

Type	Size (MB)	Cyls	Heads	Sects	Write Pcomp	Land Zone	Example Model
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
46	203	684	16	38	None	685	Conner CP3204
User							

Table 19: Default Fixed Disk Table

## GMB-486SG 80486 VESA Green Mainboard User's Guide

Version 2.01



## CHAPTER 6 BIOS DEFAULT DRIVE TABLE

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

Type	Size (MB)	Cyls	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

(TO BE CONTINUE)

**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.*

## 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.

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## UNPACKING THE MAINBOARD

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

- The Mainboard
- 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.

### 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 board ID.

**\*\*\* 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.

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**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.*

**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.

**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 66MHz, supports Intel's SL Enhanced 486 and Normal 486 CPU, Cyrix M6/M7, P24D/P24T CPUs.

**1.1 KEY FEATURES**

The advanced features of the mainboard include:

- Supports Intel's SL Enhanced 80486DX2/DX/SX, P24D/P24T, Cyrix's Cx486S2 (M6/M7) and normal 486 CPUs.
- Supports Cache Write back CPU (P24T/P24D/M6/M7) systems.
- 100% IBM PC-AT compatible, single chip 486 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
- Direct Mapped Cache Controller
  - Write-Back or Write-Through Schemes
  - Bank Interleave or Non-Interleave Cache
  - Flexible Cache Size: 128/256/512KB

- Memory size from 1MB to 128MB, possible using combinations of 256Kx9, 1Mx9 and 4Mx9, 16Mx9 SIMM modules in two memory bank.
- Easy upgrade the system, just change CPU, or and alter jumper only.
- System & video Bios Shadow, optional caching of shadowed system & video BIOS.
- Hidden DRAM refresh support.
- Support KB control Turbo/Deturbo mode select.
- Support 7 Direct Memory Access channels and 16 Interrupt levels.
- Three 16-bit I/O slots, one 8-bit I/O slots, and three Standard VESA Local Bus master slot.
- Battery backup for CMOS configuration and real time clock/calender.
- 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).

## 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 detects 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. This error may have been caused by a weak battery. Check the battery and replace if necessary.

#### 4.4.8 IDE HDD AUTO DETECTION MENU

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

ROM ISA BIOS (2C4I9G30)  
CMOS SETUP UTILITY  
AWARD SOFTWARE, INC.

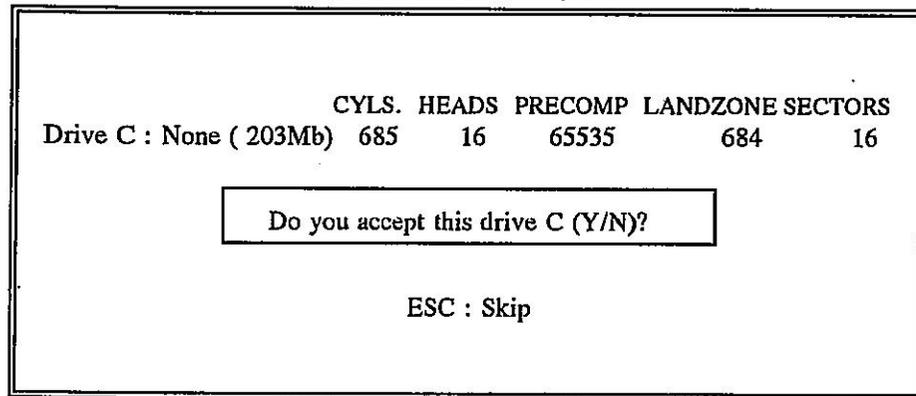


Fig 13

#### 4.4.9 SAVE & EXIT SETUP MENU

When you select this function, the following message will appear at the centre of the screen to assist you to Save data to CMOS and Exit the Setup.  
SAVE to CMOS and EXIT (Y/N)?

#### 4.4.10 EXIT WITHOUT SAVING MENU

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

Quit Without Saving (Y/N)?

## 1.2 MAINBOARD COMPONENTS

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

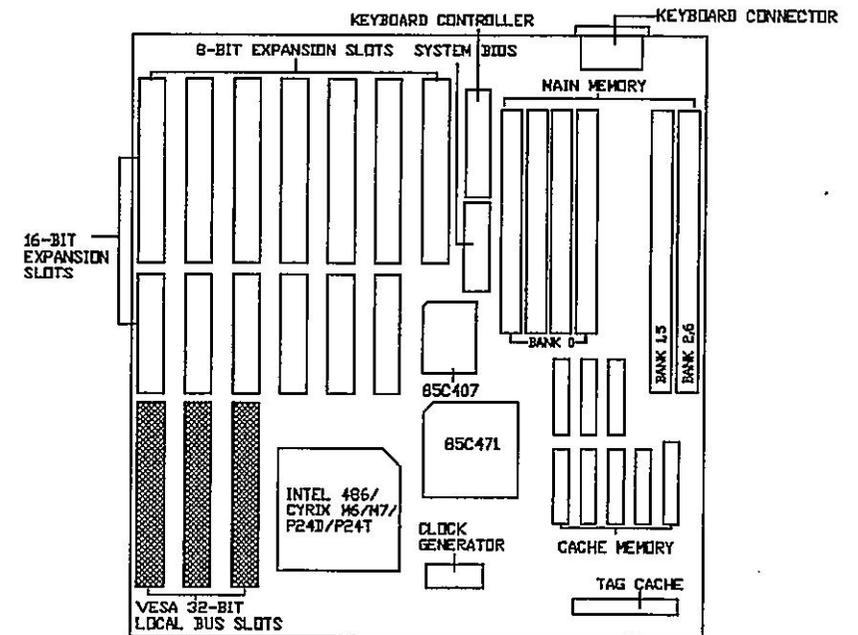


Fig 1 Key Components of the Mainboard

### 1.3 VESA LOCAL BUS SPECIAL FEATURES

- Three bus master are supported on the VESA Local-Bus. The VESA Local-Bus connector type is a standard 32-bit Micro Channel type connector, and is located inline with a system I/O bus connector.
- Three slots are provided on the mainboard. Either with one master or three master slots.
- The VESA Local-Bus can support high speed video controllers, and other peripherals, such as hard disk controllers, LAN adaptors, and so on.
- Interface protocol depends on the CPU speed, but protocol selection and switching is invisible to all add-in boards, software, and end users. The VESA Local-Bus always remains totally transparent to all application software.
- 32-bits optimum data bus width

#### 4.4.7 PASSWORD SETTING MENU

When you select this function, the following message will appear at the centre 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.

ROM ISA BIOS (2C4I9G30)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: Max Saving	IRQ 4 (COM 1)	: Enable
Break Switch	: Enable	IRQ 5 (LPT or LAN)	: Enable
PM Control by APM	: Yes	IRQ 6 (Floppy Disk)	: Enable
VGA Adapter Type	: Non-Green	IRQ 7 (LPT or LAN)	: Enable
Video Off Option	: Always On	IRQ 8 (RTC, OS2)	: Enable
IRQ 12/15 for PM	: IRQ15	IRQ 9 (Reserved)	: Enable
** PM Timers **			
HDD Power Down	: Disable	IRQ 10 (Reserved)	: Enable
System Suspend	: 10 Sec	IRQ 11 (Reserved)	: Enable
** PM Events **			
Local Master	: Disable	ESC: Quit	↑ ↓ → ←: Select Item
Local Device	: Disable	F1: Help	PU/PD/+/-: Modify
Video Activities	: Disable	F5: Old Values (Shift)	F2: Color
DMA Activities	: Enable	F6: Load BIOS Defaults	
IRQ 1 (Keyboard)	: Enable	F7: Load Setup Defaults	
IRQ 3 (COM 2)	: Enable		

Fig 12B Normal 486 CPU

#### 4.4.5 LOAD BIOS DEFAULTS MENU

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

Load BIOS Defaults (Y/N)?

#### 4.4.6 LOAD SETUP DEFAULTS MENU

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

Load SETUP Defaults (Y/N)?

## 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.

### 2.1 JUMPER AND MEMORY BANK LOCATIONS

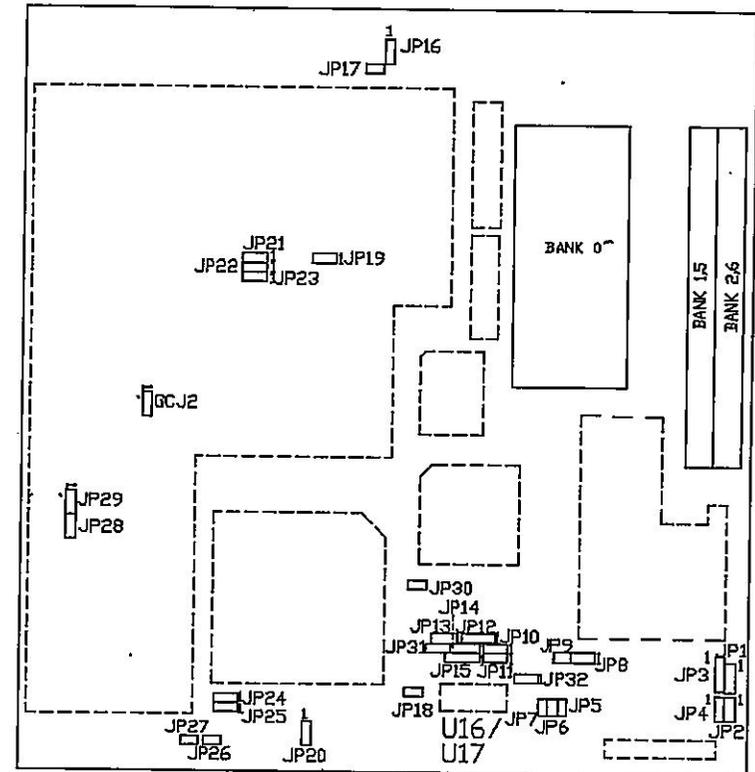


Fig 2 Jumper and Memory Bank Locations

## 2.2 JP8-JP15, JP18, JP21, JP22, JP24, JP25, JP31, JP32 - CPU TYPE CONFIGURATION

The mainboard can support processor at different speed. Various jumper are required to setup for installing different CPU. Refer to Fig 2 for the jumpers location, and set the jumper according to the following table:

### JP8-JP15, JP18, JP21, JP22, JP24, JP25, JP31, JP32--CPU Type Configuration

CPU	JP8	JP9	JP10	JP11	JP12	JP13
486SX						
486DX						
P24T						
SLE486SX						
SLE486DX2/DX						
CYRIX M6						
⊗ CYRIX M7						
P24D						

Table 1A: CPU Type Configuration

CPU Type	JP18
For CX486S2 only	 CLOSE

Table 1B: CPU Type Configuration

## 4.4.4 POWER MANAGEMENT SETUP MENU

ROM ISA BIOS (2C4I9G30)  
POWER MANAGEMENT SETUP  
AWARD SOFTWARE, INC.

Power Management	: Max Saving	IRQ 4 (COM 1)	: Enable
Break Switch	: Enable	IRQ 5 (LPT or LAN)	: Enable
PM Control by APM	: Yes	IRQ 6 (Floppy Disk)	: Enable
VGA Adaptor Type	: Non-Green	IRQ 7 (LPT or LAN)	: Enable
Video Off Option	: Always On	IRQ 8 (RTC, OS2)	: Enable
		IRQ 9 (Reserved)	: Enable
** PM Timers **			
HDD Power Down	: Disable	IRQ 10 (Reserved)	: Enable
System Suspend	: 10 Sec	IRQ 11 (Reserved)	: Enable
		IRQ 12 (PS2 mouse)	: Enable
		IRQ 13 (387)	: Enable
		IRQ 14 (Hard Disk)	: Enable
		IRQ 15 (Reserved)	: Enable
** PM Events **			
Local Master	: Disable	ESC: Quit	↑ ↓ → ←: Select Item
Local Device	: Disable	F1: Help	PU/PD/+/-: Modify
Video Activities	: Disable	F5: Old Values (Shift)	F2: Color
DMA Activities	: Enable	F6: Load BIOS Defaults	
IRQ 1 (Keyboard)	: Enable	F7: Load Setup Defaults	
IRQ 3 (COM 2)	: Enable		

Fig 12A SL Enhanced 486 CPU

### 4.4.3 CHIPSET FEATURES SETUP MENU

ROM ISA BIOS (2C4I9G30)  
 CHIPSET FEATURES SETUP  
 AWARD SOFTWARE, INC.

Auto Configuration : Enabled	Latch Local Bus : T3
AT Bus Clock : 1/5CLK	Local Bus Ready : Synchronize
Hidden Refresh : Enable	
L2 Cache Scheme : Write Back	
L1 Cache Scheme : Write Back	
Cache Burst Read : 2T	
Cache Write Cycle : 3T	
System Shadow : Cacheable	
Video Shadow : Cacheable	
Fast Reset Emulation: Enable	ESC: Quit      ↑↓→←: Select Item
Fast Reset Latency : 2 us	F1: Help      PU/PD/+/-: Modify
	F5: Old Values (Shift)F2: Color
	F6: Load BIOS Defaults
	F7: Load Setup Defaults

Fig 11: Default Setting for Cx486DX 40MHz CPU

**Note:**

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

CPU Freq.	20MHz	25MHz	33MHz	40MHz	50MHz
AT Bus Clock	1/3CLK	1/3CLK	1/4CLK	1/5CLK	1/6CLK
Cache Burst Read	2T	2T	2T	2T	2T
Cache Burst Write	2T	2T	2T	3T	3T

2) The option "L1 Cache Scheme" is shown only when the Cyrix Cx486S/Cx486DX/DX2 CPU are used.

CPU	JP14	JP15	JP21	JP22	JP24	JP25	JPS0	JP31
486SX	OPEN	OPEN	3 2 1	3 2 1	OPEN	OPEN	OPEN	OPEN
486DX	OPEN	OPEN	4 2 1	3 2 1	OPEN	OPEN	OPEN	OPEN
P24T	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	8 2 1	2 2 1	OPEN	OPEN
SLE486SX	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	OPEN	OPEN	OPEN	OPEN
SLE486DX2/DX	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	OPEN	OPEN	OPEN	OPEN
CYRIX M6	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	8 2 1	3 2 1	OPEN	OPEN
<input checked="" type="checkbox"/> CYRIX M7	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	8 2 1	3 2 1	OPEN	OPEN
P24J	4 3 2 1	8 4 3 2 1	3 2 1	3 2 1	OPEN	3 2 1	CLEAR	CLEAR

Table 1C: CPU Type Configuration

### 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.

709 e      709 701  
 - [ ] -

1. Plug the 486 CPU into the socket, with the notch corner aligned.

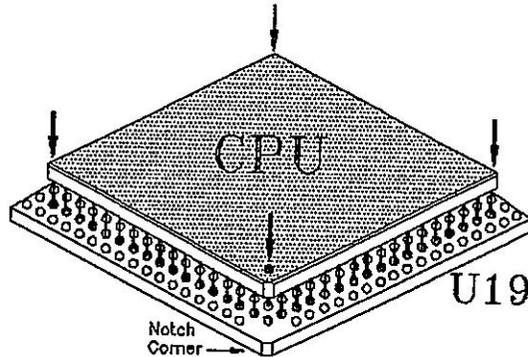


Fig 3 Installing a CPU

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

## 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 which supports 128KB, 256KB or 512KB 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, and 512KB cache configurations. Memory size is selected by the hardware jumpers and the BIOS setup program.

### 4.4.2 BIOS FEATURES SETUP MENU

ROM ISA BIOS (2C4I9G30)  
BIOS FEATURES SETUP  
AWARD SOFTWARE, INC.

Virus Warning	: Enabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000-CFFFF Shadow:	Disabled
External Cache	: Enabled	D0000-D7FFF Shadow:	Disabled
Quick Power On Self Test	: Enabled	D8000-DFFFF Shadow:	Disabled
Boot Sequence	: C,A	E0000-E7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	E8000-EFFFF Shadow:	Disabled
Boot Up Floppy Seek	: Disabled		
Boot Up Numlock Status	: On		
Boot Up System Speed	: High		
IDE HDD Block Mode	: Disabled		
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

### 4.4.1 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 ISA BIOS (2C4I9G30)  
STANDARD CMOS UTILITY  
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Thu, Mar 3 1994					
Time (hh:mm:ss) : 11 : 23 : 53					
	CYLS.	HEADS	PRECOMP	LANDZONE	SECTORS
Drive C : None ( 0Mb)	0	0	0	0	0
Drive D : None ( 0Mb)	0	0	0	0	0
Drive A : 1.2M , 5.25in.	Base Memory: 640K				
Drive B : None	Extended Memory: 3072K				
	Expanded Memory: 0K				
Video : EGA/VGA	Other Memory: 384K				
Halt On : All Errors	Total Memory: 4096K				
Esc : Quit	↑ ↓ → ← : Select Item		PU/PD/+/- : Modify		
F1 : Help	(Shift)F2 : Change Color		F3 : Toggle Calender		

Fig 9

### 2.4.1 UPGRADING CACHE

The mainboard is available with an optional 128KB, 256KB or 512KB cache memory on-board. User can upgrade cache memory by installing additional SRAM (Static Random Access Memory) chips in sockets U1, U2, U3, U4, U5, U6, U7, U8; U11.

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

25MHz CPU requires 25ns (tag) and 25ns (data) SRAM chips.

33MHz, 40MHz, 50MHz, 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.

Cache Size	BANK 0				BANK 1				TAG RAM
	U1	U2	U3	U4	U5	U6	U7	U8	U11
128K	32Kx8	32Kx8	32Kx8	32Kx8	NONE	NONE	NONE	NONE	8Kx8
256K	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8	32Kx8
512K	128Kx8	128Kx8	128Kx8	128Kx8	NONE	NONE	NONE	NONE	32Kx8

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.

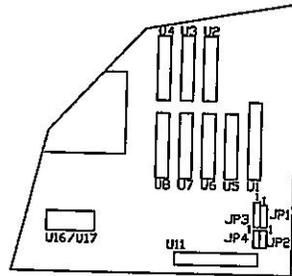


Fig 4 Cache Jumper and Socket Locations

### 2.4.4 JP1-JP4 - CACHE JUMPER SETTING

Cache memory is configured using jumpers, JP1, JP2, JP3 & JP4. The following table summarize the possible configuration.

JP1-JP4 -- Cache Jumper Setting

Cache Size	JP1	JP2	JP3	JP4
128KB				
256KB				
512KB				

Table 3: Cache Jumper Setting

### 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 ISA BIOS (2C4I9G30)  
 CMOS SETUP UTILITY  
 AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	SAVE & EXIT SETUP
POWER MANAGEMENT SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	
Esc : Quit	
F10 : Save & Exit Setup	
↑ ↓ → ← : Select Item	
(Shift)F2 : Change Color	
{Description}	

Fig 8

## 4.2 CONTROL KEYS

<b>Up arrow:</b>	Move to previous item
<b>Down arrow:</b>	Move to next item
<b>Left arrow:</b>	Move to the item in the left hand
<b>Right arrow:</b>	Move to the item in the right hand
<b>Esc key:</b>	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
<b>PgUp key:</b>	Increase the numeric value or make changes
<b>PgDn key:</b>	Decrease the numeric value or make changes
<b>F1 key:</b>	General help, only for Status Page Setup Menu and Option Page Setup Menu
<b>F2 key:</b>	Change color from total 16 colors
<b>F3 key:</b>	Calendar, only for Status Page Setup Menu
<b>F4 key:</b>	Reserved
<b>F5 key:</b>	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
<b>F6 key:</b>	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
<b>F7 key:</b>	Load the default
<b>F8 key:</b>	Reserved
<b>F9 key:</b>	Reserved
<b>F10 key:</b>	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>.

## 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.

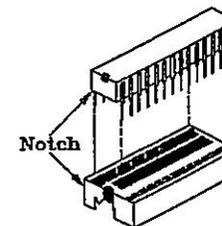


Fig 5 Installing a Cache Chip

## 2.5 JP28, JP29 - VL-BUS IDENTIFY PINS

Set the jumpers, JP28 & JP29 to configure the VL-Bus Clock Speed. Refer to Fig 2 for their location. Set the jumper as below.

### JP28, JP29 -- VL-Bus Clock Speed

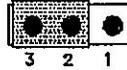
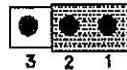
VL-BUS WAIT STATE	JP28	VL-BUS CLOCK SPEED SELECTION	JP29
0 WS		<= 33MHz	
1 WS (Default)		> 33MHz (Default)	

Table 4

## 2.6 JP16 - CMOS RAM BATTERY SETTING

Please set JP16 is for CMOS RAM battery as below. Refer to Fig 2 for the location of JP16.

**JP16 -- CMOS RAM Battery Setting**

CMOS RAM BATTERY SETTING	JP16
Normal Operation (Default)	 3 2 1
Discharge CMOS	 3 2 1

**Table 5**

## 2.7 JP17 - MONITOR SETTING

Set the jumper, JP17, to configure the mainboard for either CGA, monochrome, OR VGA/EGA display. Refer to Fig 2 for the location of JP17. Set the jumper as below.

**JP17 -- Monitor Setting**

MONITOR SETTING	JP17
CGA Display	 CLOSE
Mono, VGA/EGA Display (Default)	 OPEN

**Table 6**

# 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. **Keyboard:** Connect the keyboard to its connector, CN1.
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. User will then need to run the BIOS setup program.

## 2.8 JP20 - CPU CLOCK DELAY

JP20 is for the CPU Clock Delay setting. Refer to Fig 2 for JP20 location.

JP20 -- CPU Clock Delay

CPU CLOCK DELAY	JP20
CLKIN and CPUCLK same phase	
CLKIN delay for CPUCLK (Default)	

Table 7

## 2.9 JP5, JP6, JP7 - CPU FREQUENCY CONFIGURATION

JP5, JP6, & JP7 are for the CPU Frequency Configuration. Two different settings are provided for different Clock Generator which is used at U16 or U17. Refer to Fig 2 for the location of U16/U17 and jumpers.

JP5, JP6, JP7-- CPU Frequency Configuration

AV9107-03 IS AT U16				MX-8516 IS AT U17			
CLOCK FREQUENCY	JP5	JP6	JP7	CLOCK FREQUENCY	JP5	JP6	JP7
20MHz				20MHz			
25MHz				25MHz			
33MHz				33MHz			
40MHz				40MHz			
50MHz				50MHz			

Table 8

### 2.10 JP26 - GREEN PC BREAK SWITCH

JP26 is for the Green PC Break Switch setting. Refer to Fig 2 for JP26 location.

JP26 -- Green PC Break Switch

<b>GREEN PC BREAK SWITCH</b>	<b>JP26</b>
BREAK FUNCTION	 CLOSE
NORMAL (Default)	 OPEN

Table 9

### 2.11 JP19, JP23, JP27, JP32, GCJ2 - RESERVED JUMPERS

JP19, JP23, JP27, JP32 and GCJ2 are being reserved. Refer to Fig 2 for their location.

JP19, JP23, JP27, JP32, GCJ2 -- Reserved Jumpers

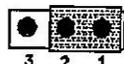
RESERVED JUMPERS		
JP19	 3 2 1	JP32
JP23	 3 2 1	
JP27	 OPEN	GCJ2
		 3 2 1

Table 10

### 3.4.7 CN1 - 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

### 3.5 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, CN2.
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 instructions that comes with the card. Connect the disk drives to the Floppy Disk and Hard Disk Controller cards.

### 3.4.5 J5 - SPEAKER CONNECTOR

Attached the system speaker to connector J5.

Pin	Description
1	+ 5V
2	Ground
3	Not Used
4	Data Out

Table 16

### 3.4.6 J6 - RESET SWITCH CONNECTOR

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

Setting	Description
Close	Reset
Open	Normal

Table 17

## 2.12 MEMORY INSTALLATION

Four 30pin SIMM sockets are provided in Bank0, and two 72pin SIMM are provided for Bank1 & Bank2. User can install either four 256Kx9, 1Mx9, 4Mx9 or 16Mx9 SIMM in Bank0, and one 256Kx36, 512Kx36, 1Mx36, 2Mx36, 4Mx36, 8Mx36 or 16Mx36 SIMM in Bank1 or Bank2. Note that all SIMM modules in a bank must be same capacity and follow combination showed below. For best performance 70ns SIMMS are required.

Bank0	Bank1	Bank2	Memory Size	Bank0	Bank1	Bank2	Memory Size
256K	NONE	NONE	1MB	4M	4M	NONE	32MB
256K	256K	NONE	2MB	1M	4M	4M	36MB
256K	256K	512K	4MB	1M	8M	NONE	36MB
1M	NONE	NONE	4MB	1M	1M	8M	40MB
256K	1M	NONE	5MB	4M	8M	NONE	48MB
256K	256K	1M	6MB	4M	4M	4M	48MB
1M	1M	NONE	8MB	16M	NONE	NONE	64MB
1M	2M	NONE	12MB	4M	4M	8M	64MB
1M	1M	1M	12MB	256K	16M	NONE	65MB
4M	NONE	NONE	16MB	1M	16M	NONE	68MB
1M	1M	2M	16MB	1M	8M	8M	68MB
256K	4M	NONE	17MB	1M	1M	16M	72MB
256K	256K	4M	18MB	4M	16M	NONE	80MB
1M	4M	NONE	20MB	4M	8M	8M	80MB
1M	2M	2M	20MB	4M	4M	16M	96MB
1M	1M	4M	24MB	16M	16M	NONE	128MB

Table 11: On-board Memory Configuration

Note: Memory Data should calculated in 36bit, so the actual memory in each entry is recorded in Double Word. E.g. 256K = 256K x 36byte = 1MB

### 2.12.1 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.

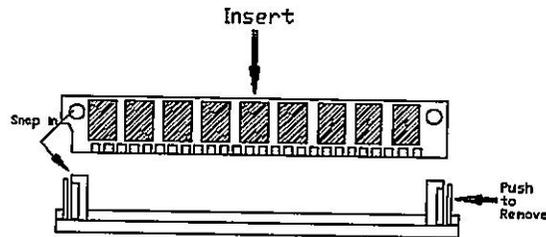


Fig 6 Installing a SIMM

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.

### 3.4.3 J3 - TURBO SWITCH CONNECTOR

J3 connects to the Turbo switch, which is used to select the mainboard's clock speed.

TURBO SWITCH	J3
De-Turbo	
Turbo (Default)	

Table 14

### 3.4.4 J4 - TURBO LED CONNECTOR

J4 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	+ Anode
2	- Cathode

Table 15

## 3.4 CONNECTORS

### 3.4.1 CN2 - 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.

CN2			
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 12

### 3.4.2 J7 - KEYLOCK & POWER LED CONNECTOR

J7 is a keylock connector that enables and disables the keyboard and the Power-LED on the case.

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

Table 13

## 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, or 1.44MB).
- Hard disk drive (optional).
- Hard disk and floppy disk drive controller card.
- Flat ribbon cables to connect the disk drive controller and the disk drive(s).
- Serial/parallel interface card.
- 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 (CN1) 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

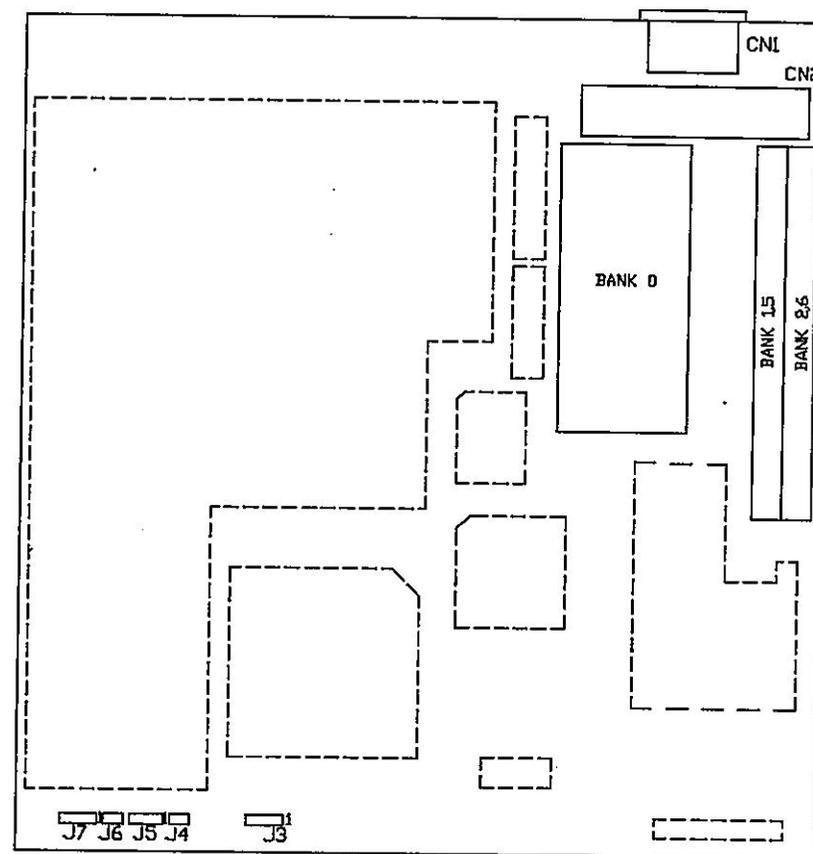


Fig 7 Connector Locations