**GMB-486SPS
High Performance
486
PCI Motherboard
User's Manual**

For
GMB-486sps v0

Manual Edition 1.03

ABOUT THIS GUIDE

This guide contains instructions for configuring and installing the mainboard.

- Chapter 1, **Introduction**, acquaints user with the special features of the mainboard.
- Chapter 2, **Hardware Configuration**, gives information on configuring memory and setting the mainboard's jumpers. Brief sections on installing memory.
- Chapter 3, **Mainboard Installation**, is an overview of how to install the mainboard in a system.
- Chapter 4, **BIOS Setup**, provides the BIOS information for system configuration.
- Chapter 5, **BIOS POST Messages**, provides references for all POST error messages.
- Chapter 6, **BIOS Default Drive Table**, provides a Default Drive Disk table contained in Setup.

WARNING

For the system to operate normally please make sure JP38 of the mainboard is set as below. Refer to Fig 2 in this manual for the location JP38.
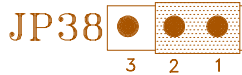
If JP38 is open, no CMOS data can be retained.

The information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies, whereas, specification is subjected to change without notice.

UNPACKING THE MAINBOARD

The Mainboard comes packed in a sturdy cardboard shipping carton. The carton contains:

- The Mainboard
- PCI IDE Driver Diskette
- 40-pin Hard Disk Cable
- 34-pin Floppy Disk Cable
- 25-pin serial & 15-pin Game Port Cable
- 9-pin serial & 25-pin Parallel Port Cable
- This User's Guide

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

The 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 chassis before handling the mainboard or any component. Doing so discharges the static charge the user's body may have built.

2.   Remove the mainboard from its anti-static wrapping and place it on a grounded surface, component side up.

3.   Inspect the mainboard for damage. Shipping may have loosened integrated circuits from their sockets. If any integrated circuit appears loose, press carefully to seat it firmly in this socket.

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

CONTENTS

CHAPTER 1   INTRODUCTION

The mainboard is a 2/3 body AT size high-performance mainboard that provides with basic elements on which to build an advanced computer. The mainboard running from 25MHz to 100MHz, supports Normal 486 CPUs, Intel's SL-Enhanced 486, P24D/P24T; P24C (486DX4), Cyrix Cx486S/DX/DX2/DX4, Cx486DX2-V66/V80 (3.6-4.0V)/Cx486DX4 (3.45V)/Cx5x86 (3.3V), Am486DX2/DX4 (3.45V), Enhanced Am486DX2/DX4 (3.45V), IBM 486-4V3100GIC/GC, SGS Thomson 486DX/DX2/DX4, UMC U5SX-486 & TI 486DX2/DX4 CPUs.

1.1   KEY FEATURES
The advanced features of the mainboard include:
• Supports Intel's SL Enhanced 80486DX2/DX/SX, normal 486,
   P24D/P24T, P24C (486DX4), Cyrix's Cx486S/DX/DX2/
   DX4, Cx486DX2-V66/V80 (3.6-4.0V)/Cx486DX4 (3.45V)/Cx5x86
   (3.3V), AMD Am486DX2/DX4 (3.45V), Enhanced Am486DX2/DX4
   (3.45V), IBM 486-4V3100GIC/GC, SGS Thomson 486DX/DX2/DX4,
   UMC U5SX-486 & TI 486DX2/DX4 CPUs.

• Supports Cache \Write back CPU
   P24T/P24D/Cx486S/DX/DX2/DX2V/DX4/5x86/
   Enhanced Am486DX2/DX4/IBM 486-4V3100GIC/GC, SGS Thomson
   486DX/DX2/DX4 & TI 486DX2/DX4.

• 100% IBM PC-AT and PCI 2.0 compatible, 486 PCI solution.

• Provides power saving features to allow a system, through the control of
   BIOS, to reduce the CPU clock frequency down to 0MHz
   (STOP CLOCK) when the system is idle.

• Supports Power Management Mode
   - Supports the SMM and the SMI
   - CPU Stop Clock Function
   - Long and Short System Timers
   - Supports the APM control
   - Supports Break Switch control
   - Power Saving also on non-SMI CPU
   - More System Event Monitoring and the Power saving Control

• Jumper select CPU supply voltage of 3.3/3.45/3.6/4.0/5.0V

• Direct Mapped Cache Controller
   - Write-Back or Write-Through Schemes
   - Bank Interleave or Non-Interleave Cache
   - Flexible Cache Size: 128/256/512/1024KB

• Memory size from 1MB to 128MB, possible using combinations of
   1M, 2M, 4M, 8M, 16M, 32M, or 64M 72-pin SIMM modules in four memory banks.

• Provide 2 enhanced PCI IDE channels that support up to 4 IDE devices.

• Provide FDD channels which support 360K, 720K, 1.2M & 1.44M floppy disks, two 16550 compatible UARTs, one Parallel port with EPP/ECP mode, and one joystick port.

• Easy upgrade the system, just change CPU, or and alter jumper only.

• System & video Bios Shadow, optional caching of shadowed system & video BIOS.

• Flash ROM support.

• Hidden DRAM refresh support.

• Support 7 Direct Memory Access channels and 16 Interrupt levels.

• Four 16-bit I/O slots, and four PCI Local Bus slots.

• Battery backup for CMOS configuration and real time clock/calendar.

• 8MHz AT Bus clock & speed changeable by hardware or keyboard, CPU clock adjustable by jumper.

• User Defined Password to inhibit illegal access.

• 2/3 Baby AT board size = 220mm(W) X 250mm(L).

1.2 MAINBOARD COMPONENTS

This section gives a brief description of key components on the mainboard. Refer to Fig 1 for component locations.
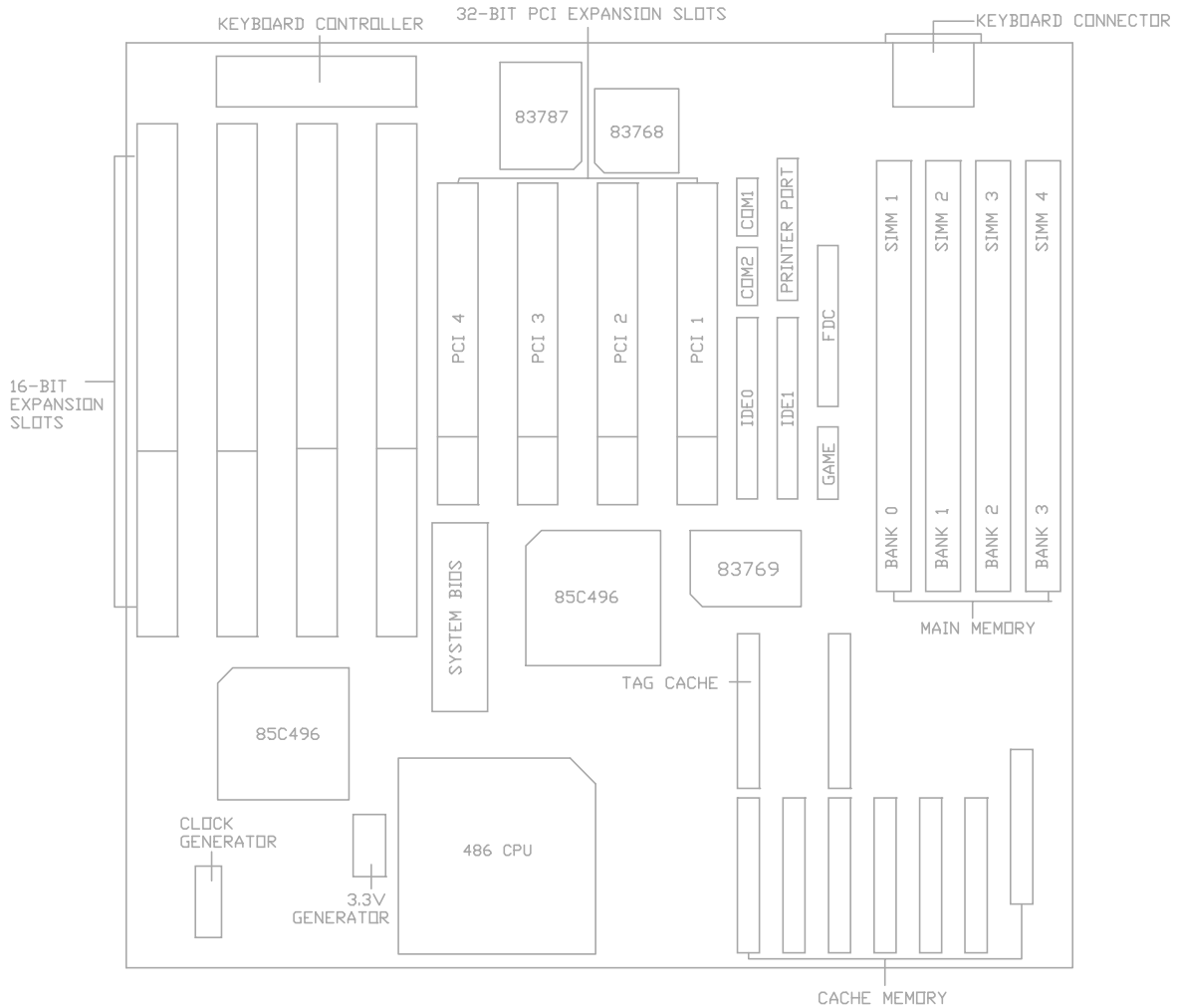
Fig 1 Key Components of the Mainboard

1.3   PCI LOCAL BUS SPECIAL FEATURES

• PCI (Peripheral Component Interconnect) Local-Bus is the latest Local
  Bus Standard that adapts the high performance and supports the future standard on the PC industry.

• Four PCI slots are provided on the mainboard support up to three Bus Master devices.

• PCI BIOS supports the PCI device configuration and fully compatible with existing drivers and application software.

• Synchronous Bus operates in 32-bit with up to 40MHz.

CHAPTER 2   HARDWARE CONFIGURATION

This chapter describes how to set the mainboard jumpers for cache memory and display type, and how to install memory modules.

Before beginning the configuration, user should take the following precautions:

•   Turn off the power supply, and unplug the power cord before begin.
•   Unplug all cables that connect the mainboard to any external devices.
•   **In Appendix A, CPU Type Configuration Table and Voltage Selection Table are provided for reference.**

2.1   JUMPER AND MEMORY BANK LOCATIONS
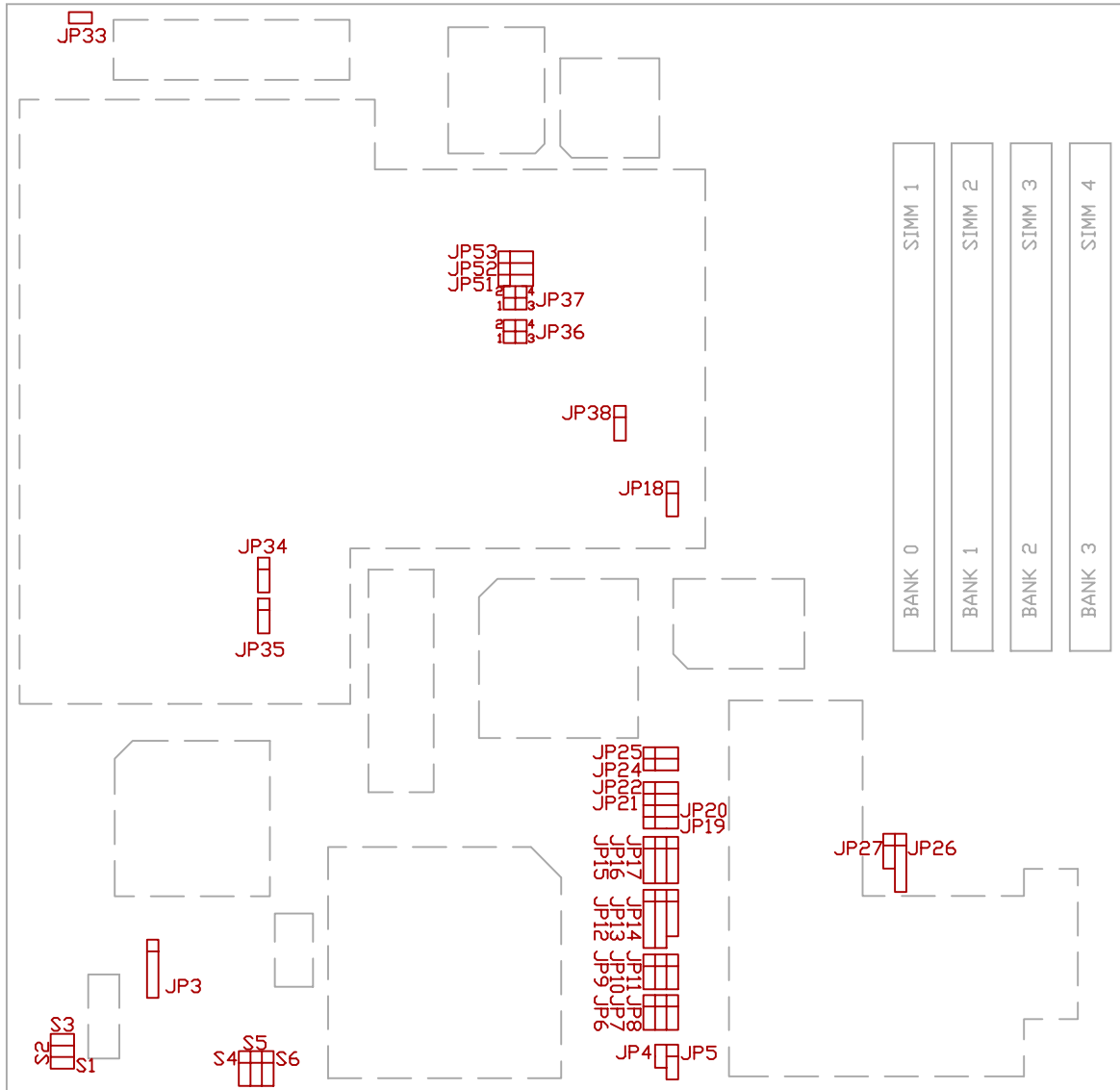
Fig 2 Jumper and Memory Bank Locations

2.2   JP4-JP17, S4-S6 - CPU TYPE CONFIGURATION

The mainboard can support different 486 processors. JP4-JP17 select CPU type and S4-S6 select the CPU voltage. Refer to Fig 2 for the jumpers' location, and set the jumper according to the following table:
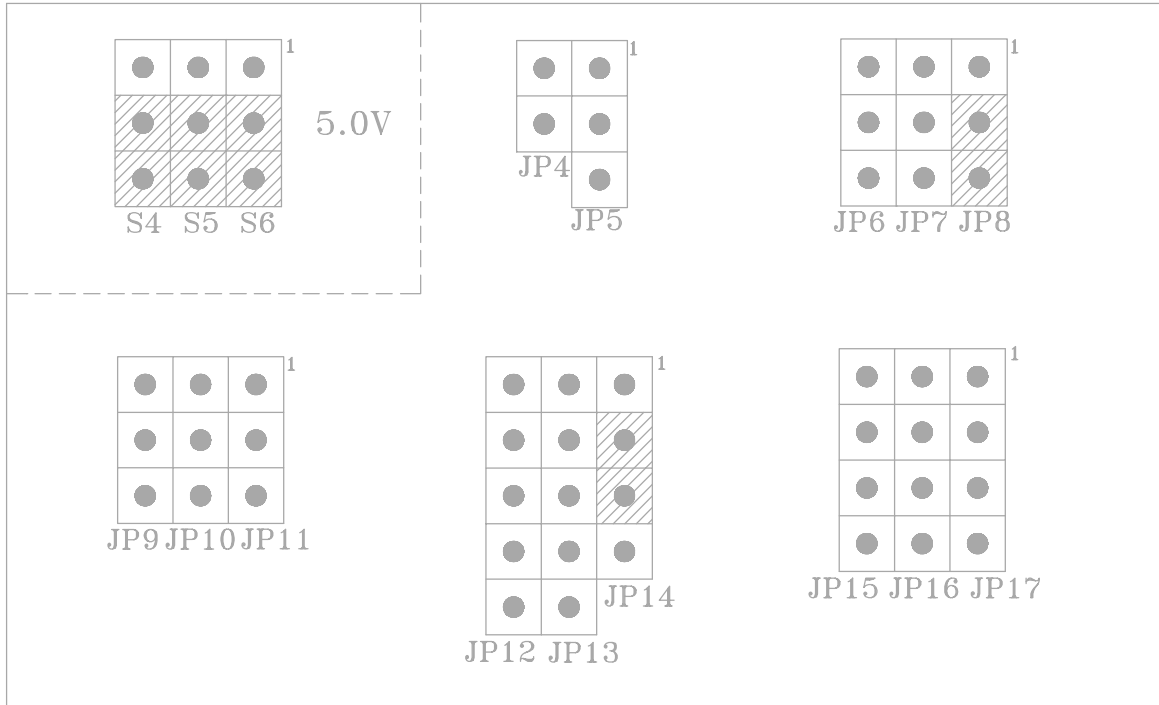
Table 1A: CPU Type: - 486SX (5V)
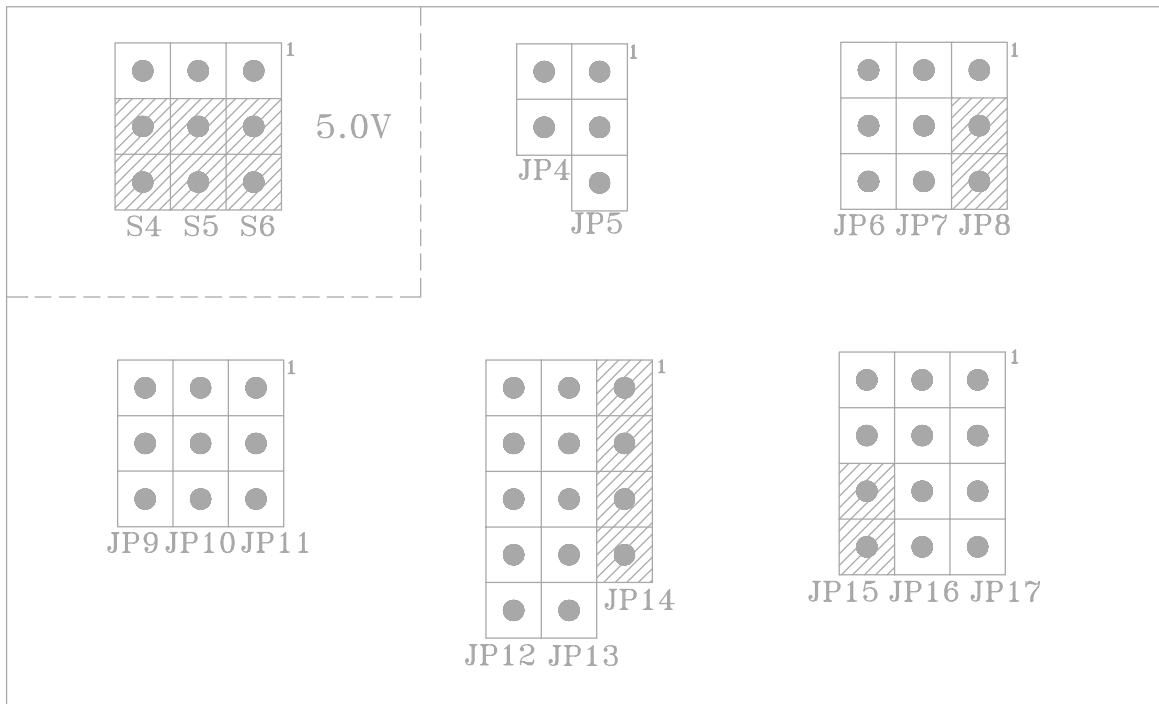
Table 1B: CPU Type: - 486DX/DX2 (5V)

5.0V

S4 S5 S6

JP4

JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP12 JP13

JP14

JP15 JP16 JP17
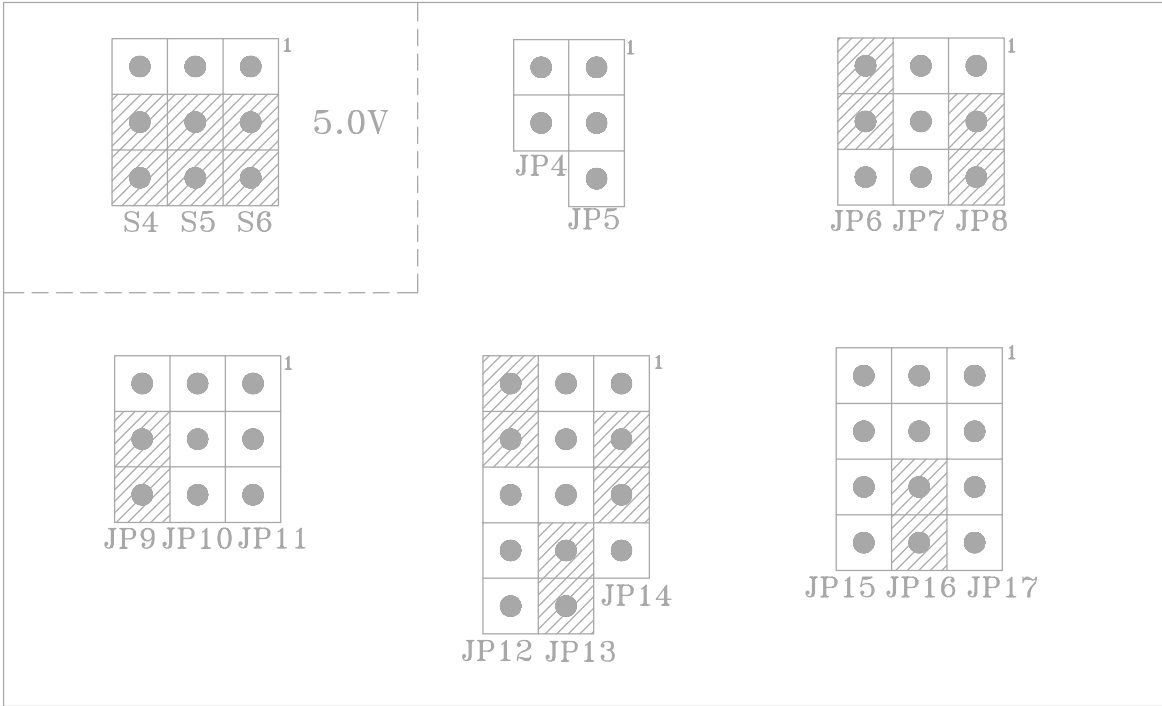
Table 1C: CPU Type: - SLE 486SX (5V)

5.0V

S4 S5 S6

JP4

JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP12 JP13

JP14

JP15 JP16 JP17
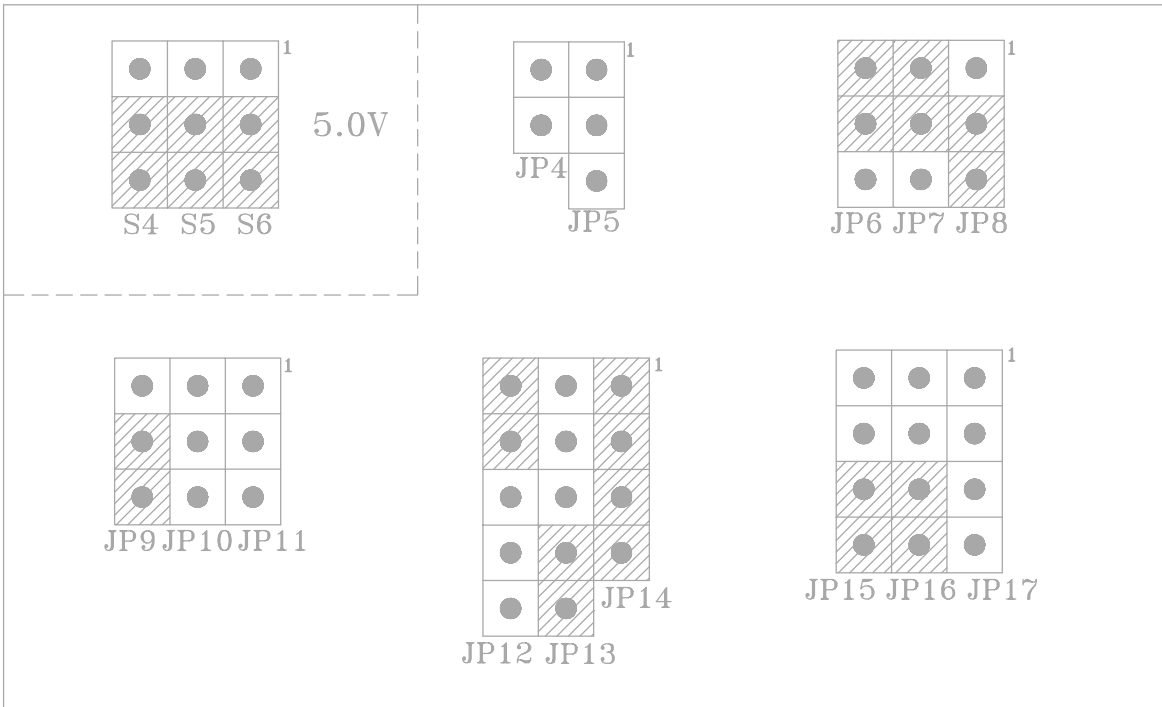
Table 1D: CPU Type: - SLE 486DX/DX2 (5V)
JP4-JP17, S4-S6--CPU Type Configuration
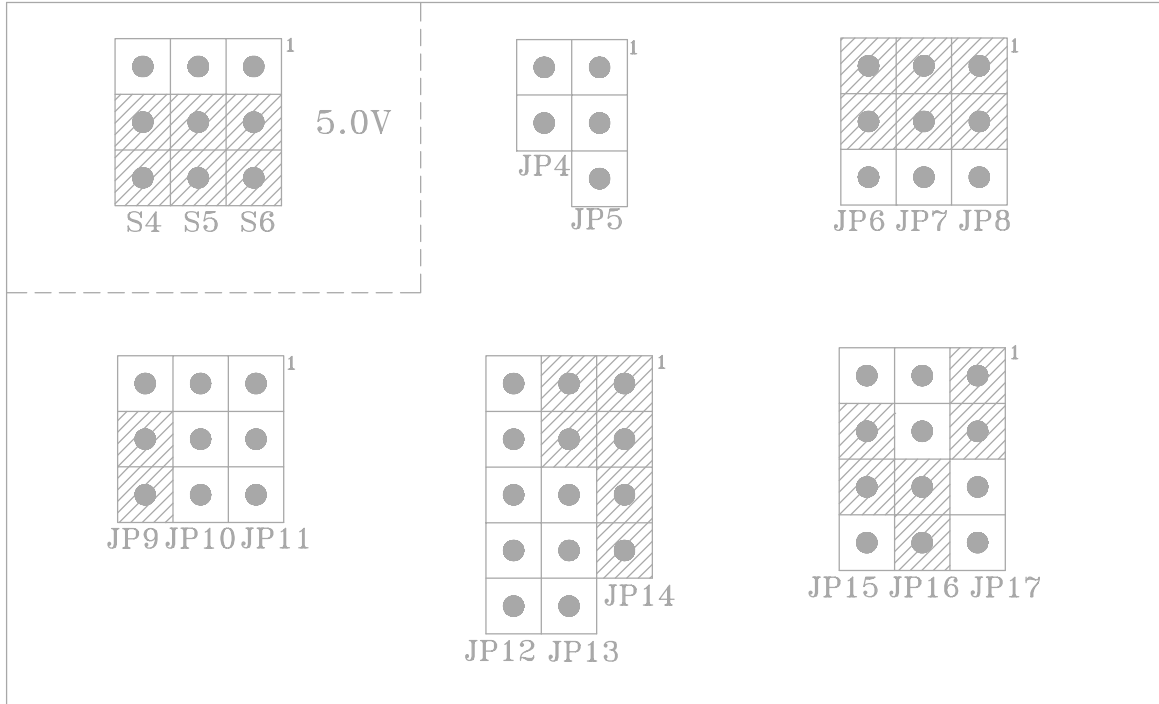
Table 1E: CPU Type: - P24T (PENTIUM OVERDRIVE PODP5V) (5V)

For 63MHz CPU clock set to 25MHz. For 83MHz CPU clock set to 33MHz
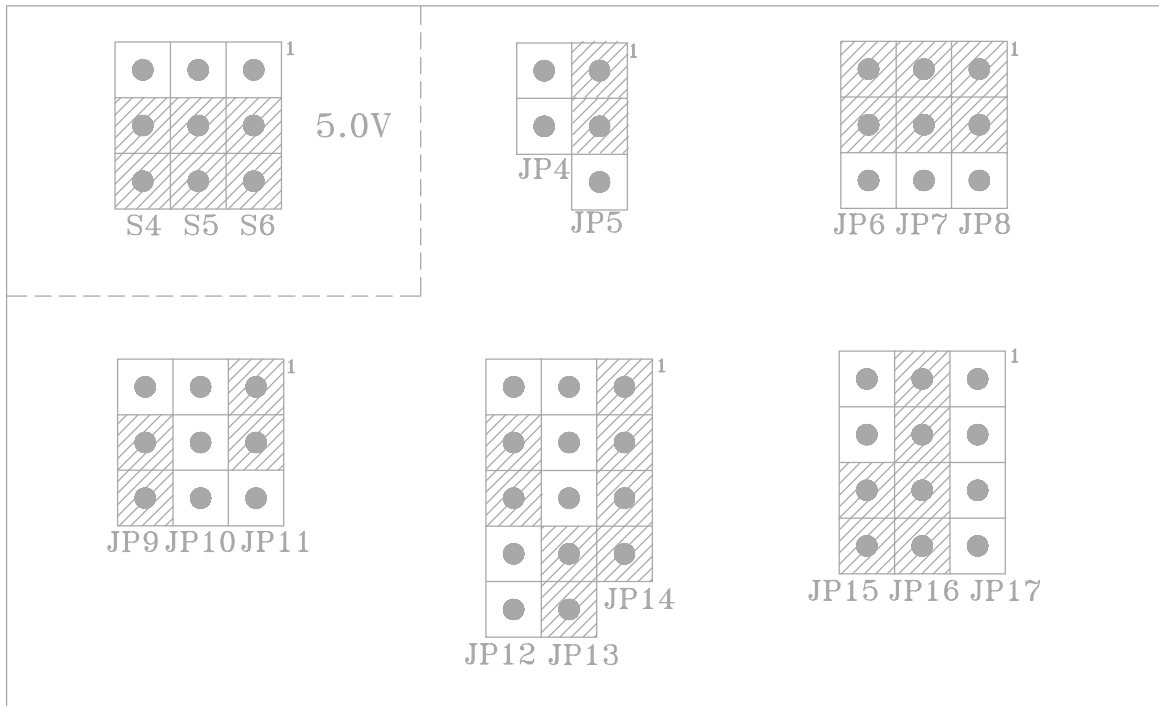
Table 1F: CPU Type: - P24D (486DX2 & EW5V) (5V)
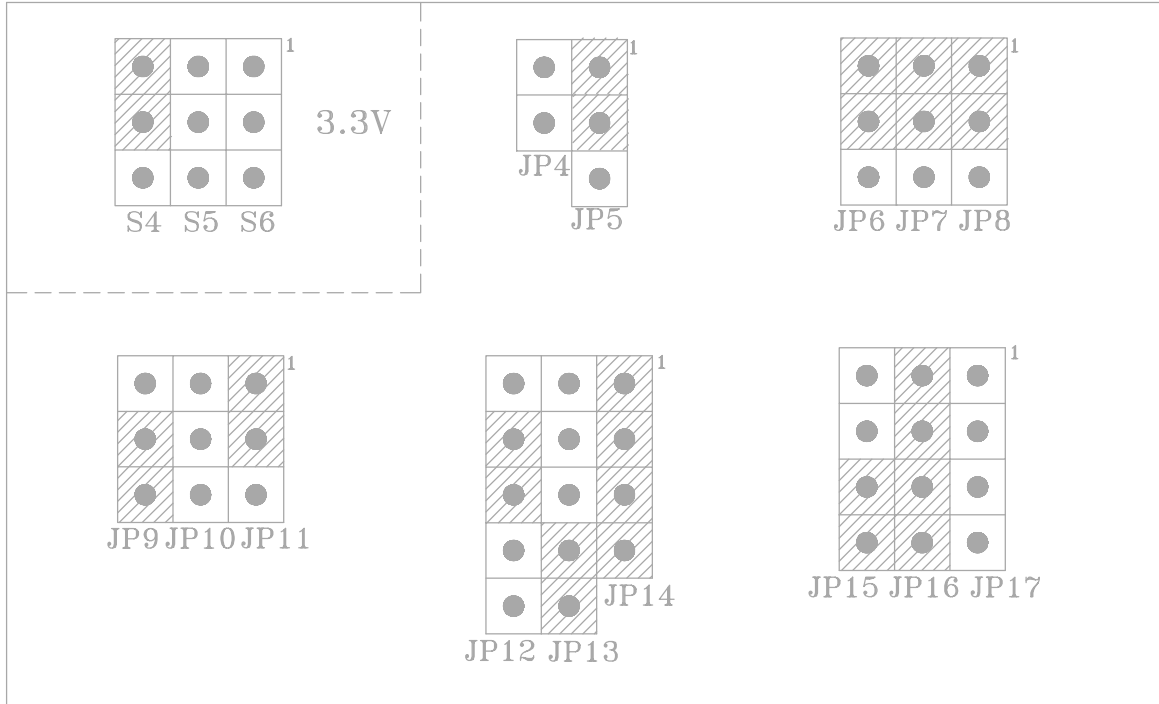
Table 1G: CPU Type: - P24D (486DX4 & EW3V) (3.3V)
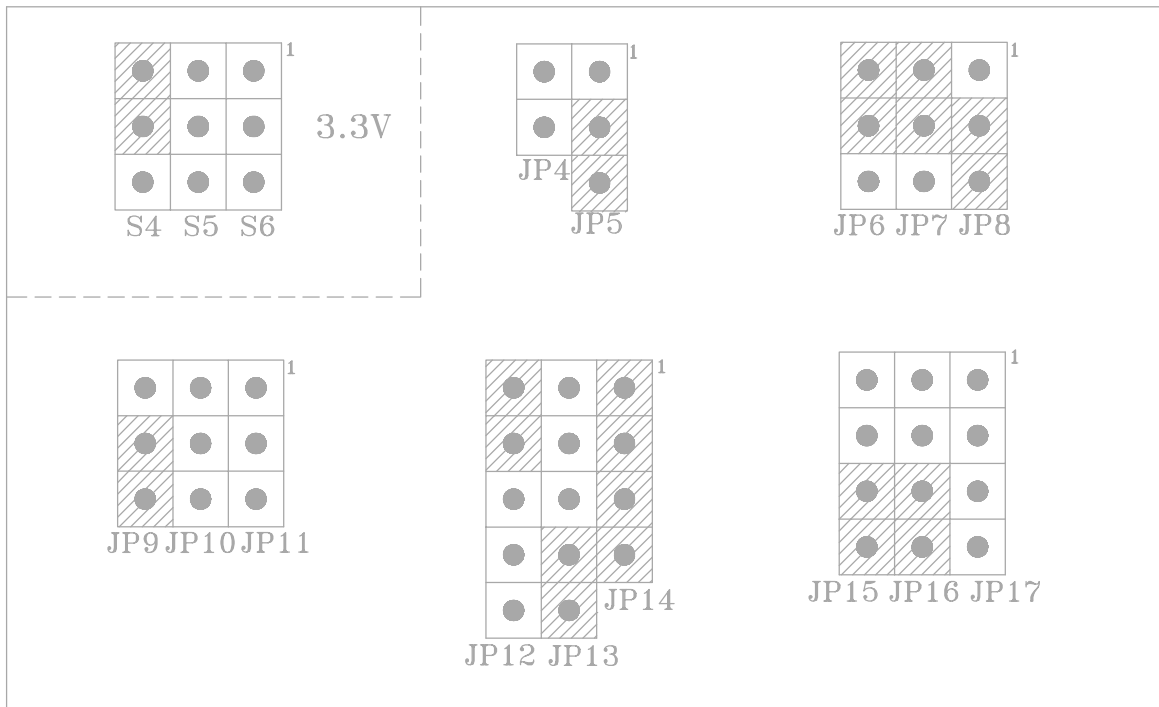
Table 1H: CPU Type: - P24C (DX4) (3.3V)
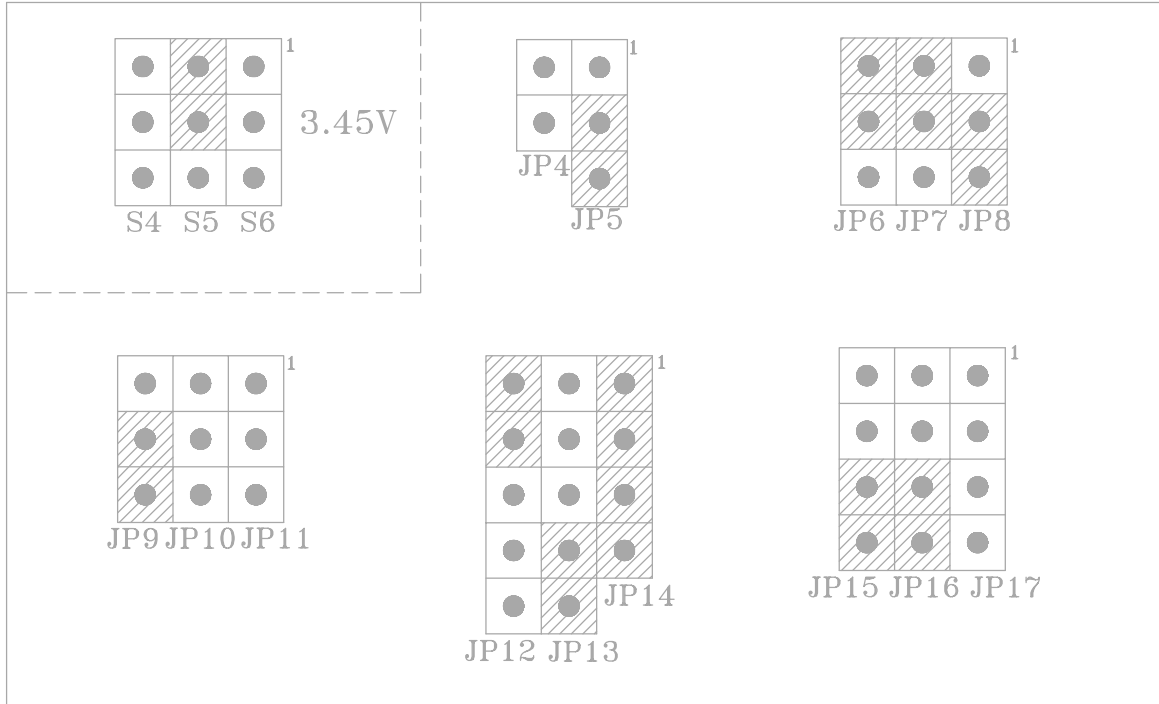
Table 1I: CPU Type: - Am486DX2 (3.45V)
(A80486DX2-XXNV8T)
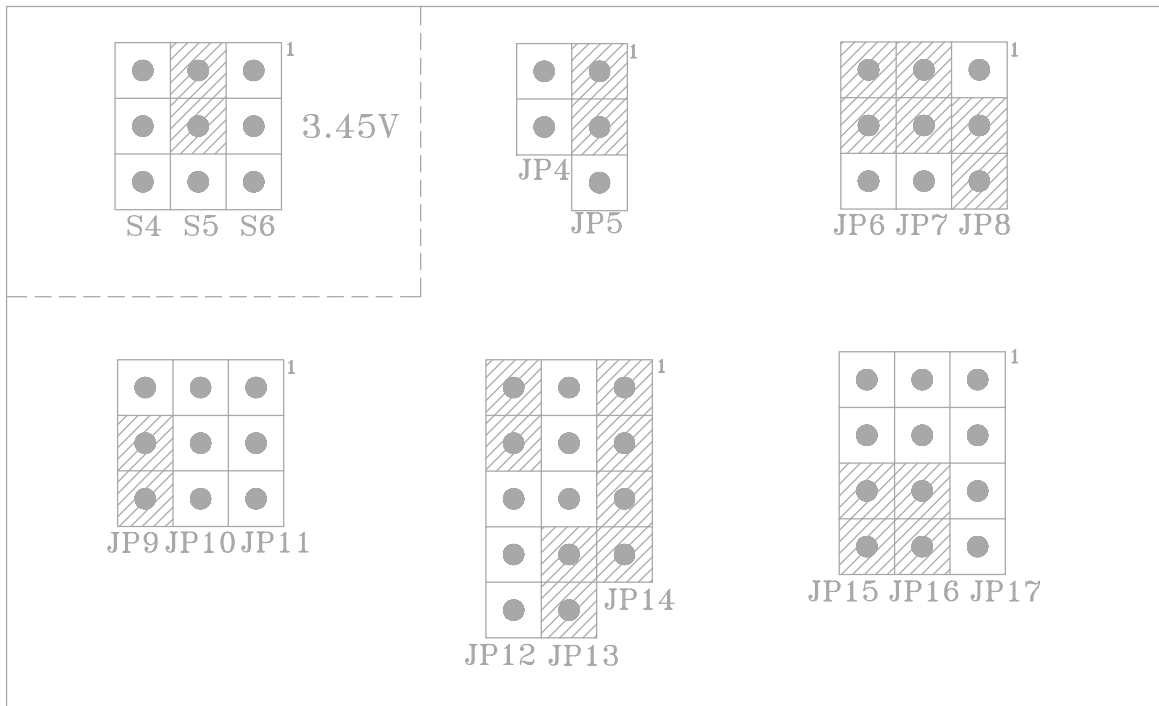
Table 1J: CPU Type: - Am486 DX4 (3.45V)
(A80486DX4-100NV8T)
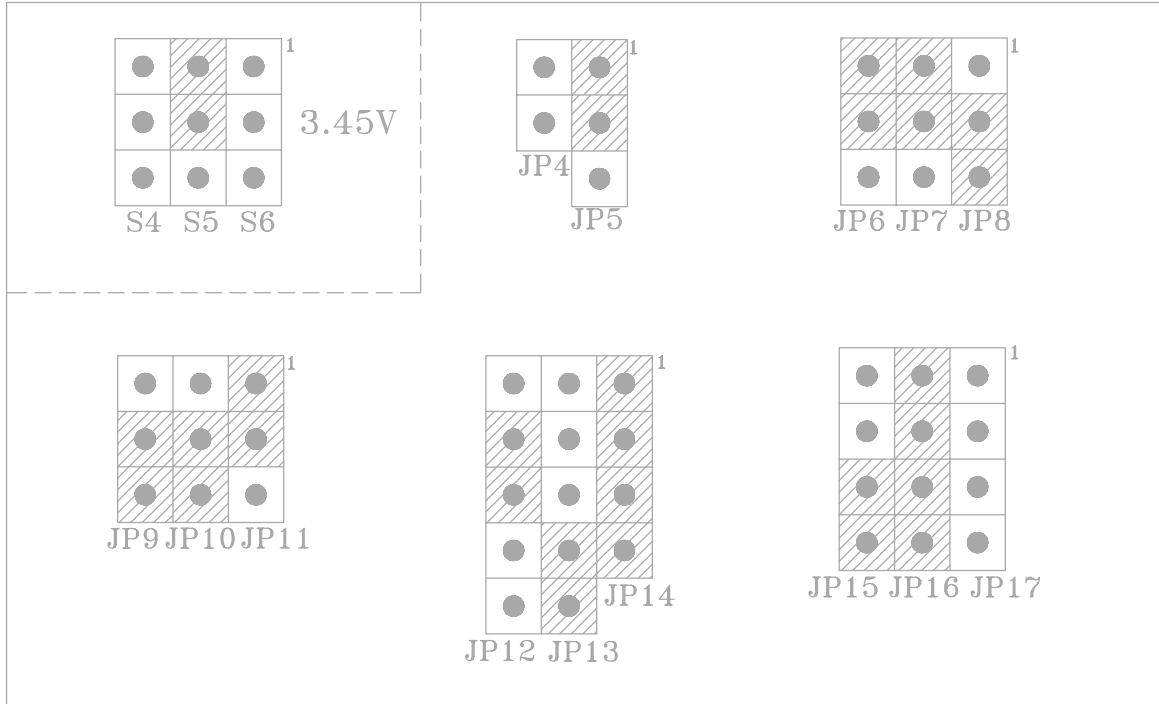
Table 1K: CPU Type: - Enhanced Am486DX2 (3.45V)
(A80486DX2-XXSV8B)
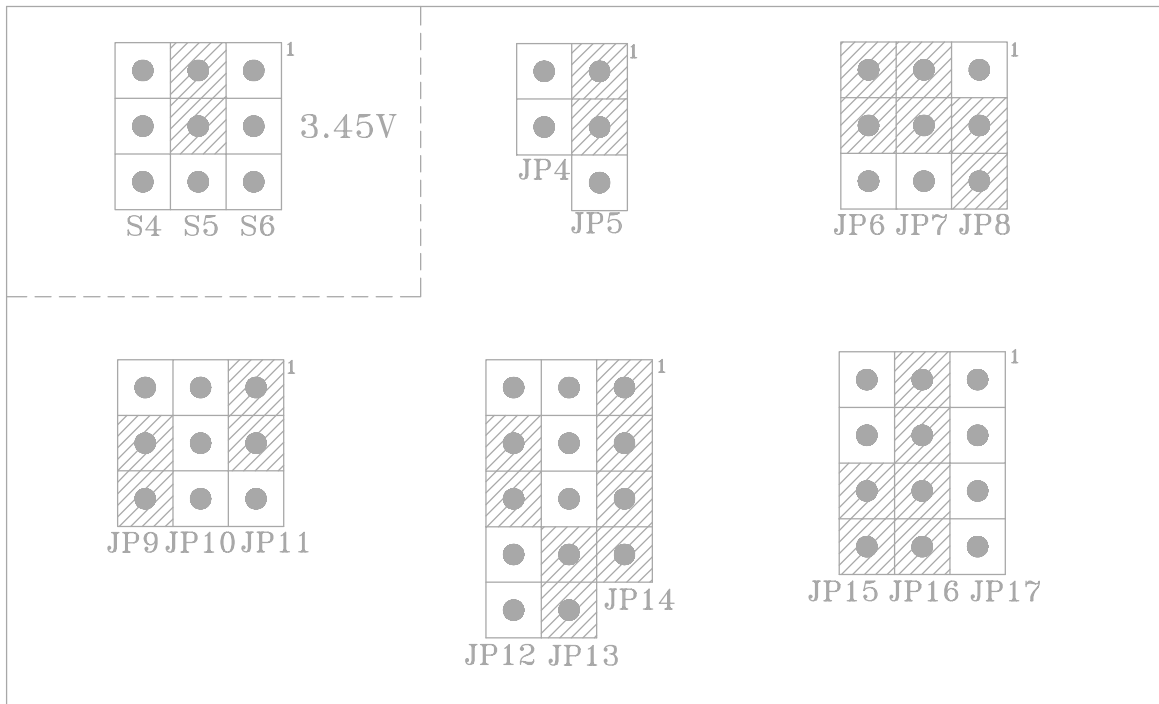
Table 1L: CPU Type: - Enhanced Am486DX4 (3.45V)
(A80486DX4-1XXSV8B)
1XX = 100/120MHz
For 120MHz CPU, CPU Clock Frequency = 40MHz
For 100MHz CPU, CPU Clock Frequency = 33MHz

3.45V

S4 S5 S6

JP4
JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP14
JP12 JP13

JP15 JP16 JP17
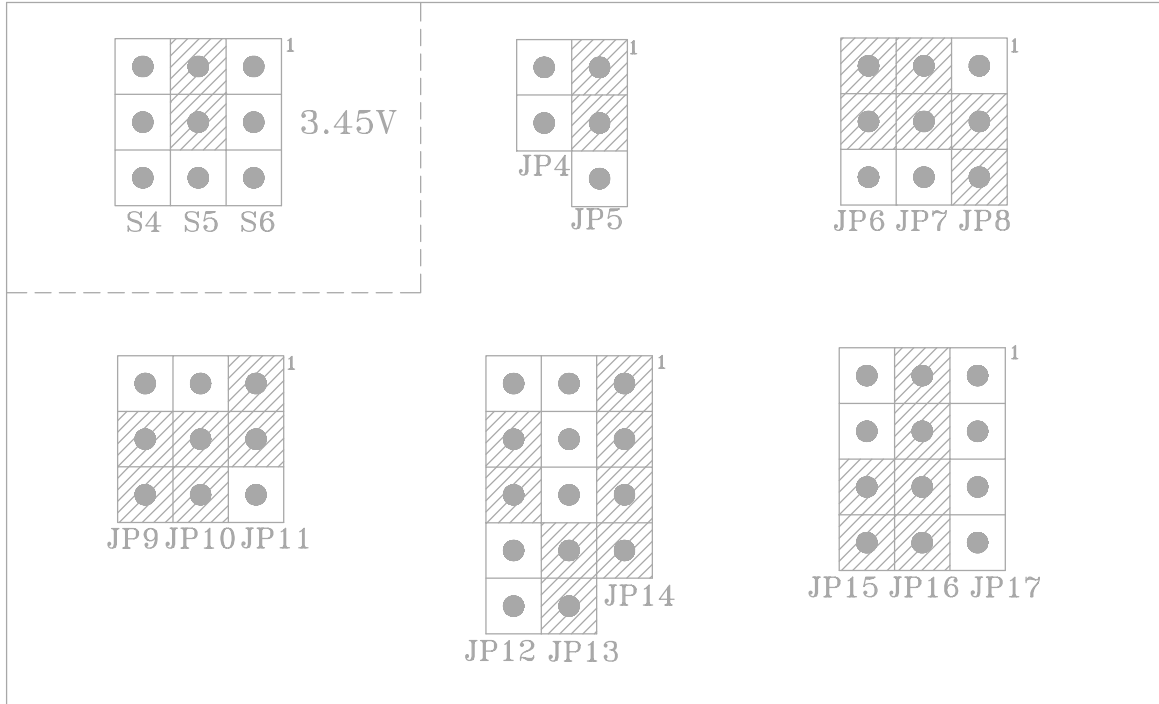
Table 1M: CPU Type: - Am5ₓ86™-P75 (3.45V)
(AMD-X5-133ADW)

For 133MHz CPU, CPU Clock Frequency = 33MHz

5.0V

S4 S5 S6

JP4
JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP14
JP12 JP13

JP15 JP16 JP17
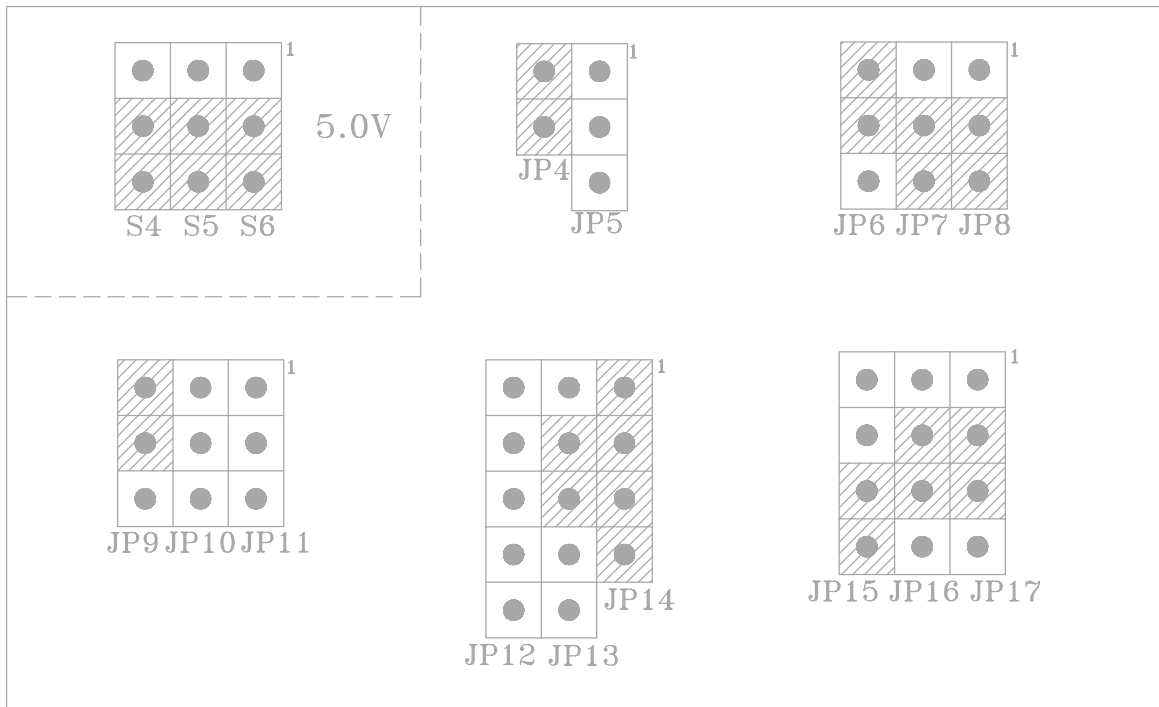
Table 1N: CPU Type: - Cx486S2 (5V)
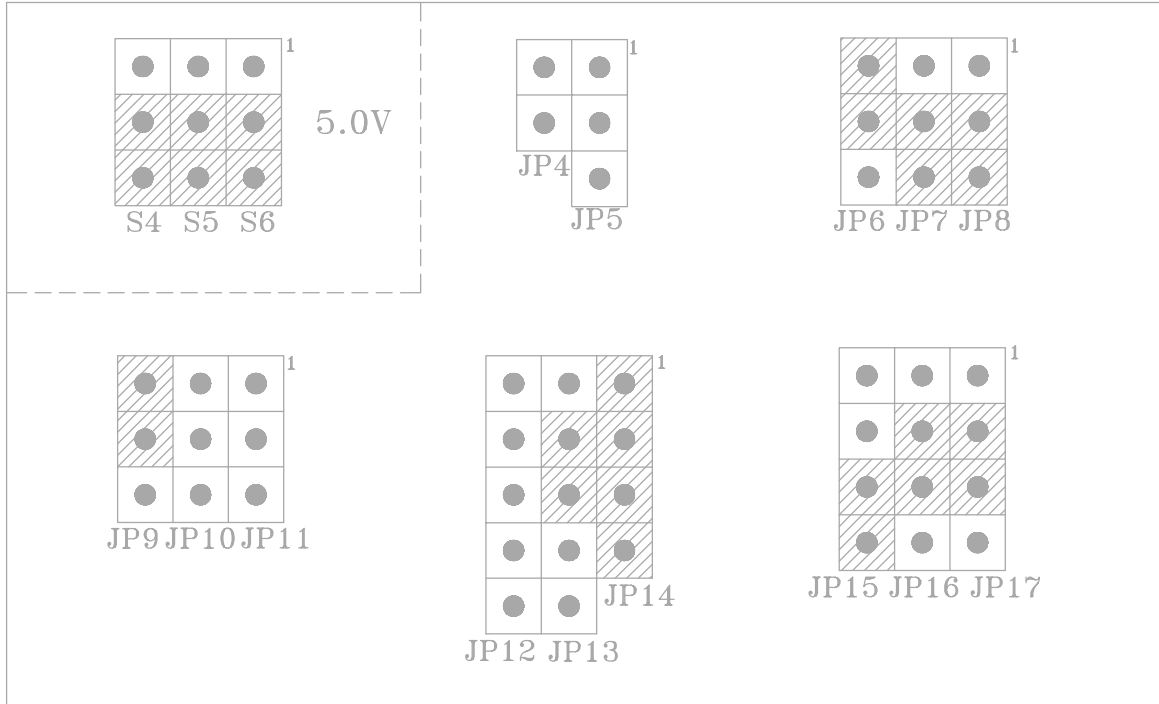
Table 1O: CPU Type: - Cx486DX/DX2 (5V)
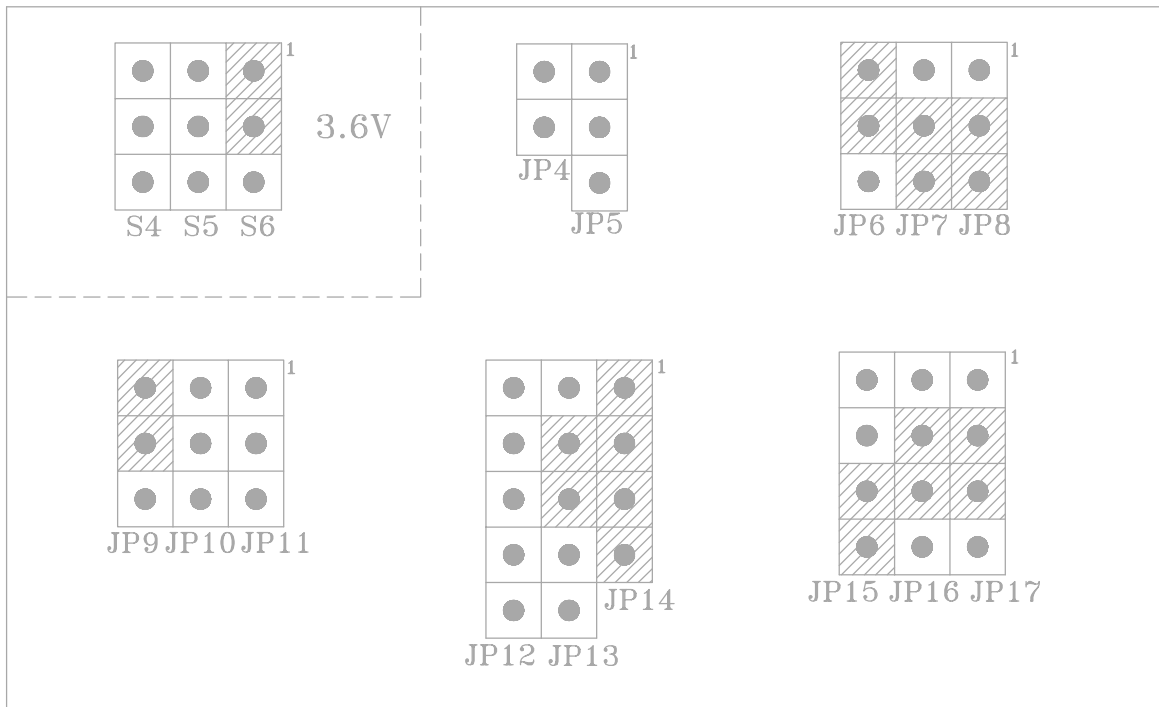
Table 1P: CPU Type: - Cx486DX2-V66 (3.6V)
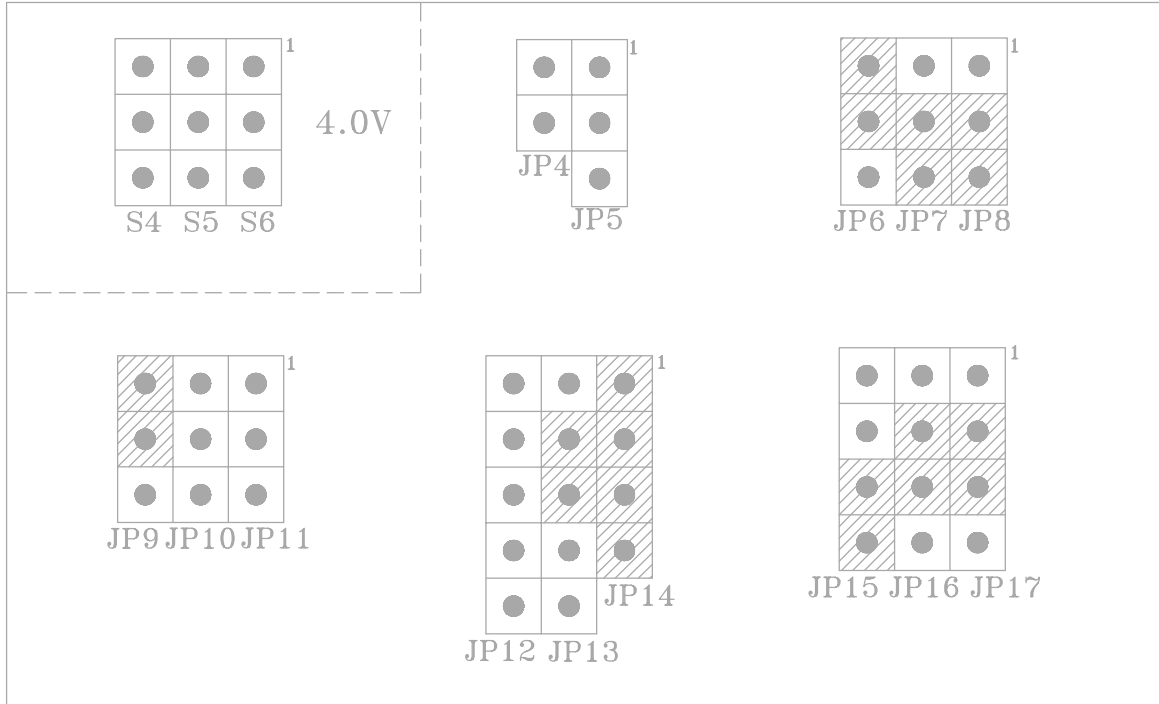
Table 1Q: CPU Type: - Cx486DX2-V80 (4.0V)
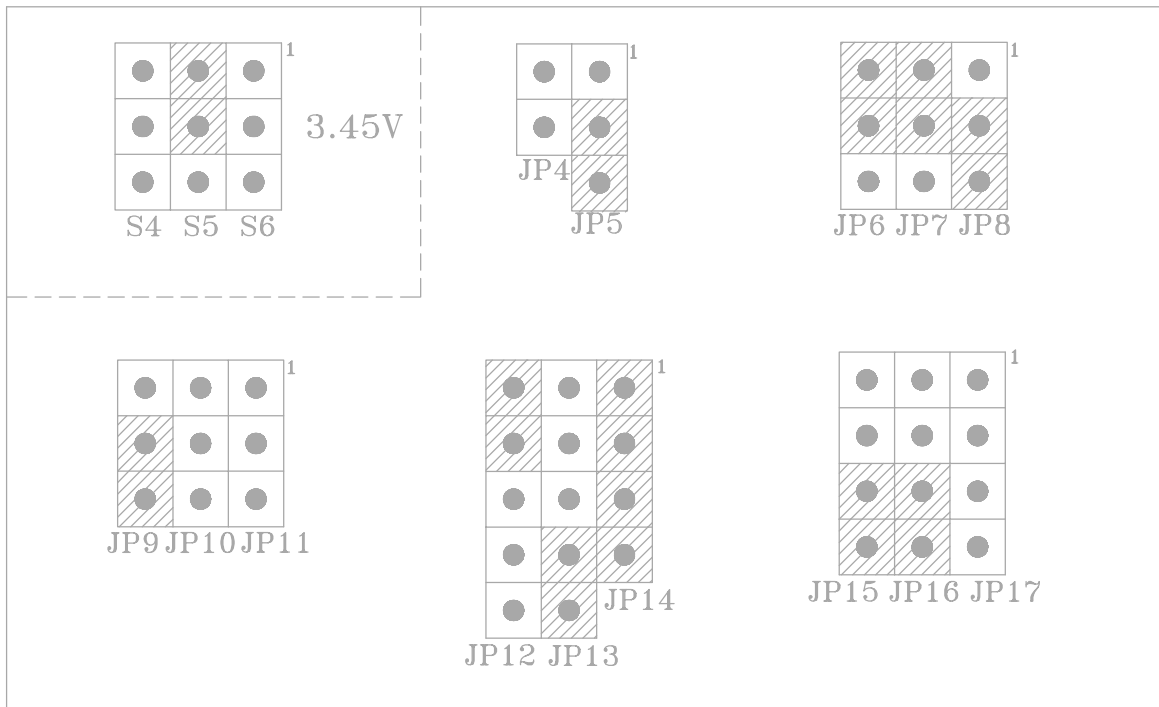
Table 1R: CPU Type: - Cx486DX4-100GP4/ST 486DX4V10HS (3.45V)

3.45V

S4 S5 S6

JP4

JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP12 JP13

JP14

JP15 JP16 JP17
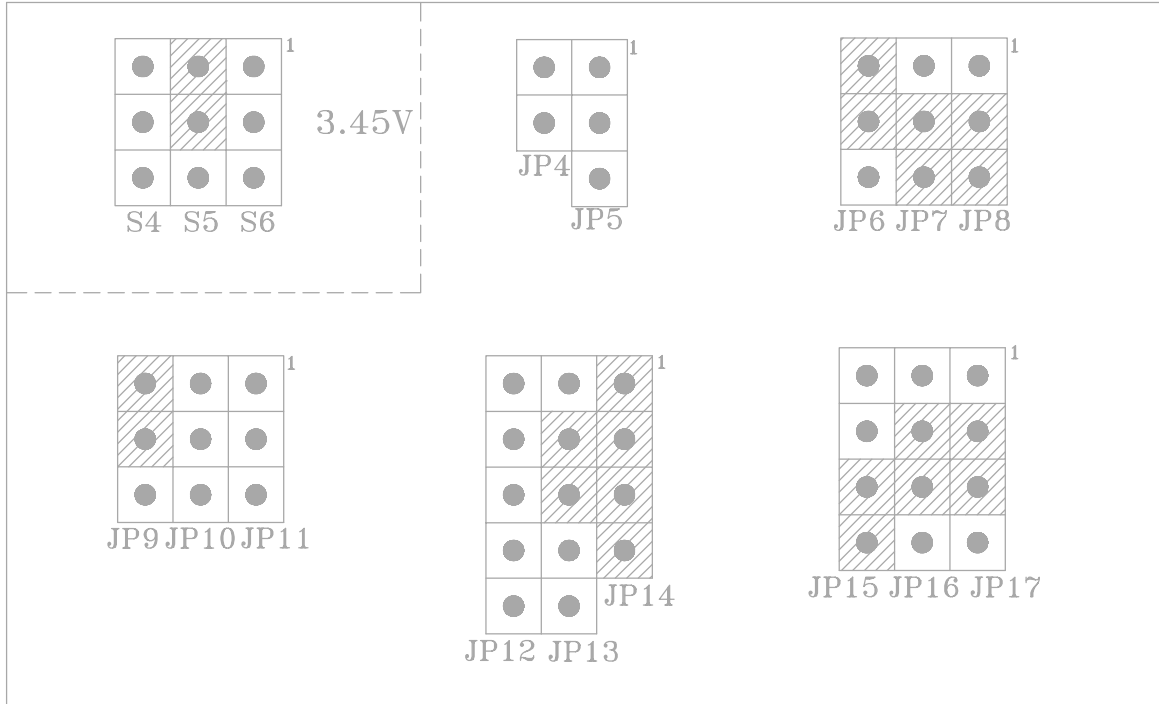
Table 1S: CPU Type: - Cx486DX4-100GP/TI486DX2-80
IBM486-4V3100GC (3.45V)

3.3V

S4 S5 S6

JP4

JP5

JP6 JP7 JP8

JP9 JP10 JP11

JP12 JP13

JP14

JP15 JP16 JP17
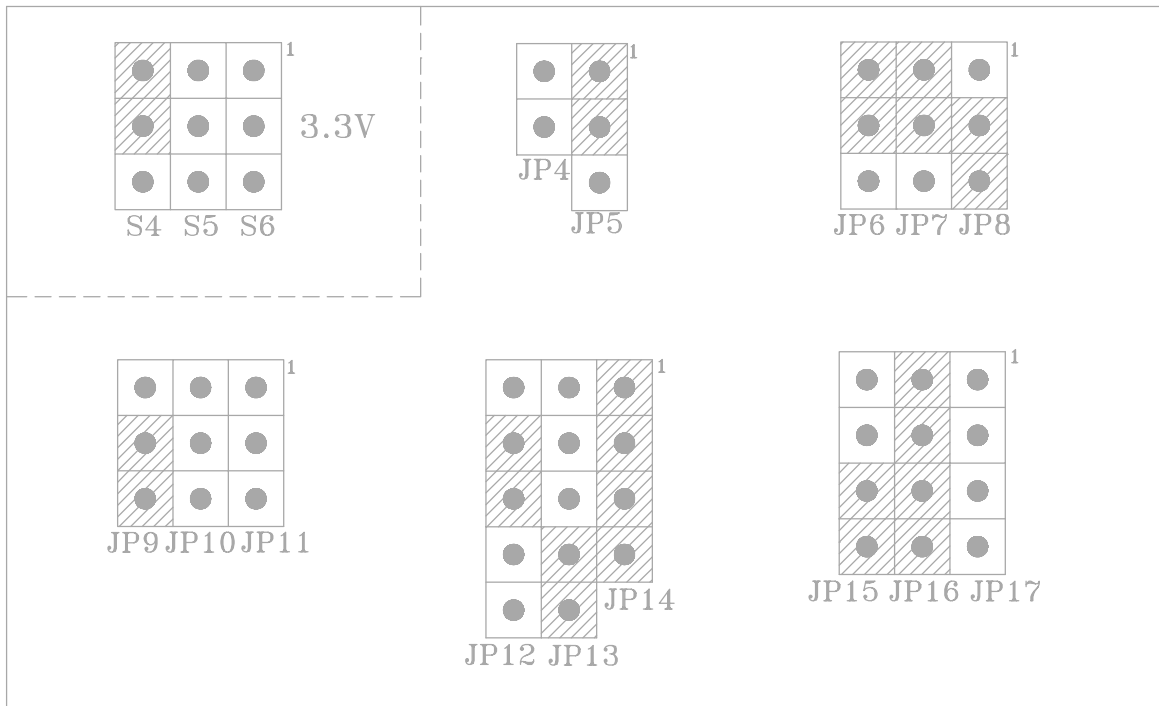
Table 1T: CPU Type: - Cx5x86-1XXGP/IBM 486-4V3100GIC (3.3V)

1XX = 100/120MHz
For 120MHz CPU, CPU Clock Frequency = 40MHz
For 100MHz CPU, CPU Clock Frequency = 33MHz
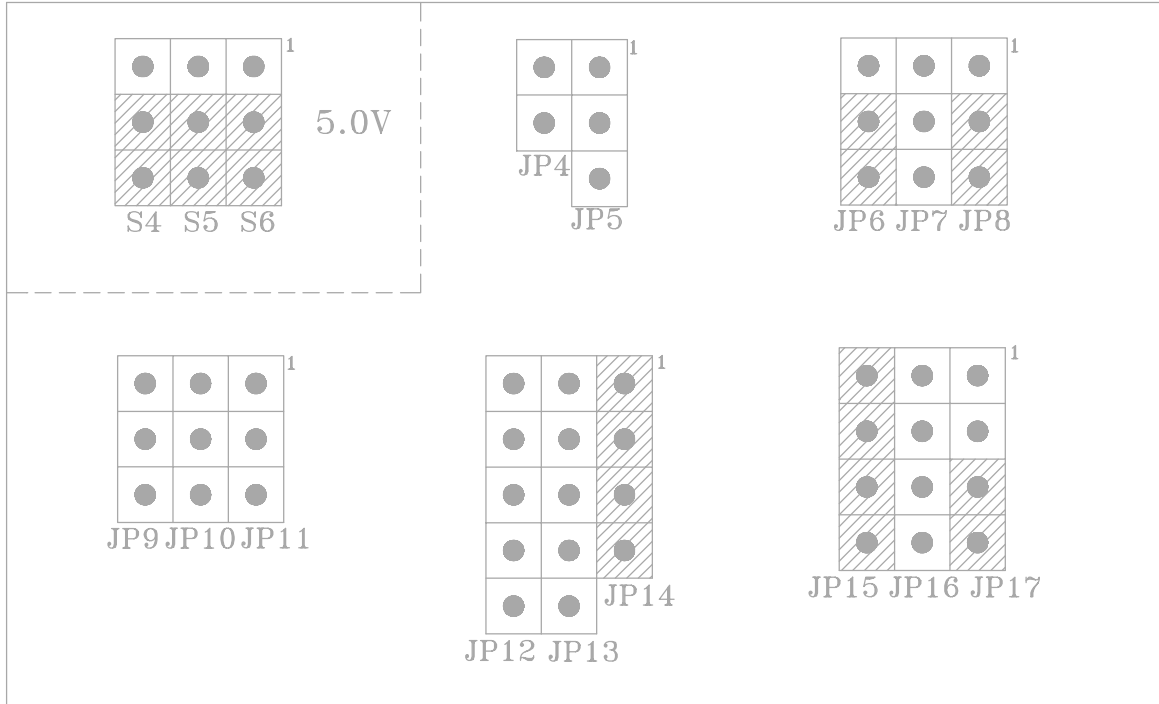
Table 1U: CPU Type: - UMC U5SX-486 (5V)

2.3   CPU INSTALLATION

The mainboard has a socket that can support 486 CPU. See Fig 1 in Chapter 1 for the socket's location.

Install the 486 CPU as follows:
Caution: Static electricity can damage the processor.

1.   Plug the 486 CPU into the socket, with the notch corner aligned.
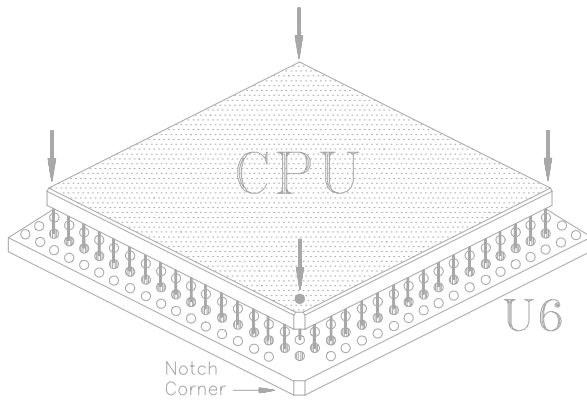
Fig 3 Installing a CPU

2.   Change the CPU type jumper setting according to the CPU Jumper setting table on the previous pages.

2.4   CACHE CONFIGURATION

The special feature of the mainboard is a built-in direct-mapped cache controller with optional write-back or write-through operation that supports 128KB, 256KB, 512KB or 1024KB cache memory.

The mainboard has a built-in cache controller. It requires external SRAM as tag and cache memory. The caching Scheme is direct mapping with selectable write-back or write-through operation. The mainboard allows 128KB, 256KB, 512KB, and 1024KB cache configurations. Memory size is selected by the hardware jumpers and the BIOS setup program.

2.4.1   UPGRADING CACHE

The mainboard is available with an optional 128KB, 256KB, 512KB or 1024KB cache memory on-board. User can upgrade cache memory by installing additional SRAM (Static Random Access Memory) chips in sockets U13-U20; U11.

The speed of the SRAM chips needed depends on the clock speed of the microprocessor:

25MHz clock requires **25ns (tag)** and **25ns (data)** SRAM chips.
33MHz, 40MHz clock CPU requires **20ns (tag)** and **20ns (data)** SRAM chips.

2.4.2 CACHE SIZE AND MEMORY LOCATIONS

The table below describes the chip capacity and socket location required for each cache size configuration. User can use 32Kx8-bit or 128Kx8-bit SRAM chips in banks 0 and 1, and in the Tag RAM socket. Please note that; do not combine different chip capacities in banks 0 and 1.

Error! Bookm ark not defined.	BANK 0				BANK 1				TAG RAM
Cache Size	U13	U14	U15	U16	U17	U18	U19	U20	U11
128K	32Kx8	32Kx8	32Kx8	32Kx8	NONE	NONE	NONE	NONE	8Kx8
256K	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	16Kx8/ 32Kx8
256K	64Kx8	64Kx8	64Kx8	64Kx8	NONE	NONE	NONE	NONE	16Kx8/ 32Kx8
512K	128Kx8	128Kx8	128Kx8	128Kx8	NONE	NONE	NONE	NONE	32Kx8
1024K	128Kx8	128Kx8	128Kx8	128Kx8	128Kx8	128Kx8	128Kx8	128Kx8	64Kx8

Table 2: Cache Size Configuration

2.4.3 CACHE CHIP SOCKETS AND JUMPER LOCATIONS

The diagram below describes the location of the cache chip sockets and cache jumpers.
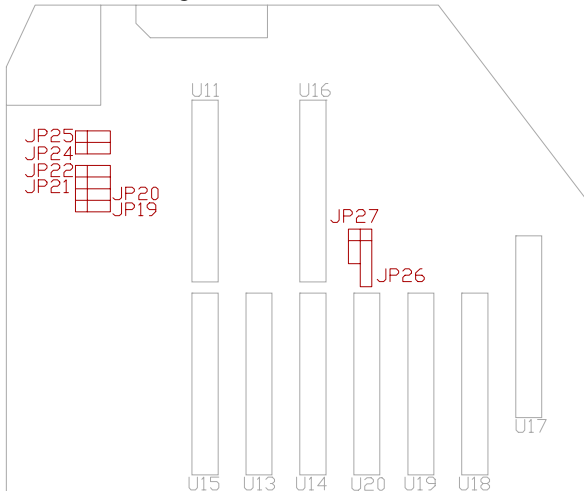
Fig 4 Cache Jumper and Socket Locatio

2.4.4 JP19, JP24-JP26, JP20-JP22, JP27 - CACHE & TAG RAM JUMPER SETTING

Cache memory is configured using jumpers, JP19, JP24-JP26; while Tag RAM setting is configured using jumpers JP20-JP22, JP27. The following tables summarize the possible configuration.

JP19, JP24-JP26 -- Cache Jumper Setting

Cache Size	JP19	JP24	JP25	JP26
64KB			OPEN	OPEN
128KB			OPEN	
256KB (D)			OPEN	
256KB (S)			OPEN	
512KB (D)			OPEN	
512KB (S)				
1024KB				

Table 3A: Cache Jumper Setting

JP20-JP22, JP27 -- Tag RAM Jumper Setting

Cache Size	JP20	JP21	JP22	JP27
64KB				
128KB				
256KB (D)				
256KB (S)				
512KB (D)				
512KB (S)				
1024KB				

Table 3B: Tag RAM Jumper Setting

Note: D = Double Bank; S = Single Bank

2.4.5   INSTALLING CACHE CHIPS
Install cache chips on the mainboard as follows:
Caution: Static electricity can damage a cache chip.
1.   Review the section on static electricity precautions at the beginning of this manual, and make sure that power to the mainboard is off.

2.   Align the chip so that the notched corner of the chip matches the notched corner of the socket.

3.   Align the pins with the socket holes.

4.   Carefully press the chip into the socket.
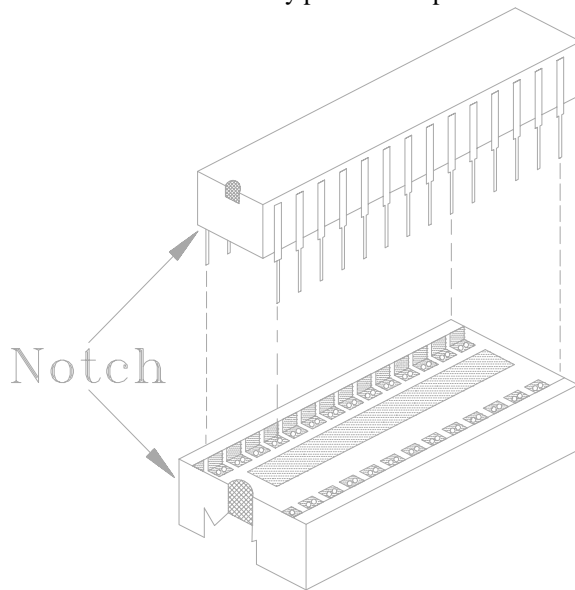
Fig 5 Installing a Cache Chip

2.5   JP38 - CMOS RAM BATTERY SETTING

Please set JP38 is for CMOS RAM battery as below. Refer to Fig 2 for its location.

JP38 -- CMOS RAM Battery Setting
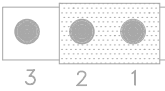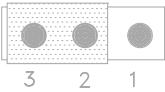
CMOS RAM BATTERY SETTING	JP38
Normal Operation (Default)	● ▢●●▢ 3 2 1
Discharge CMOS	▢●●▢ ● 3 2 1

Table 4

2.6   JP33 - MONITOR SETTING

Set the jumper, JP33, to configure the mainboard for either Monochrome or Color display. Refer to Fig 2 for its location. Set the jumper as below.

JP33 -- Monitor Setting

MONITOR SETTING	JP33
COLOR (Default)	▢● ●▢ CLOSE
MONOCHROME	● ● OPEN

Table 5

2.7   S1-S3, JP3, JP18 - CPU CLOCK FREQUENCY CONFIGURATION

S1-S3, JP3, JP18 are for the CPU Clock Frequency Configuration. Refer to Fig 2 for their location.

S1-S3, JP3, JP18-- CPU Clock Frequency Configuration
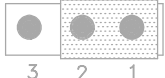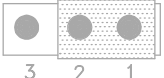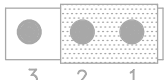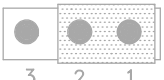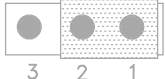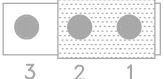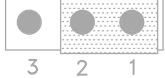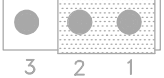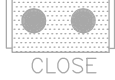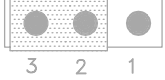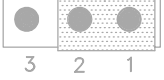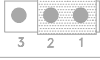
CPU CLOCK FREQUENCY	S1	S2	S3	JP3	JP18
20MHz	OPEN	OPEN	OPEN	3 2 1	3 2 1
25MHz	CLOSE	OPEN	OPEN	3 2 1	3 2 1
33MHz	CLOSE	CLOSE	CLOSE	3 2 1	3 2 1
40MHz	CLOSE	CLOSE	OPEN	3 2 1	3 2 1
50MHz	OPEN	OPEN	CLOSE	3 2 1	3 2 1

Table 6

2.8 JP34, JP35 - FLASH ROM JUMPERS

JP34, JP35 are for Flash ROM selection. Refer to Fig 2 for their location.

JP34, JP35 -- Flash ROM Jumper

FLASH ROM SELECT	JP34	JP35
NORMAL EPROM (DEFAULT)		
5V FLASH ROM		
12V FLASH ROM		
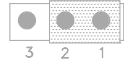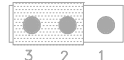
```
5V FLASH EPROM: SST 29EE010, ETC
12V FLASH EPROM: MX 28F1000, ETC
```

Table 7

2.9 JP51 - PARALLEL PORT IRQ SELECTION

JP51 is for Parallel Port IRQ selection. Refer to Fig 2 for its location.

JP51 -- Parallel Port IRQ Selection

PARALLEL PORT IRQ SELECTION	JP51
IRQ7 (Default)	
IRQ5	

2.10 JP36, JP37, JP52, JP53 - PARALLEL PORT SETTING AND ECP DMA SELECTION

JP36, JP37, JP52, JP53 are for Parallel Port Setting and ECP DMA Selection. Refer to Fig 2 for their location.

JP36, JP37, JP52, JP53 -- Parallel Port Setting and ECP DMA Selection

PARALLEL PORT SETTING	JP52	JP53	JP36	JP37
PRINTER (DEFAULT)				
DMA 1 Select for ECP				
DMA 3 Select for ECP				

Table 9

2.11   MEMORY INSTALLATION

Four 72pin SIMM sockets are provided in 4 Banks. User can install 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36, 8Mx36, or 16Mx36 SIMMs. Note that all SIMM modules in a bank must be same capacity and follow combination showed below. For best performance 70ns SIMMs are required.

BANK 0	BANK 1	BANK 2	BANK 3	MEMORY SIZE
1MB	NONE	NONE	NONE	1MB
1MB	1MB	NONE	NONE	2MB
2MB	NONE	NONE	NONE	2MB
1MB	1MB	2MB	NONE	4MB
2MB	2MB	NONE	NONE	4MB
4MB	NONE	NONE	NONE	4MB
1MB	4MB	NONE	NONE	5MB
1MB	1MB	4MB	NONE	6MB
2MB	4MB	NONE	NONE	6MB
1MB	1MB	2MB	4MB	8MB
2MB	2MB	4MB	NONE	8MB
4MB	4MB	NONE	NONE	8MB
8MB	NONE	NONE	NONE	8MB
1MB	1MB	4MB	4MB	10MB
2MB	2MB	4MB	4MB	12MB
4MB	4MB	4MB	NONE	12MB
TO BE CONTINUED ...				

BANK 0	BANK 1	BANK 2	BANK 3	MEMORY SIZE
4MB	8MB	NONE	NONE	12MB
4MB	4MB	4MB	4MB	16MB
8MB	8MB	NONE	NONE	16MB
16MB	NONE	NONE	NONE	16MB
4MB	4MB	8MB	NONE	16MB
1MB	16MB	NONE	NONE	17MB
1MB	1MB	16MB	NONE	18MB
2MB	16MB	NONE	NONE	18MB
2MB	2MB	16MB	NONE	20MB
4MB	16MB	NONE	NONE	20MB
4MB	8MB	8MB	NONE	20MB
2MB	2MB	4MB	16MB	24MB
4MB	4MB	16MB	NONE	24MB
8MB	8MB	8MB	NONE	24MB
4MB	4MB	8MB	8MB	24MB
8MB	16MB	NONE	NONE	24MB
4MB	8MB	8MB	8MB	28MB
16MB	16MB	NONE	NONE	32MB
32MB	NONE	NONE	NONE	32MB
8MB	8MB	16MB	NONE	32MB
8MB	8MB	8MB	8MB	32MB
TO BE CONTINUED ...				

BANK 0	BANK 1	BANK 2	BANK 3	MEMORY SIZE
2MB	2MB	16MB	16MB	36MB
4MB	16MB	16MB	NONE	36MB
4MB	32MB	NONE	NONE	36MB
4MB	4MB	16MB	16MB	40MB
4MB	4MB	32MB	NONE	40MB
8MB	8MB	8MB	16MB	40MB
16MB	16MB	16MB	NONE	48MB
16MB	32MB	NONE	NONE	48MB
8MB	8MB	16MB	16MB	48MB
8MB	8MB	32MB	NONE	48MB
16MB	16MB	16MB	16MB	64MB
64MB	NONE	NONE	NONE	64MB
16MB	16MB	32MB	NONE	64MB
32MB	32MB	NONE	NONE	64MB
1MB	64MB	NONE	NONE	65MB
4MB	64MB	NONE	NONE	68MB
4MB	32MB	32MB	NONE	68MB
4MB	4MB	64MB	NONE	72MB
4MB	4MB	32MB	32MB	72MB
16MB	64MB	NONE	NONE	80MB
16MB	32MB	32MB	NONE	80MB
8MB	8MB	32MB	32MB	80MB
16MB	16MB	64MB	NONE	96MB
16MB	16MB	32MB	32MB	96MB
32MB	32MB	32MB	NONE	96MB
64MB	64MB	NONE	NONE	128MB
32MB	32MB	32MB	32MB	128MB

Table 10: On-board Memory Configuration

2.11.1 INSTALLING SIMM

Install a SIMM in a memory socket as follows:
Caution: Static electricity can seriously damage SIMM modules.

1. Review the section on static electricity precautions at the beginning of this manual.

2. Align the SIMM module so that the pin-1 marking on the module corresponds to the socket pin-1 marking.

3. Hold the module at a 70-degree angle to the socket, and insert the module's connectors into the socket.

4. Snap the module to a vertical position in the socket. The module is fully inserted when retaining pegs snap into holes at each end of the module.

Insert

RAM
Module

Notch

Snap in

Push
to
Remove

RAM Module Socket
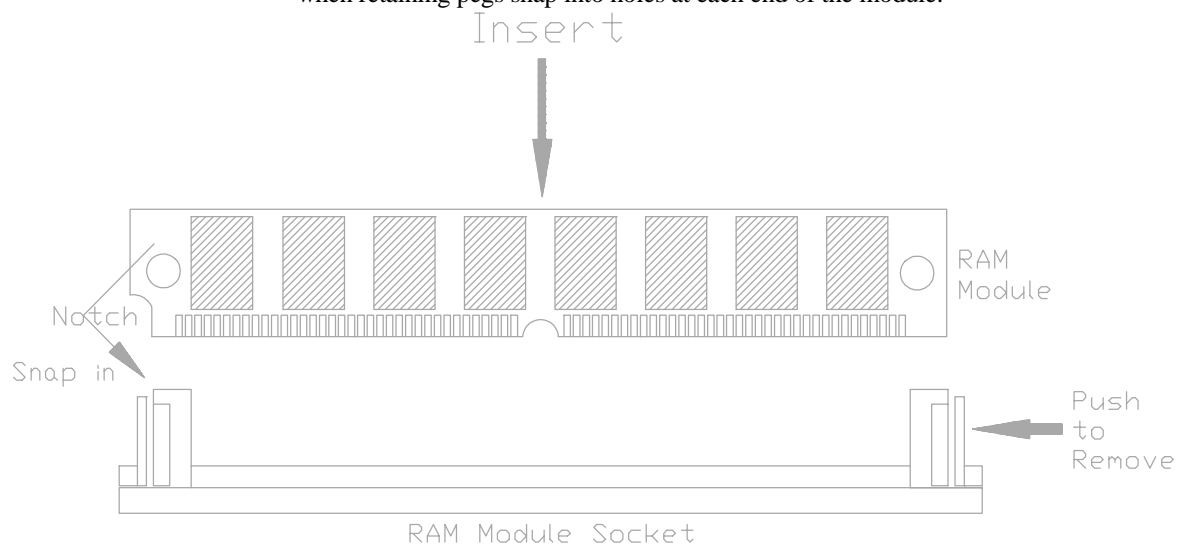
Fig 6 Installing a SIMM

5. To fill a bank, repeat steps 1 through 4 until the sockets in each bank contain SIMMs.

6. After installing memory, run BIOS Setup to indicate to the system for how much memory the user has installed.

CHAPTER 3   MAINBOARD INSTALLATION

Once the 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 mainboard.

3.1   COMPONENTS

The following components are recommended:

•   Case with standard chassis and hardware. The mainboard fits most AT compatible cases.

•   Standard AT power supply.

•   8 ohm speaker.

•   Floppy disk drive(s) (360KB, 1.2MB, 1.44MB, or 2.88MB).

•   Hard disk drive (optional).

•   Flat ribbon cables to connect the on-board FDD/HDD connectors and the disk drive(s).

•   Flat ribbon cables to connect the on-board serial, parallel, and game port connectors.

•   AT-compatible keyboard.

•   Video card and Display (monochrome, CGA, EGA, or VGA).

3.2 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 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 the 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.

3.3 CONNECTION THE MAINBOARD
Once the mainboard has 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 Fig 7 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.

3.3.1   CONNECTION LOCATIONS
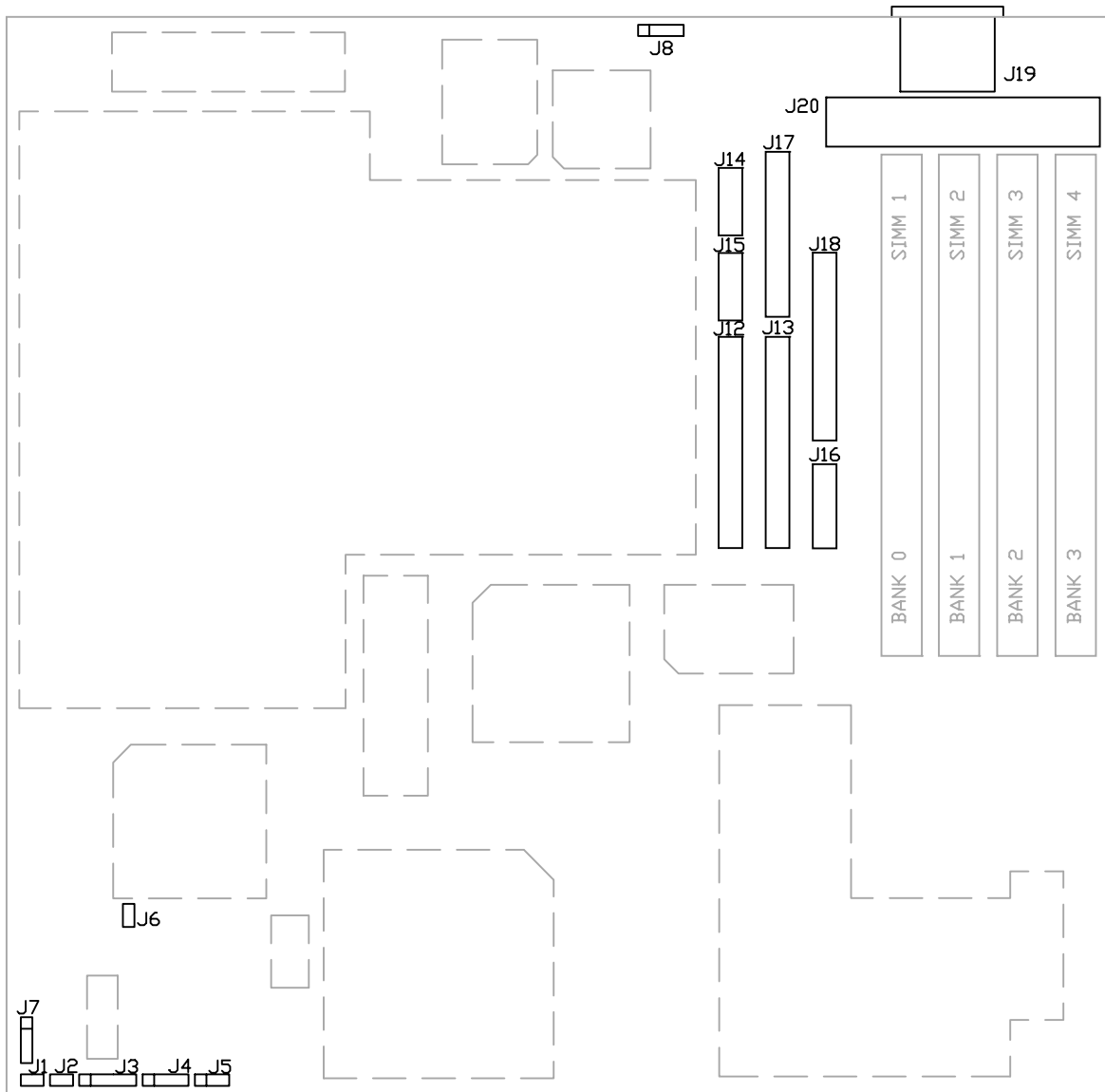
Fig 7 Connector Locations

3.4   CONNECTORS

3.4.1   J1 - RESET SWITCH CONNECTOR

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

Setting	Description
Close	Reset
Open	Normal

Table 11

3.4.2   J2 - TURBO LED CONNECTOR

J2 is usually connected to a Turbo LED on front of the system case. If the system board select is in Turbo mode, the indicator will light during high-speed operation.

Pin	Description
1	- Cathode
2	+ Anode

Table 12

3.4.3   J3 - KEYLOCK & POWER LED CONNECTOR

J3 is a keylock connector that enables and disables the keyboard and the Power-LED on the case.

Pin	Description
1	LED Power
2	Not Used
3	Ground
4	Keyboard Inhibitor
5	Ground

Table 13

3.4.4   J4 - SPEAKER CONNECTOR

Attached the system speaker to connector J4.

Pin	Description
1	Data Out
2	+5V
3	Data Out
4	+ 5V

Table 14

3.4.5   J5 - TURBO SWITCH CONNECTOR
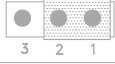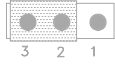
TURBO SWITCH	J5
DE—TURBO	● ●● ● 3 2 1
TURBO (DEFAULT)	●● ● ● 3 2 1

Table 15

J5 connects to the Turbo switch, which is used to select the mainboard's clock speed.

3.4.6   J6 - GREEN PC BREAK SWITCH

J6 is for the Green feature activation Break Switch. When J6 is changed from open to close then open again, the system will go to suspend mode immediately. In suspend mode; if J6 is changed from open to close then open again, the system will resume immediately.

3.4.7   J7 - HARD DISK LED CONNECTOR

J7 connects to the HDD LED in front of the system case.

Pin	Description
1	+ Anode
2	- Cathode
3	- Cathode
4	+ Anode

Table 16

3.4.8   J8 - EXTERNAL BATTERY

The mainboard has a battery on-board; however, user can also attach an external battery to connector J8. Using an external battery helps to conserve the on-board battery.

Pin	Description
1	VDD (6V)
2	Not Used
3	Ground
4	Ground

Table 17

3.4.9   J12 - ON BOARD PCI IDE 0 HDD CONNECTOR

J12 is a 40-pin IDE Hard Disk connector. It is assigned as Channel 0 for Primary Hard Disk Controller connector.

3.4.10 J13 - ON BOARD PCI IDE 1 HDD CONNECTOR

J13 is a 40-pin IDE Hard Disk connector. It is assigned as Channel 1 for Secondary Hard Disk Controller connector.

3.4.11 J14 - ON BOARD COM1 CONNECTOR

J14 is a 10-pin COM1 connector. It is assigned as COM1/COM3 for serial port.   Refer to Fig 7 for its location.

3.4.12 J15 - ON BOARD COM2 CONNECTOR

J15 is a 10-pin COM2 connector. It is assigned as COM2/COM4 for serial port.   Refer to Fig 7 for its location.

3.4.13 J16 - ON BOARD GAME PORT CONNECTOR

J16 is a 16-pin Game Port connector. Refer to Fig 7 for its location.

3.4.14 J17 - ON BOARD PARALLEL PORT CONNECTOR

J17 is a 26-pin Parallel connector. Refer to Fig 7 for its location.

3.4.15 J18 - ON BOARD FDD CONNECTOR

J18 is a 34-pin Floppy Disk connector. Refer to Fig 7 for its location.

3.4.16 J19 - 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.

Pin	Description
1	Keyboard Clock
2	Keyboard Data
3	Spare
4	Ground
5	+5V DC

Table 18

3.4.17 J20 - POWER SUPPLY CONNECTOR

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

J20			
Pin	Description	Pin	Description
1	Power Good	7	Ground
2	+5V DC	8	Ground
3	+12V DC	9	-5V DC
4	-12V DC	10	+5V DC
5	Ground	11	+5V DC
6	Ground	12	+5V DC

Table 19

3.5 HARDDISK INSTALLATION

The mainboard on-board built-in the PCI IDE Controller which supports 2 enhanced IDE channels with Primary IDE address on 1F0-1F7, 3F6, 3F7; and Secondary IDE address on 170-177, 376, 377. Please follow the steps shown below to process installation.

(1)   2 Drives System:
Case A: Set Drive C: to Master; and Drive D: to slave and connect both drives on IDE 0 connector.
             Set Drives C: and D: disk parameters in CMOS.

Case B: Set Drive C: to Master and connect it on IDE 0 connector; and Drive D: to Master and connect it on IDE 1 connector. Set Drive C: disk parameters in CMOS only.

(2)   4 Drives System:
             Set Drive C: to Master; and Drive D: to slave, and connect both drives on IDE 0 connector.
             Set Drive E: to Master; and Drive F: to slave and connect both drives on IDE 1 connector.
             Set Drives C: and D: disk parameters in CMOS.

3.6 HARDWARE/SOFTWARE INSTALLATION

(1)   Connect the IDE cable to IDE drive connector, and to IDE disk drive(s). The cable should have colored band to indicate the Pin 1 position. Make sure the IDE drive cable and the on-board IDE connector are all aligned with
Pin 1 position.

(2)   Perform system CMOS setup; enter correct drive geometry information.

(3)   Install the Device Driver
Please refer to the **README** file in Driver Diskette for detail installation procedures to be used in various kind of operating system (DOS, Windows 3.1, Windows NT, OS/2 2.XX, and Novel 3.1X/4.0X).

3.7   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 an adapter card. The power supply has four cables, each with four wires. Connect these cables to the disk drives.

3.   **Adapter Cards:** Insert each adapter card -- Disk Controller cards, Video card, Serial/Parallel Interface card, etc. -- into an expansion slot. Refer to the installation and configuration instruction that comes with the card. Connect the disk drives to the Floppy Disk Controller card, and built-in IDE HDD connectors.

4.   **Keyboard:** Connect the keyboard to its connector.

5.   **Display:** Connect the display cable to the Video Card, 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. Users will then need to run the BIOS setup program.

CHAPTER 4 AWARD BIOS SETUP

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

4.1   ENTERING SETUP

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously press <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to,

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

4.2   CONTROL KEYS

Up arrow: Move to previous item
Down arrow: Move to next item
Left arrow: Move to the item in the left hand
Right arrow: Move to the item in the right hand
Esc key: Main Menu -- Quit and not save changes into CMOS
                        Status Page Setup Menu and Option Page Setup Menu -- Exit current page and
                        return to Main Menu
PgUp key: Increase the numeric value or make changes
PgDn key: Decrease the numeric value or make changes
F1 key: General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key: Change color from total 16 colors
F3 key: Calendar, only for Status Page Setup Menu
F4 key: Reserved
F5 key: Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key: Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key: Load the default
F8 key: Reserved
F9 key: Reserved
F10 key: Save all the CMOS changes, only for Main Menu

4.3   GETTING HELP

Main Menu:
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu:
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible
selections for the highlighted item. To exit the Help window press <Esc>.

4.4   THE MAIN MENU

Once you enter Award BIOS CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

ROM PCI/ISA BIOS (2A4IBG32)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	

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

{Description}

Fig 8

4.4.1 STANDARD CMOS SETUP MENU

The items on Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
                    ROM PCI/ISA BIOS (2A4IBG32)
                      STANDARD CMOS UTILITY
                      AWARD SOFTWARE, INC.

 Date (mm:dd:yy) : Fri, Jan 20 1995
  Time (hh:mm:ss) : 12 : 46 : 31

  HARD DISKS        TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE

  Primary Master   : Auto      0    0    0      0       0      0  NORMAL
  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, 3.5in.                       Base Memory:        640K
  Drive B : None                           Extended Memory:       3328K
                                               Other Memory:        128K
  Video   : EGA/VGA
  Halt On : All Errors                       Total Memory:4096K


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

Fig 9

4.4.2   BIOS FEATURES SETUP MENU

ROM PCI/ISA BIOS (2A4IBG32)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

```
Virus Warning               : Disabled      Video  BIOS Shadow    : Enabled
 CPU Internal Cache          : Enabled       C8000-CFFFF Shadow   : Disabled
 External Cache              : Enabled       D0000-D7FFF Shadow   : Disabled
 Quick Power On Self Test  : Disabled        D8000-DFFFF Shadow   : Disabled
 Boot Sequence               : A,C
 Swap Floppy Drive   : Disabled
 Boot Up Floppy Seek         : Enabled
 Boot Up Numlock Status    : On
 Boot Up System Speed        : High
 Gate A20 Option             : Fast
 Typematic Rate Setting      : Disabled
 Typematic Rate (Chars/Sec)  : 6
 Typematic Delay (Msec)    : 250
 Security Option             : Setup


                                            ESC: Quit      ↑↓→ ←: Select Item
                                            F1: Help       PU/PD/+/-: Modify
                                            F5: Old Values  (Shift)F2: Color
                                            F6: Load BIOS Defaults
                                            F7: Load Setup Defaults
```

Fig 10

4.4.3 CHIPSET FEATURES SETUP MENU

ROM PCI/ISA BIOS (2A4IBG32)
CHIPSET FEATURES SETUP
AWARD SOFTWARE, INC.

```
Auto Configuration        : Enabled        IDE HDD Block Mode      : Enabled
                                           Onboard FDD Controller  : Enabled
ISA Bus Clock             : 1/4CLK         Onboard Serial Port 1   : COM1
DRAM Speed                : Faster         Onboard Serial Port 2   : COM2
DRAM Slow Refresh : Disable                Onboard Parallel Port   : 378H
                                           Onboard Parallel Mode   : EPP
CPU Burst Write           : Disable        Onboard Game Port       : Enabled
L2 Cache Policy           : Write Back      On Board PCI IDE        : Enabled
CPU Internal Cache        : Write Thru


                                           ESC: Quit      ↑↓→ ←: Select Item
                                           F1: Help       PU/PD/+/-: Modify
                                           F5: Old Values  (Shift)F2: Color
                                           F6: Load BIOS Defaults
                                           F7: Load Setup Defaults
```

Fig 11: Default setting for Cx486DX2 V66 CPU

Note: 1) the following table shows the settings for different CPU support: -

System Clock Freq.	25MHz	33MHz	40MHz
CPU Internal Clock Freq.	x1/x2/x3	x1/x2/x3	x1/x2
ISA Bus Clock	1/3CLK	1/4CLK	1/4CLK

2) The option "CPU Internal Cache" is shown only when the
Cyrix Cx486S/Cx486DX/DX2/DX2V CPUs are used.

4.4.4   POWER MANAGEMENT SETUP MENU

ROM PCI/ISA BIOS (2A4IBG32)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

```
Power Management     : Max Saving        IRQ 3 (COM 2)              : Enable
PM Control by APM : Yes                  IRQ 4 (COM 1)              : Enable
Video Off Option      : Suspend -> Off   IRQ 5 (LPT 2)              : Enable
Video Off Method      : V/H SYNC+Blank   IRQ 6 (Floppy Disk)        : Enable
Suspend Switch        : Enable           IRQ 7 (LPT 1)              : Enable
PM Interrupt Use       : IRQ 12          IRQ 8 (RTC Alarm)          : Disable
                                         IRQ 9 (IRQ2 Redir)         : Enable
             ** PM Timers **             IRQ 10 (Reserved)          : Enable
HDD OFF After        : Disable           IRQ 11 (Reserved)          : Enable
Suspend Mode         : 10 Sec            IRQ 12 (PS/2 Mouse)  : Enable
             ** PM Events **             IRQ 13 (Coprocessor)       : Enable
PCI Master Activity  : Disable           IRQ 14 (Hard Disk)         : Enable
COM Ports Activity  : Enable             IRQ 15 (Reserved)          : Enable
LPT Ports Activity   : Enable
HDD Ports Activity  : Enable
DMA Ports Activity  : Enable
VGA Activity          : Enable


                                         ESC: Quit        ↑↓→ ←: Select Item
                                         F1: Help        PU/PD/+/-: Modify
                                         F5: Old Values  (Shift)F2: Color
                                         F6: Load BIOS Defaults
                                         F7: Load Setup Defaults
```

Fig 12A: Normal 486 CPU

```
                    ROM PCI/ISA BIOS (2A4IBG32)
                    POWER MANAGEMENT SETUP
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────┬─────────────────────────────────┐
│ Power Management    : Disable    │ IRQ 3 (COM 2)            : Enable │
│ PM Control by APM : Yes          │ IRQ 4 (COM 1)            : Enable │
│ Video Off Option    : Suspend -> Off │ IRQ 5 (LPT 2)        : Enable │
│ Video Off Method    : V/H SYNC+Blank │ IRQ 6 (Floppy Disk)  : Enable │
│ Suspend Switch      : Enable     │ IRQ 7 (LPT 1)           : Enable │
│                                  │ IRQ 8 (RTC Alarm)       : Disable│
│         ** PM Timers **          │ IRQ 9 (IRQ2 Redir)      : Enable │
│ HDD OFF After     : Disable      │ IRQ 10 (Reserved)       : Enable │
│ Suspend Mode      : Disable      │ IRQ 11 (Reserved)       : Enable │
│         ** PM Events **          │ IRQ 12 (PS/2 Mouse)  : Enable    │
│ PCI Master Activity  : Disable   │ IRQ 13 (Coprocessor)    : Enable │
│ COM Ports Activity : Enable      │ IRQ 14 (Hard Disk)      : Enable │
│ LPT Ports Activity  : Enable     │ IRQ 15 (Reserved)       : Enable │
│ HDD Ports Activity  : Enable     │                                  │
│ DMA Ports Activity  : Enable     │                                  │
│ VGA Activity        : Enable     │                                  │
│                                  ├─────────────────────────────────┤
│                                  │ ESC: Quit      ↑↓→ ←: Select Item│
│                                  │ F1: Help      PU/PD/+/-: Modify  │
│                                  │ F5: Old Values  (Shift)F2: Color │
│                                  │ F6: Load BIOS Defaults           │
│                                  │ F7: Load Setup Defaults          │
└─────────────────────────────────┴─────────────────────────────────┘
```

Fig 12B: SL Enhanced 486 CPU

4.4.5   PCI CONFIGURATION SETUP MENU

ROM PCI/PCI/ISA BIOS (2A4IBG32)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

```
Slot 1 Using INT#           : AUTO
Slot 2 Using INT#           : AUTO
Slot 3 Using INT#           : AUTO
Slot 4 Using INT#           : AUTO

1st Available IRQ           : 10
2nd Available IRQ           : 11
3rd Available IRQ           : 9
4th Available IRQ           : 12
PCI IRQ Actived By          : Level
PCI IDE 2nd Channel             : Enable
PCI IDE IRQ Map To          : PCI-AUTO
 Primary   IDE INT#            : A
 Secondary IDE INT#            : B

CPU -> PCI MEM Post Write Buf : Disable
CPU -> PCI Memory Burst Write  : Disable
PCI Master Burst Read/Write      : Disable
```

```
ESC: Quit       ↑↓→←: Select Item
F1: Help        PU/PD/+/-: Modify
F5: Old Values  (Shift)F2: Color
F6: Load BIOS Defaults
F7: Load Setup Defaults
```

Fig 13

4.4.6 LOAD BIOS DEFAULTS MENU

When you select this function, the following message will appear at the center of the screen to assist you to load BIOS defaults (except Standard CMOS Setup).

Load BIOS Defaults (Y/N)?

4.4.7 LOAD SETUP DEFAULTS MENU

When you select this function, the following message will appear at the center of the screen to assist you to load Setup defaults (except Standard CMOS Setup).

Load SETUP Defaults (Y/N)?

4.4.8 PASSWORD SETTING MENU

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters, and press <enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED.

If you select System at Security Option of BIOS Features setup Menu; you will be prompted for password every time the system is rebooted or any time you try to enter Setup. If you select setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

4.4.9 IDE HDD AUTO DETECTION MENU

This function will automatically detect the information of the Hard Disk, and list them for your reference.

ROM PCI/ISA BIOS (2A4IBG32)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS. HEADS PRECOMP LANDZ SECTOR MODE
Primary Master:

Select Primary Master Option (N=Skip) : N

OPTIONS	SIZE	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
1(Y)	81	903	4	65535	902	46	NORMAL

ESC : Skip

Fig 14

The BIOS support 3 HDD Mode, NORMAL, LBA & LARGE. **NORMAL** mode has the maximum 528MB HDD size; **LBA** (Logical Block Addressing) mode has the maximum 8.4GB HDD size; whereas **LARGE** mode has the maximum 1GB HDD size.

4.4.10 HDD LOW LEVEL FORMAT MENU

Three utilities are provided in the HDD Low Level Format menu:

(1) SELECT DRIVE
(2) BAD TRACK LIST
(3) PREFORMAT

```
┌──────────────────────────────────────────┬─────────────────────┐
│   Hard Disk Low Level Format Utility      │  BAD TRACKS TABLE   │
│                                           │    NO.  CYLS HEAD   │
│                                           │                     │
│         ┌────────────────────┐            │                     │
│         │   SELECT DRIVE     │            │                     │
│         │  BAD TRACK LIST    │            │                     │
│         │    PREFORMAT       │            │                     │
│         └────────────────────┘            │                     │
│                                           │                     │
├───────────────────────────────────────────│                     │
│                                           │                     │
│       Current select drive is : C         │                     │
│  ──────────────────────────────────────   │                     │
│   DRIVE : C   CYLINDER :  0   HEAD : 0     │                     │
├───────────────────────────────────────────┴─────────────────────┤
│        SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE            │
│ Primary Master   :  270   944    14    65535     943      40    NORMAL │
│ Primary Slave    :   0     0      0      0        0       0     NORMAL │
│ Secondary Master :   0     0      0      0        0       0     NORMAL │
│ Secondary Slave  :   0     0      0      0        0       0     NORMAL │
├──────────────────────────────────────────────────────────────────┤
│ Up/Down-Select item        ENTER-Accept           ESC-Exit/Abort │
│       Copyright (c) Award Software, Inc.  1992-94 All Rights Reserved │
└──────────────────────────────────────────────────────────────────┘
```

Fig 15A Setup Screen shown when "SELECT DRIVE" option is selected

```
┌─────────────────────────────────────────────┬──────────────────────┐
│      Hard Disk Low Level Format Utility       │   BAD TRACKS TABLE   │
│                                               │    NO.  CYLS HEAD    │
│         ┌───────────────────────────┐         │                      │
│         │      SELECT DRIVE         │         │                      │
│         │    BAD TRACK LIST         │         │                      │
│         │      PREFORMAT            │         │                      │
│         └───────────────────────────┘         │                      │
│                                               │                      │
│          Auto scan bad track                  │                      │
│            Add bad track                      │                      │
│           Modify bad track                    │                      │
│           Delete bad track                    │                      │
│          Clear bad track table                │                      │
│    DRIVE : C  CYLINDER :  0  HEAD : 0         │                      │
├───────────────────────────────────────────────┴──────────────────────┤
│            SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE                    │
│ Primary Master   :  270  944   14   65535    943    40   NORMAL        │
│ Primary Slave    :   0    0     0     0       0      0    NORMAL        │
│ Secondary Master :   0    0     0     0       0      0    NORMAL        │
│ Secondary Slave  :   0    0     0     0       0      0    NORMAL        │
├───────────────────────────────────────────────────────────────────────┤
│ Up/Down-Select item            ENTER-Accept            ESC-Exit/Abort  │
│         Copyright (c) Award Software, Inc.  1992-94 All Rights Reserved│
└───────────────────────────────────────────────────────────────────────┘
```

Fig 15B Setup Screen shown when "BAD TRACK LIST" option is selected

```
┌─────────────────────────────────────────┬──────────────────────┐
│        Hard Disk Low Level Format Utility │   BAD TRACKS TABLE   │
│                                           │   NO.  CYLS HEAD     │
│         ┌─────────────────────────┐       │                      │
│         │     SELECT DRIVE        │       │                      │
│         │     BAD TRACK LIST      │       │                      │
│         │     PREFORMAT           │       │                      │
│         └─────────────────────────┘       │                      │
│                                           │                      │
│                                           │                      │
│     Interleave (1-8) : 0 (0 for auto detect)                     │
│     Auto scan bad track : N               │                      │
│            START : N                      │                      │
│                                           │                      │
│     DRIVE : C  CYLINDER :  0  HEAD : 0    │                      │
├───────────────────────────────────────────┴──────────────────────┤
│            SIZE CYLS HEAD PRECOMP LANDZ SECTOR  MODE              │
│ Primary Master  :  270  944   14   65535    943    40   NORMAL    │
│ Primary Slave   :    0    0    0       0      0     0   NORMAL    │
│ Secondary Master:    0    0    0       0      0     0   NORMAL    │
│ Secondary Slave :    0    0    0       0      0     0   NORMAL    │
├──────────────────────────────────────────────────────────────────┤
│ Up/Down-Select item          ENTER-Accept          ESC-Exit/Abort │
│     Copyright (c) Award Software, Inc.  1992-94 All Rights Reserved│
└──────────────────────────────────────────────────────────────────┘
```

Fig 15C Setup Screen shown when "PREFORMAT" option is selected

4.4.11 SAVE & EXIT SETUP MENU

When you select this function, the following message will appear at the center of the screen to assist you to Save data to CMOS and Exit the Setup.

SAVE to CMOS and EXIT (Y/N)?

4.4.12 EXIT WITHOUT SAVING MENU

When you select this function, the following message will appear at the center of the screen to assist you to Abandon all Data and Exit Setup.

Quit Without Saving (Y/N)?

CHAPTER 5 BIOS POST MESSAGE

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message **PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP** will be shown in the information box at the bottom.

5.1   POST BEEP

Currently there is only one beep code in BIOS. This code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by two short beeps.

5.2   ERROR MESSAGES

One or more of the following messages may be displayed if the BIOS detect an error during the POST. This list includes message for both the ISA and the EISA BIOS.

CMOS BATTERY HAS FAILED:
CMOS battery is no longer functional. It should be replaced.

CMOS CHECKSUM ERROR:
Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. A weak battery may have caused this error. Check the battery and replace if necessary.

DISK BOOT FAILURE, INSERT SYSTEM DISK AND PRESS ENTER:
No boot device was found. Insert a system disk into Drive A: and press <Enter>. If you assumed the system would boot from hard drive, make sure the controller is inserted correctly and all cables are properly attached. Also be sure the disk is formatted as a boot device. Then reboot the system.

DISKETTE DRIVES OR TYPES MISMATCH ERROR - RUN SETUP:
Type of diskette drive installed in the system is different from the CMOS definition. Run Setup to reconfigure the drive type correctly.

DISPLAY SWITCH IS SET INCORRECTLY:
Display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different setting than indicated in Setup. Determine which setting is correct, and then either turn off the system and change the jumper, or enter Setup and change the VIDEO selection.

DISPLAY TYPE HAS CHANGE SINCE LAST BOOT:
Since last powering off the system, the display adapter has been changes. You must configure the system for the new display type.

EISA Configuration Checksum Error
PLEASE RUN EISA CONFIGURATION UTILITY:
The EISA non-volatile RAM checksum is incorrect or cannot correctly read the EISA slot. This can indicate either the EISA non-volatile memory has become corrupt or the slot has configured incorrectly. Also be sure the card is installed firmly in the slot.

EISA Configuration Is Not Complete
PLEASE RUN EISA CONFIGURATION UTILITY:
The slot configuration information stored in EISA non-volatile memory is incomplete.

*** NOTE: When either of these errors appear, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

ERROR ENCOUNTERED INITIALIZING HARD DRIVE:
Hard drive cannot be initialized. Be sure the adapter is installed correctly and all cables are correctly and firmly attached. Also be sure the correct hard drive type is selected in Setup.

ERROR INITIALIZING HARD DISK CONTROLLER:
Cannot initialize controller. Make sure the cord is correctly and firmly installed in the bus. Be sure the correct hard drive type is selected in Setup. Also check to see if any jumper needs to be set correctly on the hard drive.

FLOPPY DISK CNTRLR ERROR OR NO CNTRLR PRESENT:
Cannot find or initialize the floppy drive controller. Make sure the controller is installed correctly and firmly. If there is no floppy drives installed, be sure the Diskette Drive selection in Setup is set to NONE.

Invalid EISA Configuration
PLEASE RUN EISA CONFIGURATION UTILITY:
The non-volatile memory containing EISA configuration information was programmed incorrectly or has become corrupt. Re-run EISA configuration utility to correctly program the memory.

*** NOTE: When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.

KEYBOARD ERROR OR NO KEYBOARD PRESENT:
Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

If you are purposely configuring the system without a keyboard, set the error halt condition in Setup to HALT ON ALL, BUT KEYBOARD. This will cause the BIOS to ignore the missing keyboard and continue the boot.

Memory Address Error at ...:
Indicates a memory address error at a specific location. You can use this location along with the memory map for your system to find and replace the bad memory chips.

Memory parity Error at ...
Indicates a memory parity error at a specific location. You can use this location along with the memory map for your system to find and replace bad memory chips.

MEMORY SIZE HAS CHANGED SINCE LAST BOOT:
Memory has been added or removed since the last boot. In EISA mode use Configuration Utility to reconfigure the memory configuration. In ISA mode enter Setup and enter the new memory size in the memory fields.

Memory Verify Error at ...:
Indicates an error verifying a value already written to memory. Use the location along with your system's memory map to locate the bad chip.

OFFENDING ADDRESS NOT FOUND:
This message is used in conjunction with the I/O CHANNEL CHECK and
RAM PARITY ERROR messages when the segment that has caused the problem cannot be isolated.

OFFENDING SEGMENT:
This message is used in conjunction with the I/O CHANNEL CHECK and

RAM PARITY ERROR messages when the segment that has caused the problem has been isolated.

PRESS A KEY TO REBOOT:
This will be displayed at the bottom screen when an error occurs that required you to reboot. Press any key and the system will reboot.

PRESS F1 TO DISABLE NMI, F2 TO REBOOT:
When BIOS detects a Non-markable Interrupt condition during boot, this will allow you to disable the NMI and continue to boot, or you can reboot the system with the NMI enabled.

RAM PARITY ERROR - CHECKING FOR SEGMENT ...:
Indicates a parity error in Random Access Memory.

Should Be Empty But EISA Board Found
PLEASE RUN EISA CONFIGURATION UTILITY:
A valid board ID was found in a slot that was configured as having no boards ID.

*** NOTE: *When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.*

Should Have EISA Board But Not Found
PLEASE RUN EISA CONFIGURATION UTILITY:
The board installed is not responding to the ID request, or no board ID has been found in the indicated slot.

*** NOTE: *When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.*

Slot Not Empty:
Indicates that a slot designated as empty by the EISA Configuration Utility actually contains a board.

*** NOTE: *When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.*

SYSTEM HALTED, (CTRL-ALT-DEL) TO REBOOT ...:
Indicates the present boot attempt has been aborted and the system must be rebooted. Press and hold down the CTRL and ALT keys and press DEL.

Wrong Board In Slot
PLEASE RUN EISA CONFIGURATION UTILITY:
The board ID does not match the ID stored in the EISA non-volatile memory.

*** NOTE: *When this error appears, the system will boot in ISA mode, which allows you to run the EISA Configuration Utility.*

CHAPTER 6 BIOS DEFAULT DRIVE TABLE

This is a current list of the drive type table contained in Setup.

Type	Size (MB)	Cylns	Heads	Sects	Write Pcomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	20	615	4	17	300	615	Seagate ST225, ST4026
3	30	615	6	17	300	615	
4	62	940	8	17	512	940	
5	46	940	6	17	512	940	
6	20	615	4	17	None	615	Seagate ST125, Tandon TM262
7	30	462	8	17	256	511	
8	30	733	5	17	None	733	Tandon TM703
9	112	900	15	17	None	901	
10	20	802	3	17	None	820	
11	35	855	5	17	None	855	
12	49	855	7	17	None	855	
13	20	306	8	17	128	319	Disctron 526, MMI M125
14	42	733	7	17	None	733	
15		Reserved					
16	20	612	4	17	0	663	Microscience HH725, Syquest 3250, 3425
17	40	977	5	17	300	977	
18	56	977	7	17	None	977	
19	59	1024	7	17	512	1023	
20	30	733	5	17	300	732	
21	42	733	7	17	300	732	
22	30	306	5	17	300	733	Seagate ST4038
23	10	977	4	17	0	336	
24	40	1024	5	17	None	976	Seagate ST4051
25	76	1224	9	17	None	1023	Seagate ST4096
26	71	1224	7	17	None	1223	Maxtor 2085
27	111	1224	11	17	None	1223	Maxtor 2140, Priam S14
28	152	1024	15	17	None	1223	Maxtor 2190, Priam S19
29	68	1024	8	17	None	1023	Maxtor 1085, Micropolis 1325
30	93	918	11	17	None	1023	Maxtor 1105, 1120, 4780
31	83	925	11	17	None	1023	Maxtor 1170
32	69	1024	9	17	None	926	CDC 9415
33	85	1024	10	17	None	1023	
34	102	1024	12	17	None	1023	
35	110	1024	13	17	None	1023	
36	119	1024	14	17	None	1023	
37	17	1024	2	17	None	1023	
38	136	1024	16	17	None	1023	
39	114	918	15	17	None	1023	Maxtor 1140, 4380
40	40	820	6	17	None	820	Seagate ST251
41	42	1024	5	17	None	1023	Seagate 4053 Miniscribe 3053/6053
42	65	1024	5	26	None	1023	Miniscribe3053/6053 RLL
43	40	809	6	17	None	852	Miniscribe 3650
44	61	809	6	26	None	852	Miniscribe 3675 RLL
45	100	776	8	33	None	775	Conner CP3104
Auto	0	0	0	0	None	0	
User							

Table 20: Default Fixed Disk Table

CHAPTER 7 APPENDIX A

7.1 CPU TYPE CONFIGURATION

	486SX	486DX	P24T	SL ENHANCE 486SX	SL P24D ENHANCE 486DX/2	AMD486	DX/DX4 DX2
JP6	OPEN	OPEN	1-2	1-2	1-2	1-2	1-2
JP7	OPEN	OPEN	1-2	OPEN	1-2	1-2	1-2
JP8	2-3	2-3	1-2	2-3	2-3	1-2	2-3
JP9	OPEN	OPEN	2-3	2-3	2-3	2-3	2-3
JP11	OPEN	OPEN	OPEN	OPEN	OPEN1-2	OPEN	
JP12	OPEN	OPEN	OPEN	1-2	1-2	2-3	1-2
JP13	OPEN	OPEN	1-2	4-5	4-5	4-5	4-5
JP14	2-3	1-2,3-4	1-2,3-4	2-3	1-2,3-4	1-2,3-4	1-2,3-4
JP15	OPEN	3-4	2-3	OPEN	3-4	3-4	3-4
JP16	OPEN	OPEN	3-4	3-4	3-4	1-2,3-4	3-4
JP17	OPEN	OPEN	1-2	OPEN	OPENOPEN	OPEN	
JP4	OPEN	OPEN	OPEN	OPEN	OPENOPEN	OPEN	
JP5	OPEN	OPEN	OPEN	OPEN	OPEN1-2	2-3 DX	
							DX2 1-2 DX4
JP10	OPEN	OPEN	OPEN	OPEN	OPENOPEN	OPEN	

Table 21a

	AMD486 DX2/DX4 ENHANCE	INTEL DX4 (P24C)	CYRIX DX/DX2	CYRIX M1SC	UMC (U5SX)
JP6	1-2	1-2	1-2	1-2	2-3
JP7	1-2	1-2	2-3	1-2	OPEN
JP8	2-3	2-3	2-3	1-2	2-3
JP9	2-3	2-3	1-2	2-3	OPEN
JP11	OPEN	OPEN	OPEN	1-2	OPEN
JP12	1-2	1-2	OPEN	2-3	OPEN
JP13	4-5	4-5	2-3	4-5	OPEN
JP14	1-2,3-4	1-2,3-4	1-2,3-4	1-2,3-4	1-2,3-4
JP15	3-4	3-4	3-4	3-4	1-2,3-4
JP16	3-4	3-4	2-3	1-2	OPEN
JP17	OPEN	OPEN	2-3	OPEN	3-4
JP4	OPEN	OPEN	OPEN	OPEN	OPEN
JP5	1-2 WB 2-3WT	2-3	OPEN	1-2 WB 2-3 WT	OPEN
JP10	2X 2-3 3X OPEN	2X 2-3 3X OPEN	OPEN	OPEN	OPEN

Table 21b

7.2   CPU SUPPLY VOLTAGE SELECTION

CPU VOLT	S4	S5	S6
5V	2-3	2-3	2-3
3.3V	1-2	OPEN	OPEN
3.45V	OPEN	1-2	OPEN
3.6V	OPEN	OPEN	1-2
4V	OPEN	OPEN	OPEN

Table 22