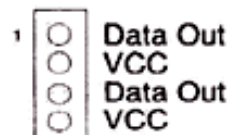
3.5.3 Turbo LED Connector

Turbo LED on front of the system case. If the system board select is in Turbo mode, the indicator lights during high-speed operation.



3.5.4 Speaker Connector

Following is the signals for system speaker connector.



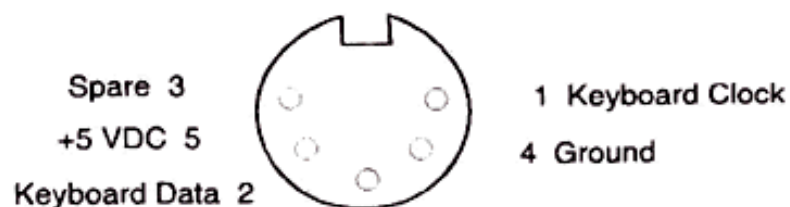
3.5.5 Reset Switch Connector

Attach the Reset switch cable to this connector. The Reset switch restarts the system.

Short	Reset System
Open	Normal

3.5.6 J5-Keyboard Connector

A standard five-pin female DIM keyboard connector is located at the rear of the keyboard. Plug the jack on the keyboard cable into this connector.



3.5.7 J4 PS/2 Mouse Connector

PAM-0063I also provides PS/2 type Mouse connector for users convenience. Which is right beside the Keyboard connector.

3.5.8 HDD LED Hard Disk LED

HDD LED is for front HDD LED. When hard disk is been accessed, the LED will blink.

3.6 On Board Multi I/O Connection

PAM-0063I provides on board two serial ports, one parallel port and floppy drive controller that simplifies the system requirement.

3.6.1 J7 Serial Port 1 (COM1)

Both COM1 and 2 are 16550 fast UART compatible. Pin 1 is toward power direction.

3.6.2 J10 Serial Port 2 (COM2)

Pin 1 of J10 is toward rear board direction.

3.6.3 J14 Parallel Port

J14 Parallel Port is D type 25-pin connector.

3.6.4 J15 Floppy Drive Controller

This Floppy drive controller also supports 2.88M FDD format.

3.7 On Board PCI IDE Device Controller

PAM-0063I provides on board two PCI Local Bus type IDE Connectors, which control up to four IDE devices. Those connectors are J11 and J12.

3.7.1 J11 Primary IDE Connector (IDE1)

The bootable Hard Disk must connect to this Primary IDE Connector. Pin 1 is CPU direction.

3.7.2 J12 Secondary IDE Connector (IDE2)

Pin 1 is toward CPU direction.

3.8 On Board PCI VGA System

PAM-0063I provides on board PCI Local Bus type VGA display.

3.8.1 J1 VGA Connector

J1 is 15-Pin D shell type connector. It locates right behind power connector.

3.9 On Board Creative Sound System

PAM-0063I provides on board Creative Sound System.

3.9.1 J13 Sound Connector

J13 is provided for the sound board. The sound board has Microphone, Speaker, Line-in connectors for external devices.

3.9.2 J9 CD-IN

J9 is provided for CD-ROM sound connector.

3.10 System Assembly Overview

After installing and connecting the mainboard, assemble components in the following order:

1. **Power Supply:** Place the power supply so that it fits the raised tongues on the chassis floor. Insert and fasten the two screws on the back panel of the chassis. Connect the power supply to the power supply connector.
2. **Disk Drives:** Slide disk drives into the chassis. Connect a wide 34-wire ribbon cable to each disk drive; this cable will attach to J11 of mainboard. The power supply has four cables, each with four wires. Connect these cables to the disk drives.
3. **Adapter Cards:** Insert each adapter card -- Modem cards, network card, etc., into an expansion slot. Refer to the installation and configuration instructions that comes with the card.

DTK PAM-0063I ————— ***Mainboard Installation***

4. **Keyboard:** Connect the keyboard to its connector, J5. If the keyboard is not PS/2 type connector, apply a connector converter.
5. **Display:** Connect the display cable to J1 VGA Connector, and the display's power cord into a power outlet.
6. **Case:** Slide on the case cover and fasten its screws.

Connect the power cord to the power supply and plug it into a wall outlet. Put the boot disk into drive a: and turn on the power. User will then need to run the BIOS setup program.

