

GMB-486UNL
80486 VESA Mainboard
User's Guide

Version 1.01

ABOUT THIS GUIDE

This guide contains instructions for configuring and installing the GMB-486UNL mainboard.

- Chapter 1, **Introduction**, acquaints user with the special features of the GMB-486UNL 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, **Hard Disk Types**, provides a Default fixed Disk table.
- Chapter 6, **Error Codes**, provides references for all POST communicate errors.
- Chapter 7, **Connector Pin Assignment**, provides the VESA Local Bus Pin Assignment on VESA Connectors.

TRADEMARKS USED IN THIS MANUAL

MS-DOS, XENIX, Microsoft, WINDOWS are trademarks of Microsoft Corp.

NOVELL, Netware are trademarks of Novell, Inc.

Wordstar is a trademark of MicroPro International.

Lotus 1-2-3 is a trademark of Lotus Development Corp.

AT is a trademark of International Business Machines Corp.

OS/2 is a trademark of Microsoft Corp. and International Business Machines Corp.

UNIX is the trademark of AT&T.

Weitek is a trademark of Weitek Corp.

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.

All rights reserved. No part of this Manual may be reproduced in any form without the written permission.

CONTENTS

| | | |
|------------------|--|-----------|
| CHAPTER 1 | INTRODUCTION | 1 |
| 1.1 | KEY FEATURES | 1 |
| 1.2 | MAINBOARD COMPONENTS | 3 |
| 1.3 | VESA LOCAL BUS SPECIAL FEATURES | 4 |
| CHAPTER 2 | HARDWARE CONFIGURATION | 5 |
| 2.1 | JUMPER AND MEMORY BANK LOCATIONS | 5 |
| 2.2 | JP4 - CPU JUMPER SETTING | 6 |
| 2.3 | CPU INSTALLATION | 6 |
| 2.3.1 | JP19 - OSCILLATOR SPEED SELECTION | 8 |
| 2.4 | CACHE CONFIGURATION | 8 |
| 2.4.1 | UPGRADING CACHE | 9 |
| 2.4.2 | CACHE SIZE AND MEMORY LOCATIONS | 9 |
| 2.4.3 | CACHE CHIP SOCKETS AND JUMPER LOCATIONS | 10 |
| 2.4.4 | JP6, JP7, JP9, JP11 - CACHE JUMPER SETTING | 11 |
| 2.4.5 | INSTALLING CACHE CHIPS | 12 |
| 2.5 | JP1-DISPLAY ADAPTER SETUP | 13 |
| 2.6 | JP2-DISCHARGE CMOS SETUP | 13 |
| 2.7 | JP40, JP41, JP42, JP44, JP45-MASTER/ SLAVE MODE | 14 |
| 2.8 | JP29, JP30, JP31-SYSTEM CLOCK SPEED SELECTION | 14 |
| 2.9 | JP43-VESA LOCAL-BUS CLOCK SPEED | 15 |
| 2.10 | JP20-VESA LOCAL-BUS WAIT STATE | 15 |
| 2.11 | MEMORY INSTALLATION | 16 |
| 2.11.1 | INSTALLING SIMM | 17 |
| CHAPTER 3 | MAINBOARD INSTALLATION | 19 |
| 3.1 | COMPONENTS | 19 |
| 3.2 | INSTALLING THE MAINBOARD | 20 |
| 3.3 | CONNECTION THE MAINBOARD | 20 |
| 3.3.1 | CONNECTION LOCATIONS | 21 |

| | | |
|------------------|--|-----------|
| 3.4 | CONNECTORS | 22 |
| 3.4.1 | J2/J3-POWER SUPPLY CONNECTOR | 22 |
| 3.4.2 | J5-KEYLOCK & POWER LED CONNECTOR | 22 |
| 3.4.3 | JP17-TURBO SWITCH CONNECTOR | 23 |
| 3.4.4 | JP16-TURBO LED CONNECTOR | 23 |
| 3.4.5 | J6-SPEAKER CONNECTOR | 24 |
| 3.4.6 | JP18-RESET SWITCH CONNECTOR | 24 |
| 3.4.7 | J4-EXTERNAL BATTERY | 25 |
| 3.4.8 | J1-KEYBOARD CONNECTOR | 25 |
| 3.5 | SYSTEM ASSEMBLY OVERVIEW | 26 |
| CHAPTER 4 | AMI BIOS SETUP | 27 |
| 4.1 | STANDARD CMOS SETUP | 27 |
| 4.2 | ADVANCED CMOS SETUP | 29 |
| 4.3 | ADVANCED CHIPSET SETUP | 30 |
| 4.4 | AUTO CONFIGURATION WITH BIOS DEFAULTS | 35 |
| 4.5 | AUTO CONFIGURATION WITH POWER-ON DEFAULTS | 35 |
| 4.6 | CHANGE PASSWORD | 35 |
| 4.7 | HARD DISK UTILITY | 36 |
| CHAPTER 5 | HARD DISK TYPES | 37 |
| CHAPTER 6 | ERROR CODES | 39 |
| 6.1 | BEEP ERROR CODES | 39 |
| 6.2 | ERROR MESSAGES | 40 |
| 6.3 | HARD DISK UTILITY ERROR MESSAGES | 42 |
| CHAPTER 7 | VESA LOCAL-BUS SLOT PINOUT | 43 |

UNPACKING THE MAINBOARD

The GMB-486UNL Mainboard comes packed in a sturdy cardboard shipping carton. The carton contains:

- The GMB-486UNL Mainboard
- This User's Guide

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

The GMB-486UNL 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.

CHAPTER 1

INTRODUCTION

The GMB-486UNL mainboard is a 2/3 body AT size high-performance mainboard that provides with basic elements on which to build an advanced computer. The GMB-486UNL mainboard is configured with one of the following microprocessors:

- 80486SX-25, 80487SX-25, 80486DX2-50 CPU running at 25MHz.
- 80486DX-33, 80486DX2-66 CPU running at 33MHz.
- 80486DX-40 CPU running at 40MHz.
- 80486DX-50 CPU running at 50MHz.

1.1 KEY FEATURES

The advanced features of the GMB-486UNL mainboard include:

- 100% IBM PC-AT compatible, single chip 486 solution.
- Support CPU type: 80486SX-25, 80487SX-25, 80486DX-33,40,50, 80486DX2-50,66.
- High performance single chip core logic with Internal Cache Controller.
- Built-in direct mapped secondary cache controller with option write-back or write-through operation and 0 wait state for cache hit.
- Optional cache memory size of 64/128/256KB in either one or two banks of SRAM.
- Two non-cacheable blocks ranging from 128K to 1MB.
- System & video Bios Shadow, optional caching of shadowed video BIOS.
- Memory size from 1MB to 32MB, possible using combinations of 256Kx9, 1Mx9 and 4Mx9 SIMM modules in two memory bank.
- Hidden DRAM refresh support.

- Support KB control Turbo/Deturbo mode select.
- Support 7 Direct Memory Access channels.
- Support 16 Interrupt levels.
- Six 16-bit I/O slots, two 8-bit I/O slots, three Standard VESA Local Bus slot.
- Battery backup for CMOS configuration and real time clock/calender.
- Hardware and Software turbo clock switching.
- 8MHz AT Bus clock & speed changeable by software, CPU clock available by oscillator.
- User Defined Password to inhibit illegal access.
- 2/3 Baby AT board size = 220mm(W) X 260mm(L).

1.2 MAINBOARD COMPONENTS

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

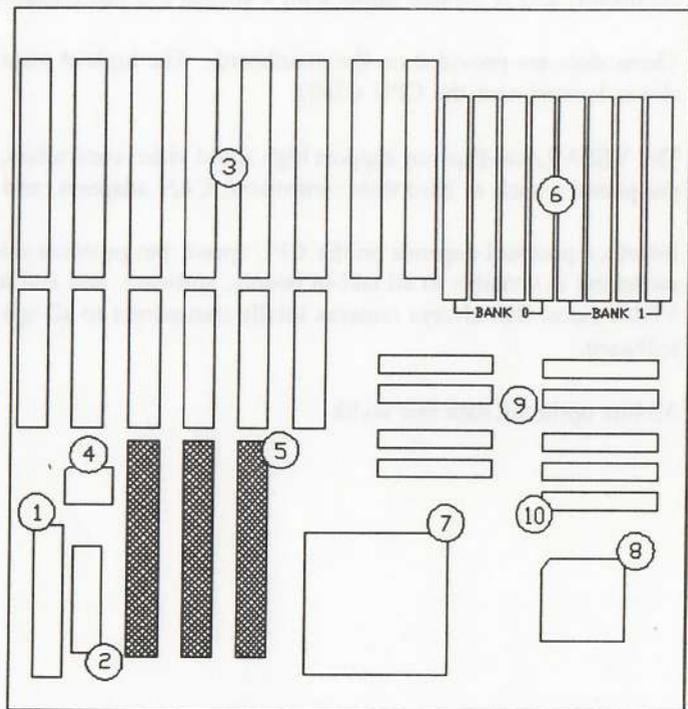


Fig 1 Key Components of the GMB-486UNL Mainboard

- | | |
|--|---|
| (1). Keyboard Controller | (6). Main Memory |
| (2). System BIOS | (7). 486SX/486DX/487SX Microprocessor Socket |
| (3). Expansion Slots | (8). Single Chip Toshiba 4800 |
| (4). UM82C206 Integrated Peripherals Controller | (9). Cache Memory |
| (5). Local Bus Slot | (10). Tag Cache |

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. The highest priority master slot is located near the CPU (U49).
- 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

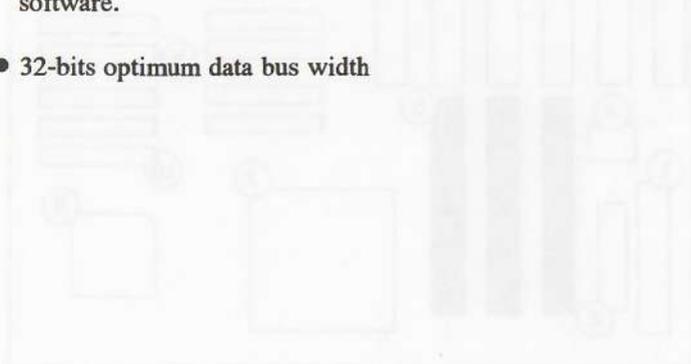


Fig. 1.3 Components of the VESA Local Bus

- | | |
|---------------------|----------------------------|
| 101. CPU | 111. Video Controller |
| 102. System I/O Bus | 112. Hard Disk Controller |
| 103. VESA Local Bus | 113. LAN Adaptor |
| 104. Add-in Board | 114. Peripheral Controller |
| 105. CPU (U49) | 115. System Bus |

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

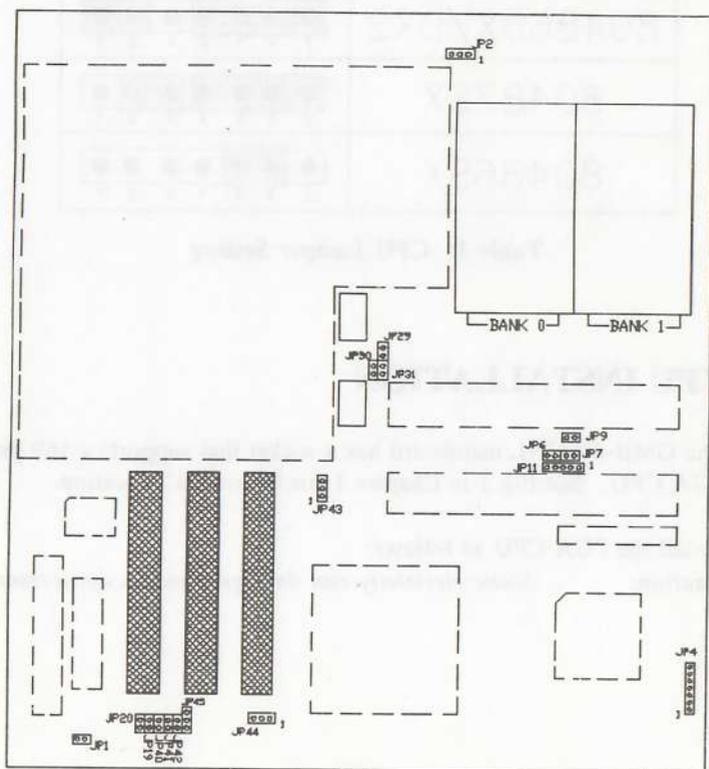


Fig 2 Jumper and Memory Bank Locations

2.2 JP4 - CPU JUMPER SETTING

The GMB-486UNL mainboard can support processor at different speed. Jumper JP4 is required to setup for installing various CPU. Refer to Fig 2 for the jumpers location, and set the jumper according to the following table:

| CPU TYPE | JP4 |
|-------------|---|
| 80486DX/DX2 |  |
| 80487SX |  |
| 80486SX |  |

Table 1: CPU Jumper Setting

2.3 CPU INSTALLATION

The GMB-486UNL mainboard has a socket that supports a 169 pin PGA CPU. See Fig 1 in Chapter 1 for the socket's location.

Install the PGA CPU as follows:

Caution: *Static electricity can damage a math coprocessor.*

1. Pug the PGA CPU into the socket.

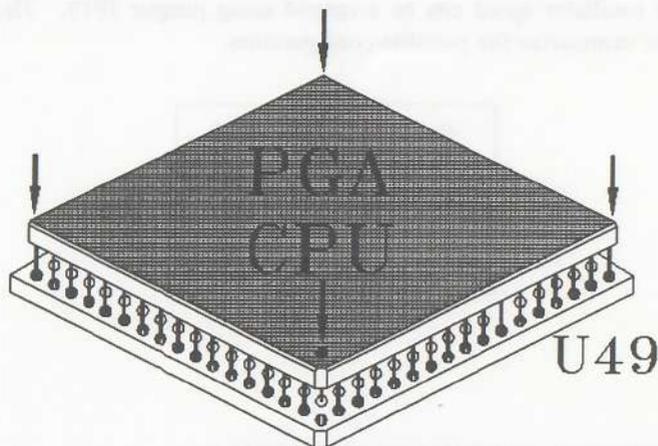


Fig 3 Installing a PGA CPU

2. Change the CPU type jumper setting according to the CPU Jumper Setting table on pg6.
3. Change the OSC (Y3) with speed relevant to the CPU speed. Refer to section 2.3.1 JP19 - Oscillator Speed Selection, for relevant oscillator speed configuration.

2.3.1 JP19 - OSCILLATOR SPEED SELECTION

The oscillator speed can be arranged using jumper JP19. The following table summarize the possible configuration.

| Setting | JP19 |
|----------|---|
| > 33MHz |  |
| <= 33MHz |  |

Table 2

2.4 CACHE CONFIGURATION

The special feature of the GMB-486UNL mainboard is a built-in direct-mapped cache controller with optional write-back or write-through operation which supports 64KB, 128KB, or 256KB cache memory.

The GMB-486UNL 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 64KB, 128KB, and 256KB cache configurations. Memory size is selected by the hardware jumpers and the BIOS setup program.

2.4.1 UPGRADING CACHE

The GMB-486UNL mainboard is available with an optional 64KB, 128KB, or 256KB cache memory on-board. User can upgrade cache memory by installing additional SRAM (Static Random Access Memory) chips in sockets U38, U39, U41, U43, U36, U37, U40, U42; U33.

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

50MHz, 33MHz CPU requires **20ns (tag)** and **20ns (data)** SRAM chips.

25MHz CPU requires **25ns (tag)** and **25ns (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 8K x 8-bit or 32K x 8-bit SRAM chips in banks 0 and 1, and in the Tag RAM sockets. Please note that, do not combine different chip capacities in banks 0 and 1.

| Cache Size | BANK 0 | | | | BANK 1 | | | | TAG RAM |
|-------------|--------|-------|-------|-------|--------|-------|-------|-------|---------|
| | U38 | U39 | U41 | U43 | U36 | U37 | U40 | U42 | U33 |
| 64K | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 | 8Kx8 |
| 128K | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | NONE | NONE | NONE | NONE | 8Kx8 |
| 256K | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 | 32Kx8 |

Table 3: 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.

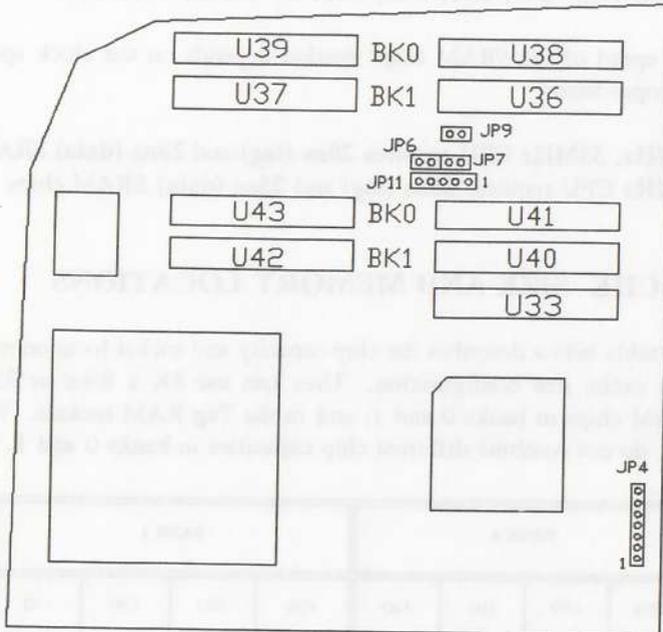


Fig 4 Cache Jumper and Socket Locations

2.4.4 JP6, JP7, JP9, JP11 - CACHE JUMPER SETTING

Cache memory is configured using jumpers, JP6, JP7, JP9, JP11. The following table summarize the possible configuration.

JP6, JP7, JP9, JP11 -- Cache Jumper Setting

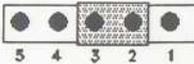
| Cache Size | Jumper | | | |
|------------|--|--|--|--|
| | JP6 | JP7 | JP9 | JP11 |
| 32K |  OPEN |  OPEN |  OPEN |  5 4 3 2 1 |
| 64K |  OPEN |  CLOSE |  OPEN |  5 4 3 2 1 |
| 128K |  OPEN |  CLOSE |  CLOSE |  5 4 3 2 1 |
| 256K |  CLOSE |  CLOSE |  CLOSE |  5 4 3 2 1 |

Table 4: Cache Jumper Setting

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.

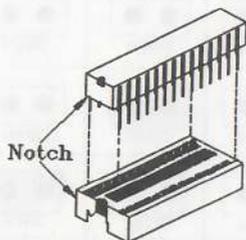


Fig 5 Installing a Cache Chip

2.5 JP1-DISPLAY ADAPTER SETUP

Set the jumper, JP1, to configure the mainboard for either a color display card or a monochrome display card. Short the jumper for a color display adapter. Open the jumper for a monochrome display adapter. Refer to Fig 2 for the location of JP1. Set the jumper as below.

JP1 -- Display Adapter Type

| Display Adapter | JP1 |
|----------------------------|---|
| Color Display (Default) |  CLOSE |
| Mono Display |  OPEN |

Table 5

2.6 JP2-DISCHARGE CMOS SETUP

The CMOS Setup can be erased by shorting the jumper JP2 as below. Refer to Fig 2 for the location of JP2.

JP2 -- Discharge CMOS Setup

| Setting | JP2 |
|-------------------------------|---|
| Normal Operation (Default) |  |
| Discharge CMOS |  |

Table 6

2.7 JP40, JP41, JP42, JP44, JP45-MASTER/SLAVE MODE

The jumper JP40, JP41, JP42, JP44, JP45 are for the system setting of Master/Slave mode. Refer to Fig 2 for the location of these jumpers, and set the jumpers as below.

JP40, JP41, JP42, JP44, JP45 -- Master/Slave Mode

| | JP40 & JP41 & JP42 | JP44 | JP45 |
|-----------------------|--|--|---|
| PAL/GAL INSTALLED |  OPEN |  3 2 1 |  |
| PAL/GAL NOT INSTALLED |  CLOSE |  3 2 1 |  |

Table 7

2.8 JP29, JP30, JP31-SYSTEM SPEED SELECTION

The setting for System Speed Selection jumpers JP29, JP30, JP31 are shown as below. Refer to Fig 2 for the location of this jumper.

JP29, JP30, JP31 -- System Speed Selection

| SYSTEM SPEED | JP29 | JP30 | JP31 |
|--------------|--|--|--|
| 25MHz |  CLOSE |  OPEN |  CLOSE |
| 33MHz |  CLOSE |  CLOSE |  OPEN |
| 40MHz |  OPEN |  OPEN |  CLOSE |
| 50MHz |  OPEN |  CLOSE |  OPEN |

Table 8

2.9 JP43-VESA LOCAL-BUS CLOCK SPEED

JP43 is for the selection of VESA Local-Bus clock speed. Refer to Fig 2 for the location of this jumper, and set the jumper as follow.

JP43 -- VESA Local-Bus Clock Speed

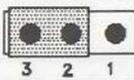
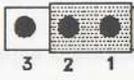
| | JP43 |
|---|---|
| NORMAL (SAME PHASE AS CPU) * DEFAULT |  |
| ADJUSTED (SAME PHASE AS U4800) |  |

Table 9

2.10 JP20-VESA LOCAL-BUS WAIT STATE

User must set the jumper to tell the mainboard, how much wait states the VESA Local-Bus uses. Refer to Fig 2 for the location of JP20, and set the jumper as follow.

JP20 -- VESA Local-Bus Clock Speed

| Setting | JP20 |
|---------|---|
| 1 WS |  |
| 0 WS |  |

Table 10

2.11 MEMORY INSTALLATION

The GMB-486UNL lets user add system memory via SIMM sockets on the mainboard. On-board memory is located in two banks: Bank 0 and Bank 1. See Fig 2.

Four SIMM sockets are provided in each bank. User can install either a 256K, 1M, or 4M SIMM in each socket. Note that all SIMM modules in a bank must be the same capacity.

SIMM speed required for best performance depends on the CPU speed, which requires 70ns SIMM.

The mainboard supports the following configurations:

| Bank 0 | Bank 1 | Memory Size |
|--------|--------|-------------|
| 256K | NONE | 1MB |
| 256K | 256K | 2MB |
| 1M | NONE | 4MB |
| 256K | 1M | 5MB |
| 1M | 1M | 8MB |
| 4M | NONE | 16MB |
| 1M | 4M | 20MB |
| 4M | 1M | 20MB |
| 4M | 4M | 32MB |

Table 11: 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.

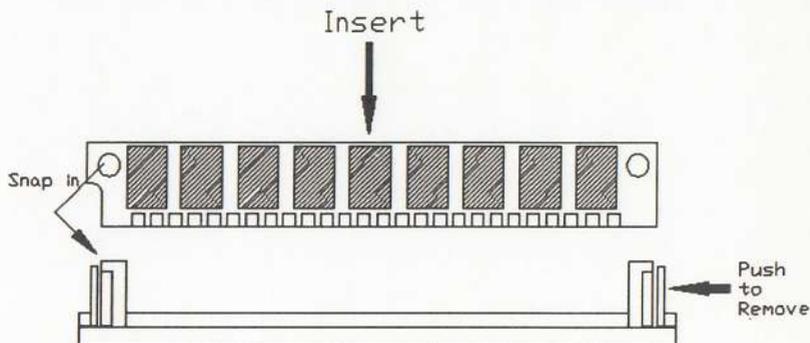


Fig 6 Installing a SIMM

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 GMB-486UNL 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 GMB-486UNL mainboard.

3.1 COMPONENTS

The following components are recommended:

- Case with standard chassis and hardware. The GMB-486UNL 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 GMB-486UNL 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 (J1) 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

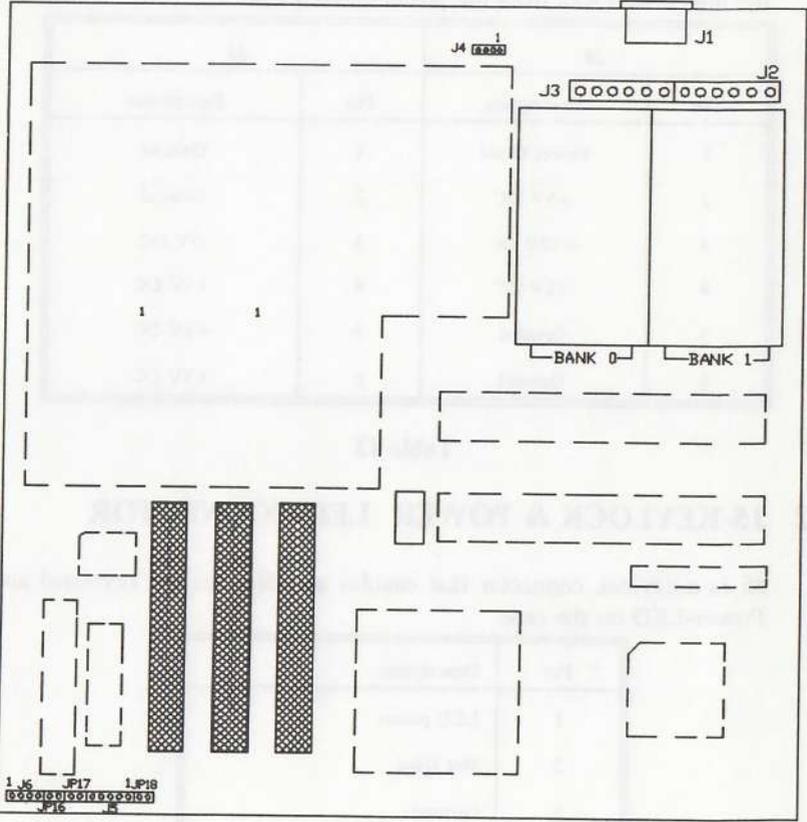


Fig 7 Connector Locations

3.4 CONNECTORS

3.4.1 J2/J3-POWER SUPPLY CONNECTOR

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

| J3 | | J2 | |
|-----|-------------|-----|-------------|
| Pin | Description | Pin | Description |
| 1 | Power Good | 1 | Ground |
| 2 | +5V DC | 2 | Ground |
| 3 | +12V DC | 3 | -5V DC |
| 4 | -12V DC | 4 | +5V DC |
| 5 | Ground | 5 | +5V DC |
| 6 | Ground | 6 | +5V DC |

Table 12

3.4.2 J5-KEYLOCK & POWER LED CONNECTOR

J5 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 Inhibiter |
| 5 | Ground |

Table 13

3.4.3 JP17-TURBO SWITCH CONNECTOR

JP17 connects to the Turbo switch, which is used to select the mainboard's clock speed.

| Setting | Description |
|-----------------|-------------|
| Open | Normal Mode |
| Close (default) | Turbo Mode |

Table 14

3.4.4 JP16-TURBO LED CONNECTOR

JP16 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

3.4.5 J6-SPEAKER CONNECTOR

Attach the system speaker to connector J6.

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

Table 16

3.4.6 JP18-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

3.4.7 J4-EXTERNAL BATTERY

The GMB-486UNL mainboard has a battery on-board; however, user can also attach an external battery to connector J4. Using an external battery helps to conserve the on-board battery.

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

Table 18

3.4.8 J1-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 19

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, J2/J3.
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.
4. **Keyboard:** Connect the keyboard to its connector, J1.
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.

CHAPTER 4 AMI BIOS SETUP

The setup program provided with the mainboard is the AMI BIOS from American Megatrends Inc. Enter the AMI Setup program's Main Menu as follows:

1. Turn on or reboot the system. After a series of diagnostic checks, the following message appears:
"Hit if you want to run SETUP"
2. Press the key to enter the AMI BIOS setup program and the following screen appears:
STANDARD CMOS SETUP
ADVANCED CMOS SETUP
ADVANCED CHIPSET SETUP
AUTO CONFIGURATION WITH BIOS DEFAULTS
AUTO CONFIGURATION WITH POWER-ON DEFAULTS
CHANGE PASSWORD
HARD DISK UTILITY
WRITE TO CMOS AND EXIT
DO NOT WRITE TO CMOS AND EXIT
3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections for more information).
4. Press <ESC> at anytime to return to the Main Menu.
5. In the Main Menu, choose "WRITE TO CMOS AND EXIT" to save changes and reboot the system. Choosing "DO NOT WRITE TO CMOS AND EXIT" ignores all changes and exists the program.

4.1 STANDARD CMOS SETUP

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu and a screen with a list of items appears.

| BIOS SETUP PROGRAM - STANDARD CMOS SETUP (C)1992 American Megatrends Inc., All Rights Reserved | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|
| Date (mm/date/year): Thu, Jan 31 1991 | | | Base memory : 640 KB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Time (hour/min/sec): 15 : 23 : 15 | | | Ext. memory : 3072 KB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Daylight saving : Disabled | | | Cyln Head Wpoom LZone Sect Size | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hard disk C: type : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Hard disk D: type : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floppy drive A : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Floppy drive B : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Primary display : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Keyboard : Not Installed | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Month : Jan, Feb, ... Dec Date : 01, 02, 03, ... 31 Year : 1981, 1982, ... 2099 | | | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Sun</th> <th>Mon</th> <th>Tue</th> <th>Wed</th> <th>Thu</th> <th>Fri</th> <th>Sat</th> </tr> </thead> <tbody> <tr> <td>30</td> <td>31</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> <td>9</td> <td>10</td> <td>11</td> <td>12</td> </tr> <tr> <td>13</td> <td>14</td> <td>15</td> <td>16</td> <td>17</td> <td>18</td> <td>19</td> </tr> <tr> <td>20</td> <td>21</td> <td>22</td> <td>23</td> <td>24</td> <td>25</td> <td>26</td> </tr> <tr> <td>27</td> <td>28</td> <td>29</td> <td>30</td> <td>31</td> <td>1</td> <td>2</td> </tr> <tr> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> <td>9</td> </tr> </tbody> </table> | | | | Sun | Mon | Tue | Wed | Thu | Fri | Sat | 30 | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| Sun | Mon | Tue | Wed | Thu | Fri | Sat | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 30 | 31 | 1 | 2 | 3 | 4 | 5 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 27 | 28 | 29 | 30 | 31 | 1 | 2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ESC:Exit ←→↑↓:Select F2/F3:Color PU/PD:Modify | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

Fig 8 Standard CMOS Setup Screen

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn keys. Some fields let user enter numeric values directly.
3. After user finished with the Standard CMOS Setup program, press the <ESC> key. The following appears:
 "Write to CMOS and Exit (Y/N)?"
4. Typing "N" and <Enter> returns user to the Main Menu. Typing "Y" and <Enter> saves the system parameters and the system reboots.

4.2 ADVANCED CMOS SETUP

Run the Advanced CMOS Setup as follows.

1. Choose "ADVANCED CMOS SETUP" from the Main Menu and a screen with a list of items appears.

BIOS SETUP PROGRAM - ADVANCED CMOS SETUP
(C)1992 American Megatrends Inc., All Rights Reserved

| | | | |
|-------------------------------|------------|------------------------------|------------|
| Typematic Rate Programming | : Enabled | Turbo Switch Function | : Enabled |
| Typematic Rate Delay (msec) | : 500 | Password Checking Option | : Setup |
| Typematic Rate (Chars/Sec) | : 15 | Video ROM Shadow C000, 16K | : Enabled |
| Mouse Support Option | : Enabled | Video ROM Shadow C400, 16K | : Enabled |
| Above 1 MB Memory Test | : Disabled | Adaptor ROM Shadow C800, 16K | : Enabled |
| Memory Test Tick Sound | : Enabled | Adaptor ROM Shadow CC00, 16K | : Enabled |
| Memory Parity Error Check | : Enabled | Adaptor ROM Shadow D000, 16K | : Disabled |
| Hit Message Display | : Enabled | Adaptor ROM Shadow D400, 16K | : Disabled |
| Hard Disk Type 47 RAM Area | : 0:300 | Adaptor ROM Shadow D800, 16K | : Disabled |
| Wait For <F1> If Any Error | : Enabled | Adaptor ROM Shadow DC00, 16K | : Disabled |
| System Boot Up Num Lock | : On | Adaptor ROM Shadow E000, 16K | : Disabled |
| Numeric Processor Test | : Enabled | Adaptor ROM Shadow E000, 64K | : Disabled |
| Weitek Processor | : Absent | System ROM Shadow F000, 64K | : Enabled |
| Floppy Drive Seek At Boot | : Enabled | C000 Write Protect, 64K | : Enabled |
| System Boot Up Sequence | : A:, C: | D000 Write Protect, 64K | : Disabled |
| System Boot Up CPU Speed | : High | E000 Write Protect, 64K | : Disabled |
| Cache Memory Select | : Both | BootSector Virus Protection | : Disabled |
| Fast A20 and fast reset | : Enabled | | |
| Fast KB Reset DELAY 2 μ s | : Enabled | | |
| Fast KB Reset Requires HALT | : Disabled | | |

ESC:Exit ←→←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color

F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults

Fig 9 BIOS Setup Defaults for 486DX/486DX2/486SX/487SX CPU

2. Use the arrow keys to move between items and to select values. Modify the selected fields by using the PgUp/PgDn keys. An explanation of the <F> keys follows:

<F1>: "Help" gives options available for each item.

<F2/F3>: Change color.

<F5>: Get the old values. These values are the values with which the user started the current session. If the CMOS was good, then the old values are either the CMOS values or the BIOS Setup default values.

<F6>: Load all options in the Advanced CMOS Setup / Advanced Chipset Setup with the BIOS Setup default values.

<F7>: Load all options in the Advanced CMOS Setup / Advanced Chipset Setup with the Power-On default values.

3. After user has finished with the Advanced CMOS Setup program, press the <ESC> key. the following appears:
"Write to CMOS and Exit (Y/N)?"
4. Typing "N" and <Enter> returns user to the Main Menu. typing "Y" and <Enter> saves the system parameters and the system reboots.

4.3 ADVANCED CHIPSET SETUP

The Advanced Chipset Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Note: Change these settings only if user is familiar with the Chipset.

Run the Advanced Chipset Setup as follows:

1. Choose "ADVANCED CHIPSET SETUP" from the Main Menu and a screen with a list of items appears.

| BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP | |
|---|------------|
| (C)1992 American Megatrends Inc., All Rights Reserved | |
| Hidden Refresh | : Enabled |
| Cache Scheme | : W-Back |
| Video BIOS Cache | : Enabled |
| DRAM Read/Write | : 0 WS |
| RAS Precharge | : 2Sclk |
| SRAM Read | : 0 WS |
| SRAM Burst | : Enabled |
| SRAM Write | : 0 WS |
| Master Cycle Swap | : Disabled |
| IO Recovery Time | : 1ATCLK |
| AT Wait State | : 0 WS |
| AT BUS CLK | : SCLK/3 |
| Non-Cacheable Block-0 Size | : 0 KB |
| Non-Cacheable Block-0 Base | : 0000000H |
| Non-Cacheable Block-1 Size | : 0 KB |
| Non-Cacheable Block-1 Base | : 0000000H |
| ESC:Exit ↓→↑←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color | |
| F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults | |

**Fig 10A Default Advanced Chipset Setup Screen for
486SX-25/486DX2-50 CPU**

| BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP (C)1992 American Megatrends Inc., All Rights Reserved | |
|---|------------|
| Hidden Refresh | : Enabled |
| Cache Scheme | : W-Back |
| Video BIOS Cache | : Enabled |
| DRAM Read/Write | : 1 WS |
| RAS Precharge | : 2Sclk |
| SRAM Read | : 0 WS |
| SRAM Burst | : Enabled |
| SRAM Write | : 1 WS |
| Master Cycle Swap | : Disabled |
| IO Recovery Time | : 1ATCLK |
| AT Wait State | : 0 WS |
| AT BUS CLK | : SCLK/4 |
| Non-Cacheable Block-0 Size | : 0 KB |
| Non-Cacheable Block-0 Base | : 0000000H |
| Non-Cacheable Block-1 Size | : 0 KB |
| Non-Cacheable Block-1 Base | : 0000000H |
| ESC:Exit ←→↑←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults | |

**Fig 10B Default Advanced Chipset Setup Screen for
486DX-33/486DX2-66 CPU**

| BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP | |
|---|------------|
| (C)1992 American Megatrends Inc., All Rights Reserved | |
| Hidden Refresh | : Enabled |
| Cache Scheme | : W-Back |
| Video BIOS Cache | : Enabled |
| DRAM Read/Write | : 1 WS |
| RAS Precharge | : 2Sclk |
| SRAM Read | : 0 WS |
| SRAM Burst | : Enabled |
| SRAM Write | : 1 WS |
| Master Cycle Swap | : Disabled |
| IO Recovery Time | : 1ATCLK |
| AT Wait State | : 0 WS |
| AT BUS CLK | : SCLK/5 |
| Non-Cacheable Block-0 Size | : 0 KB |
| Non-Cacheable Block-0 Base | : 0000000H |
| Non-Cacheable Block-1 Size | : 0 KB |
| Non-Cacheable Block-1 Base | : 0000000H |
| ESC:Exit ←→↑←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color | |
| F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults | |

Fig 10C Default Advanced Chipset Setup Screen for 486DX-40 CPU

| BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP (C)1992 American Megatrends Inc., All Rights Reserved | |
|---|------------|
| Hidden Refresh | : Enabled |
| Cache Scheme | : W-Back |
| Video BIOS Cache | : Enabled |
| DRAM Read/Write | : 2 WS |
| RAS Precharge | : 4ScLk |
| SRAM Read | : 1 WS |
| SRAM Burst | : Enabled |
| SRAM Write | : 2 WS |
| Master Cycle Swap | : Disabled |
| IO Recovery Time | : 1ATCLK |
| AT Wait State | : 0 WS |
| AT BUS CLK | : SCLK/6 |
| Non-Cacheable Block-0 Size | : 0 KB |
| Non-Cacheable Block-0 Base | : 0000000H |
| Non-Cacheable Block-1 Size | : 0 KB |
| Non-Cacheable Block-1 Base | : 0000000H |
| ESC:Exit ↓→↑←:Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color F5:Old Values F6:BIOS Setup Defaults F7:Power-On Defaults | |

Fig 10D Default Advanced Chipset Setup Screen for 486DX-50 CPU

2. Use the arrow keys to move between items select values. Modify selected fields using the PgUp/PgDn keys. An explanation of the <F> keys are shown on pg30 of this manual.
3. After finishing with the Advance Chipset Setup, press the <ESC> key. The following appears:
 "Write to CMOS and Exit (Y/N)?"
4. Typing "N" and <Enter> returns user to the Main Menu. Typing "Y" and <Enter> saves the system parameters and the system reboots.

4.4 AUTO CONFIGURATION WITH BIOS DEFAULTS

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults will load automatically. Choose this item and the following message appears:

"Load BIOS Setup Default Values from ROM Table (Y/N)? N"

To use the BIOS defaults, change the prompt to "Y" and press <Enter>. The following message appears:

"Default values loaded. Press any key to continue."

4.5 AUTO CONFIGURATION WITH POWER-ON DEFAULTS

This Main Menu item uses the default Power-On values. Use this option as a diagnostic aid if the system behaves erratically. Choose this item and the following message appears:

"Load Power-On Default Values (Y/N)? N"

To use the Power-On defaults, change the prompt to "Y" and press <Enter>. The following message appears:

"Default values loaded. Press any key to continue."

4.6 CHANGE PASSWORD

The Main Menu item lets user to configure the system so that a password is required every time the system boots or an attempt is made to enter the Setup program.

The password cannot be longer than 6 ASCII characters. A default password is stored in the ROM in case the CMOS is corrupted. The default password is <AMI>. To change the password choose "Change Password" in the Main Menu and press <Enter>.

When user next boot the system, after saving changed value to CMOS, user will be prompted for the password.

If user is not prompted for the password, check that the "Password Checking Option" in the Advanced CMOS Setup is configured for "Always" or "Setup". See the section above on "Advanced CMOS Setup."

When the password prompt appears, key in the new password and press <Enter>. If loose or disconnected batteries corrupt the CMOS, use the default password, <AMI> instead.

Important: Keep a safe record of the new password. If forget or lose the password, the only way to access the system is to disconnect the CMOS batteries and then re-use the default password <AMI>.

4.7 HARD DISK UTILITY

This Main Menu item gives user three options for analyzing and formatting a hard disk. The three options are:

- **Hard Disk Format** - performs a "low level" format of the hard disk. Check with the hard drive manufacturer to see if this option is required.
- **Auto Interleave** - determines optimum interleave factor before formatting the hard disk.
- **Media Analysis** - analyzes each track of the hard drive. Marks unusable tracks as "bad" to prevent future data storage on those tracks.

Error messages specific to the Hard Disk Utility options may appear during initialization or operation. Refer to Chapter 6 for a list of these messages.

Warning: *Performing any one of these options destroys all data on the hard disk. User must back-up the hard disk before performing any of these tests.*

- Notes:**
1. *System documentation of brand new hard disk usually provides a list of "bad tracks" as well as the optimum interleave factor.*
 2. *These options are not valid for a SCSI Disk Drive.*

CHAPTER 5 HARD DISK TYPES

The AMI BIOS supports the following hard disk types.

| Type | Cyln | Head | WPrec | LZone | Sect | Cap (MB) |
|------|------|------|-------|-------|------|----------|
| 1 | 306 | 4 | 128 | 305 | 17 | 10MB |
| 2 | 615 | 4 | 300 | 615 | 17 | 20MB |
| 3 | 615 | 6 | 300 | 615 | 17 | 31MB |
| 4 | 940 | 8 | 512 | 940 | 17 | 62MB |
| 5 | 940 | 6 | 512 | 940 | 17 | 47MB |
| 6 | 615 | 4 | 65535 | 615 | 17 | 20MB |
| 7 | 462 | 8 | 256 | 511 | 17 | 31MB |
| 8 | 733 | 5 | 65535 | 733 | 17 | 30MB |
| 9 | 900 | 15 | 65535 | 901 | 17 | 112MB |
| 10 | 820 | 3 | 65535 | 820 | 17 | 20MB |
| 11 | 855 | 5 | 65535 | 855 | 17 | 35MB |
| 12 | 855 | 7 | 65535 | 855 | 17 | 50MB |
| 13 | 306 | 8 | 128 | 319 | 17 | 20MB |
| 14 | 733 | 7 | 65535 | 733 | 17 | 43MB |
| 15 | 0 | 0 | 0 | 0 | 0 | 0MB |
| 16 | 612 | 4 | 0 | 663 | 17 | 20MB |
| 17 | 977 | 5 | 300 | 977 | 17 | 41MB |
| 18 | 977 | 7 | 65535 | 977 | 17 | 57MB |
| 19 | 1024 | 7 | 512 | 1023 | 17 | 60MB |
| 20 | 733 | 5 | 300 | 732 | 17 | 30MB |
| 21 | 733 | 7 | 300 | 732 | 17 | 43MB |
| 22 | 733 | 5 | 300 | 733 | 17 | 30MB |
| 23 | 306 | 4 | 0 | 336 | 17 | 10MB |
| 24 | 925 | 7 | 0 | 925 | 17 | 54MB |
| 25 | 925 | 9 | 65335 | 925 | 17 | 69MB |

(TO BE CONTINUED)

| Type | Cyln | Head | WPrec | LZone | Sect | Cap (MB) |
|------|------------------|------|-------|-------|------|----------|
| 26 | 754 | 7 | 754 | 754 | 17 | 44MB |
| 27 | 754 | 11 | 65535 | 754 | 17 | 69MB |
| 28 | 699 | 7 | 256 | 699 | 17 | 41MB |
| 29 | 823 | 10 | 65535 | 823 | 17 | 68MB |
| 30 | 918 | 7 | 918 | 918 | 17 | 53MB |
| 31 | 1024 | 11 | 65535 | 1024 | 17 | 94MB |
| 32 | 1024 | 15 | 65535 | 1024 | 17 | 128MB |
| 33 | 1024 | 5 | 1024 | 1024 | 17 | 43MB |
| 34 | 612 | 2 | 128 | 612 | 17 | 10MB |
| 35 | 1024 | 9 | 65535 | 1024 | 17 | 77MB |
| 36 | 1024 | 8 | 512 | 1024 | 17 | 68MB |
| 37 | 615 | 8 | 128 | 615 | 17 | 41MB |
| 38 | 987 | 3 | 987 | 987 | 17 | 25MB |
| 39 | 987 | 7 | 987 | 987 | 17 | 57MB |
| 40 | 820 | 6 | 820 | 820 | 17 | 41MB |
| 41 | 977 | 5 | 977 | 977 | 17 | 41MB |
| 42 | 981 | 5 | 981 | 981 | 17 | 41MB |
| 43 | 830 | 7 | 512 | 830 | 17 | 48MB |
| 44 | 830 | 10 | 65535 | 830 | 17 | 69MB |
| 45 | 917 | 15 | 65535 | 918 | 17 | 114MB |
| 46 | 1224 | 15 | 65535 | 1223 | 17 | 152MB |
| 47 | USER DEFINE TYPE | | | | | |

Table 20: Default Fixed Disk Table

CHAPTER 6 ERROR CODES

Every time when power on the system, the POST (Power On Self Test) diagnostic routines will check to make sure the system is running properly. During boot-up, the POST communicate errors to the user as either a series of beeps, or as messages on the display screen. Fatal errors do not let the system complete boot-up, and are usually signalled as a series of beeps, since the display may not come on. Non-fatal errors allow boot-up to continue, and error messages appear on the screen.

6.1 BEEP ERROR CODES

These codes are emitted as a series of audible beeps. All Beep Error Codes, except for number 8, are fatal errors. If the system does not boot-up and starts beeping, write down the number of beeps that had heard and consult an authorized repair person.

Beep Error Codes and their meanings follow:

| Number of Beeps | Error Message |
|-----------------|---|
| 1 | Refresh Failure |
| 2 | Parity Error |
| 3 | Base 64 KB Memory Failure |
| 4 | Timer Not Operational |
| 5 | Processor Error |
| 6 | 8042 - Gate A20 Failure |
| 7 | Processor Exception Interrupt Error |
| 8 | Display Memory Read/Write Error |
| 9 | ROM Checksum Error |
| 10 | CMOS Shutdown Register Read/Write Error |

Table 21

6.2 ERROR MESSAGES

Non-fatal Error Messages usually appear on the screen as follows:

ERROR Message Line 1

ERROR Message Line 2

Press <F1> to RESUME

After user note the Error Message, then press the <F1> key to allow the system to proceed with boot-up. A list of Error Messages follows:

| Message | Action |
|--------------------------------|---|
| CMOS Battery State Low | Replace the battery. |
| CMOS Checksum Failure | Run the BIOS SETUP program. |
| CMOS System Options Not Set | Run the BIOS SETUP program. |
| CMOS Display Type Mismatch | Run the BIOS SETUP program. |
| Display Switch Not Proper | Properly set the video switch on the mainboard to monochrome or color. |
| Keyboard Is Locked...Unlock It | Unlock the keyboard lock to continue boot-up. |
| Keyboard Error | Make sure to have the AMI keyboard BIOS installed, or set the Standard CMOS Setup's "Keyboard" option to "Not Installed". |
| CMOS Memory Size Mismatch | Run the BIOS SETUP program. |
| FDD Controller Failure | Check all connections after the system is powered off. |
| HDD Controller Failure | Check all connections after the system is powered off. |

| Message | Action |
|-------------------------------------|---|
| C: Drive Error | Check Standard CMOS Setup to see if correct hard disk is selected. |
| D: Drive Error | Check Standard CMOS Setup to see if correct hard disk is selected. |
| CMOS Time & Date Not Set | Check Standard CMOS Setup to see if correct date and time are selected. |
| Diskette Boot Failure | Use another boot disk. |
| Invalid Boot Diskette | Use another boot disk. |
| On Board Parity Error | Use memory diagnostic software, such as AMIDIAG, to find and correct memory problems. |
| Off Board Parity Error | Use memory diagnostic software, such as AMIDIAG, to find and correct memory problems. |
| Parity Error ???? | Use memory diagnostic software, such as AMIDIAG, to find and correct memory problems. |

Table 22

Note: For any other error messages please consult an authorised repair person.

6.3 HARD DISK UTILITY ERROR MESSAGES

The following error messages may appear during the Hard Disk Utility routines of the BIOS Setup program. The first four messages may appear during initialization; the rest may appear during operations.

| Message | Action |
|--|---|
| No Hard Disk Installed | Check if hard disk is on the system. |
| Fatal Error Bad Hard Disk | Check all cables and power connections. |
| Hard Disk Controller Failure | Check that the controller is properly inserted in the BUS slot. |
| C: (D:) Hard Disk Failure | Check all cables and power connections. |
| Drive Parameter Activity Failed | Check to see if the proper drive type is selected in the Standard CMOS Setup. |

Table 23

Note: For any other error messages please consult an authorised repair person.

CHAPTER 7 VESA LOCAL-BUS SLOT PINOUT

Pinout shown is a top-view. The "A" side of the connector is the add-in board component side. The "B" side of the connector is the add-in board solder side.

| B | | A |
|---------|--------|-----------|
| DAT00 | - 01 - | DAT01 |
| DAT02 | - 02 - | DAT03 |
| DAT04 | - 03 - | GND |
| DAT06 | - 04 - | DAT05 |
| DAT08 | - 05 - | DAT07 |
| GND | - 06 - | DAT09 |
| DAT10 | - 07 - | DAT11 |
| DAT12 | - 08 - | DAT13 |
| Vcc | - 09 - | DAT15 |
| DAT14 | - 10 - | GND |
| DAT16 | - 11 - | DAT17 |
| DAT18 | - 12 - | Vcc |
| DAT20 | - 13 - | DAT19 |
| GND | - 14 - | DAT21 |
| DAT22 | - 15 - | DAT23 |
| DAT24 | - 16 - | DAT25 |
| DAT26 | - 17 - | GND |
| DAT28 | - 18 - | DAT27 |
| DAT30 | - 19 - | DAT29 |
| Vcc | - 20 - | DAT31 |
| ADR31 | - 21 - | ADR30 |
| GND | - 22 - | ADR28 |
| ADR29 | - 23 - | ADR26 |
| ADR27 | - 24 - | GND |
| ADR25 | - 25 - | ADR24 |
| ADR23 | - 26 - | ADR22 |
| ADR21 | - 27 - | Vcc |
| ADR19 | - 28 - | ADR20 |
| GND | - 29 - | ADR18 |
| ADR17 | - 30 - | ADR16 |
| ADR15 | - 31 - | ADR14 |
| Vcc | - 32 - | ADR12 |
| ADR13 | - 33 - | ADR10 |
| ADR11 | - 34 - | ADR08 |
| ADR09 | - 35 - | GND |
| ADR07 | - 36 - | ADR06 |
| ADR05 | - 37 - | ADR04 |
| GND | - 38 - | WBACK# |
| ADR03 | - 39 - | BE0# |
| ADR02 | - 40 - | Vcc |
| N/C | - 41 - | BE1# |
| RESET# | - 42 - | BE2# |
| DC# | - 43 - | GND |
| M/ID# | - 44 - | BE3# |
| V/R# | - 45 - | ADS# |
| RDYRTN# | - 48 - | LRDY# |
| GND | - 49 - | LDEV<>># |
| IRQ9 | - 50 - | LREQ<<>># |
| BRDY# | - 51 - | GND |
| BLAST# | - 52 - | LGNT<<>># |
| ID0 | - 53 - | Vcc |
| ID1 | - 54 - | ID2 |
| GND | - 55 - | ID3 |
| LCLK | - 56 - | ID4 |
| Vcc | - 57 - | LKEN# |
| LBS16# | - 58 - | LEADS# |

Fig 11 VESA Local-Bus Slot Pinout