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80386

40/33/25 MHz Mainboard
User's Guide &
Technical Reference

About this Guide

This User's Guide is meant to assist both computer system manufacturers and end users in setting up and installing the mainboard. Information in this guide has been carefully checked for reliability; however, no guarantee is given as to the correctness of the contents. The information contained in this document is subject to change without notice.

Edition

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Table of Contents

How to Use This Guide

This information in this guide helps you configure and install the 386DX mainboard quickly and efficiently.

- Chapter 1, **Introduction**, describes the key features and mainboard layout.
- Chapter 2, **Hardware Setup**, shows you how to make case connections, set the mainboard's jumpers, and install memory.
- Chapter 3, **BIOS Setup**, explains the mainboard's BIOS setup program.

This guide concludes with an appendix on the AMI BIOS POST Error Codes.

Electrostatic Discharge Precautions

Make sure you ground yourself before handling the mainboard or other system components. Electrostatic discharge can easily damage the components. Note that you must take special precaution when handling the mainboard in dry or air-conditioned environments.

Abide by the precautions below to protect your equipment from electrostatic discharge:

- Do not remove the anti-static packaging until you are ready to install the mainboard and other system components.
- Ground yourself before removing any system component from its protective anti-static packaging. You can ground yourself by grasping the expansion slot covers or other unpainted portions of the computer chassis.
- Frequently ground yourself while working, or use a grounding strap.
- Handle the mainboard by the edges and avoid touching its components.

1 Introduction

The 386DX mainboard is a high-performance system board based on a 386DX microprocessor running at 25MHz, 33MHz, or 40 MHz. The mainboard is fully compatible with industry standards, while incorporating many technical enhancements.

The mainboard also supports an optional 387DX or 3167 coprocessor for calculation-intensive applications. You can configure system memory from 1M to 32M using 256K, 1M, and 4M SIMM modules.

The 386DX mainboard offers superior system performance, compatibility, flexibility, and reliability, and is the ideal choice for a wide variety of system applications.

Key Features

Features of the 386DX mainboard include:

- 386DX CPU running at 40MHz, 33MHz, or 25MHz
- Supports a 386DX PGA/PQFP packing CPU
- **Built-in 8KB SRAM as a unified cache supporting 16M cacheable memory**
- Built-in two-way/direct mapped copy back cache controller
- Socket support for an 387DX/Weitek 3167 math coprocessor
- Memory configurations from 1MB to 32MB using combinations of 256K, 1M, and 4M SIMM modules
- Dynamic memory allocation without H/W or S/W switching
- Support for Shadow RAM with no-waste DRAM remapping
- Supports fast gate A20 and fast reset option to ease OS/2 operation
- Programmable bus speed (1/5, 1/2, 1/3, 1/4 of system clock)
- Supports Turbo mode
- Seven 16-bit ISA slots and one 8-bit ISA slots
- 4-layer PCB

Unpacking the Mainboard

The mainboard package contains:

- The 386DX Mainboard
- This User's Guide

Note: Do not unpack the mainboard until you are ready to install it.

Follow the precautions below while unpacking the mainboard.

1. Before handling the mainboard, ground yourself by grasping an unpainted portion of the system's metal chassis.
2. Remove the mainboard from its anti-static packaging and place it on a grounded surface, component side up.
3. Check the mainboard for damage. If any chip appears loose, press carefully to seat it firmly in its socket.

Do not apply power if the mainboard appears damaged. If there is damage to the board contact your dealer immediately.

Mainboard Layout

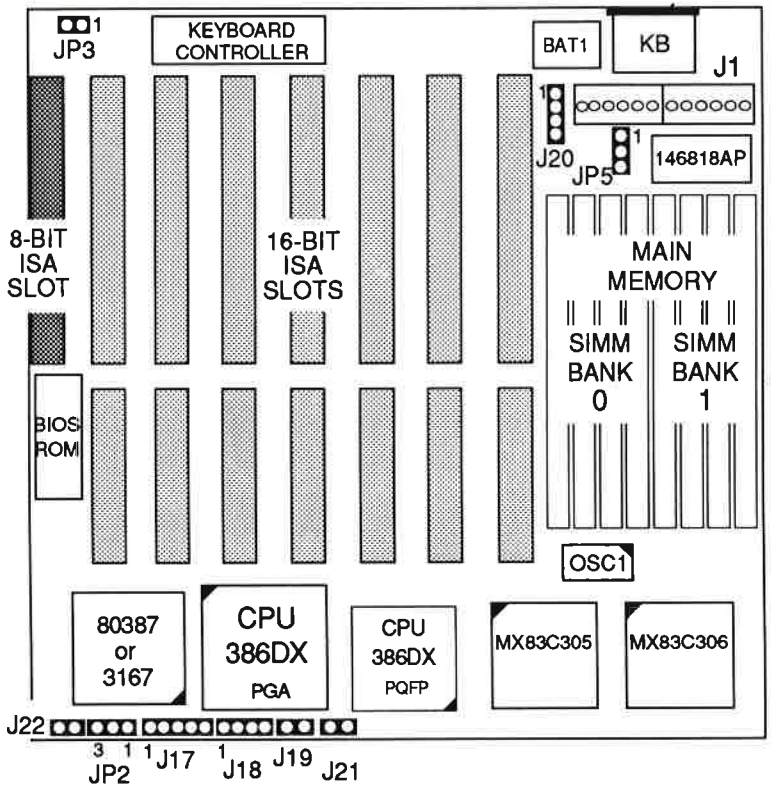


Figure 1–1. Mainboard Layout

2 Hardware Setup

This chapter explains how to configure the mainboard's hardware. After you install the mainboard, you can make the case connections, set the display and CMOS Reset jumpers, and install memory and a coprocessor on the mainboard. Refer to this chapter whenever you upgrade or reconfigure your system.

Power Precautions

Before you begin, make sure that you are working with an unplugged mainboard. Many components are powered by low-voltage current, but there still may be a dangerous electric current coming from the leads and power supply. You should take the following precautions:

- Turn off power to the mainboard, and unplug the power cord before you begin.
- Unplug all cables that connect the mainboard to any external devices.

Case Connections

After you have fastened the mainboard into the case, you must connect internal cables running from devices mounted on the case to connectors on the mainboard. Case devices include:

Keylock	Some cases are configured with a lock that can electronically disconnect the keyboard from the mainboard for security purposes.
Power LED	This LED shows that the system is on.
Speaker	This is the system speaker.
Reset button	This button lets you reboot your system without turning off the power.
Turbo Switch	This switch lets you toggle between high and low speeds.
Turbo LED	This LED works with the Turbo Switch and shows when the system is set to high speed.

Mainboard connectors have varying numbers of pins and are the points of contact between the mainboard and case devices. A description of each connector and its connector pins follows.

Connectors

Attach the 386DX mainboard to case devices, or an external battery, via connectors on the mainboard. Refer to Figure 1-1 for connector locations and connector pin positions.

J17 - Keylock & Power LED Connector

J17 is a connector for a lock that may be installed on the system case for enabling or disabling the keyboard. This connector also attaches to the case's Power LED.

J18 - Speaker Connector

Attach the system speaker to connector J18.

J19 - Hardware Reset Control

Attach the Reset switch to this connector. Closing the Reset switch restarts the system.

J20 - External Battery Connector

J20 connects an external battery for use in place of the on-board battery.

J21 - Turbo Switch Connector

J21 is connected to a Turbo switch on the front of the system case. The connector is open for turbo operation and shorted for normal operation.

J22 - Turbo LED Connector

J22 is connected to a Turbo LED on the case control panel and works with the Turbo Switch. If the mainboard is in Turbo mode, the Turbo LED indicator lights.

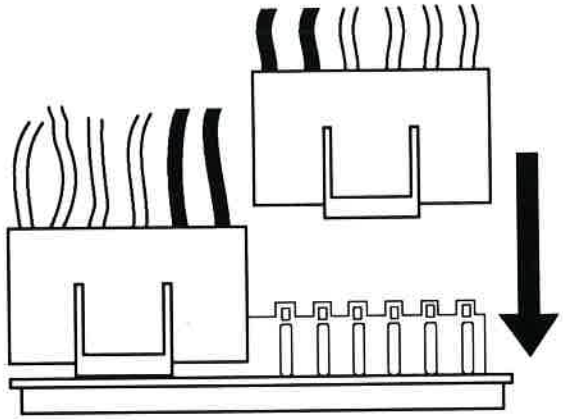
J2 - Keyboard Connector

A five-pin female DIN keyboard connector is located at the rear of the board. Plug the keyboard jack into this connector.

J1 - Power Supply Connector

The mainboard requires a power supply with at least 200 watts and a "power good" signal. The power supply connector has two six-pin male header connectors.

Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.



Setting Jumpers

You can configure hardware options on the mainboard by setting jumper switches. Jumper switches are rows of small pins on the mainboard that are set by using a jumper cap. Refer to Figure 1-1 for the location of the mainboard's jumpers.

Set a jumper switch as follows:

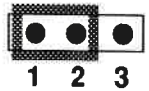
- *Close* a jumper switch by inserting the plastic jumper cap over two pins of the jumper.
- *Open* a jumper switch by removing the jumper cap.

Note: When you open a jumper, attach the plastic jumper cap to one of the pins so you won't lose it.

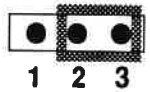
Symbols:

For jumper settings, the symbol:  denotes a jumper cap.

For example, three-pin jumper settings are designated as follows:



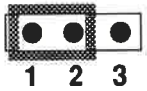
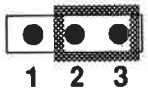
Pins 1 and 2 are Closed with a jumper cap.



Pins 2 and 3 are Closed with a jumper cap.

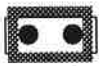
JP2: Intel/Cyrix CPU Select

Set jumper JP2 so that the mainboard recognizes the type of CPU installed.

Setting	JP2
Select Intel CPU (default)	
Select Cyrix CPU	

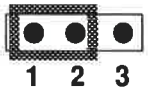
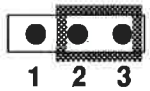
JP3: Display Type

Set jumper JP3 to configure the mainboard for use with either a color or monochrome monitor.

Monitor Type	JP3
Monochrome (Default)	
Color/EGA/VGA	

JP5: CMOS Reset

When you first configure the mainboard, make sure this jumper is set to "Retain CMOS Data" This allows the mainboard to retain your BIOS configuration settings in CMOS memory. See Chapter 3 for information on configuring the BIOS.

Setting	JP5
Retain CMOS Data	
Clear CMOS Data	

Memory Configuration

The 386DX mainboard lets you increase the system's main memory via on-board SIMM (Single In-line Memory Modules) sockets. The mainboard supports two banks of 256K, 1M, and 4M SIMM modules. The mainboard requires SIMM of at least 80ns access time.

On-board memory is located in two banks: Bank 0 and Bank 1. See Figure 1-1. Four SIMM sockets are provided in each bank. You can install either a 256K, 1M, or a 4M SIMM in each socket. The section that follows explains how to install SIMM modules.

The mainboard supports the following configurations:

Memory Size	Bank 0	Bank 1
1 MB	256K	—
2 MB	256K	256K
4 MB	1M	—
5MB	256K	1M
8 MB	1M	1M
16 MB	4M	—
20 MB	1M	4M
32 MB	4M	4M

Table 2-1. On-board Memory Configurations

Installing SIMM

Install a SIMM in a memory socket as follows:

1. Review the section on Electrostatic Discharge Precautions.
2. Remove the SIMM from its anti-static wrapping.
3. Hold the SIMM so that the chips are toward you and the edge connector is pointed toward the mainboard.
4. Insert the module's connectors into the socket at a 60-degree angle and gently move the SIMM back and forth until it is firmly in place.
5. Slowly move the module to a vertical position until the locking tabs snap into the holes at each end of the module.

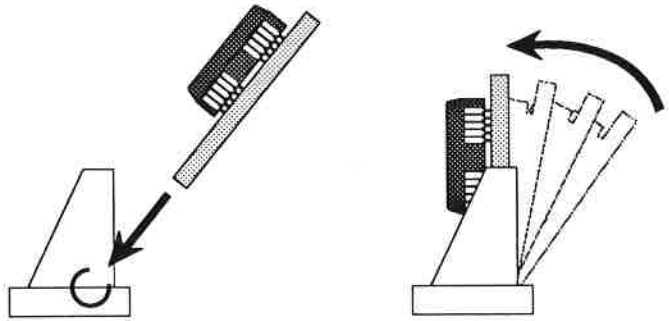


Figure 2-1. Installing a SIMM

6. Repeat steps 2~5 until the sockets of each bank are full.
7. Once you install memory, run the Setup program to let the system know how much memory you have installed.

Numeric Coprocessor Installation

The 386DX mainboard supports an 387DX or a Weitek 3167 numeric coprocessor. Refer to Figure 1-1 for the coprocessor socket location .

Installing an 387DX Coprocessor

Install an 387DX coprocessor as follows:

1. Review the section on Electrostatic Discharge Precautions and make sure that power to the mainboard is off.
2. Align the notched corner of the 387DX chip to the notched corner of the socket. The chip's notched corner also has a dot.

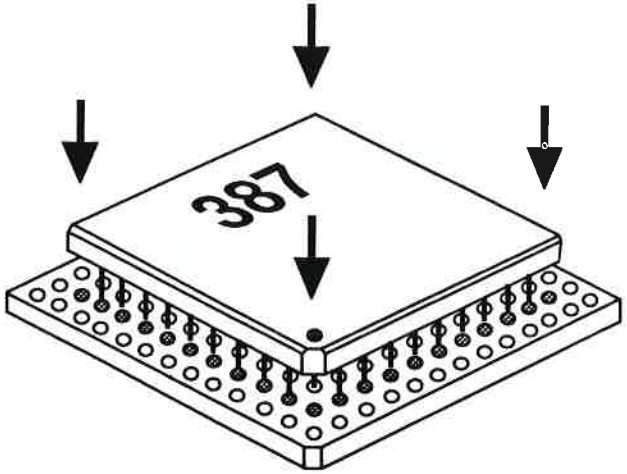


Figure 2-2. Installing the 387DX Coprocessor

3. Match the pins of the 387DX with the second row of socket holes — a row of empty socket holes appears around the chip.
4. Press the chip into the socket and then run the Setup program. In ADVANCED CMOS SETUP, set **Numeric Processor Test** to "Enabled."

Installing a Weitek 3167 Coprocessor

Install a Weitek 3167 coprocessor as follows:

1. Review this manual's section on Electrostatic Discharge Precautions and make sure that power to the mainboard is off.
2. Hold the coprocessor so that the corner of the chip marked by a round dot corresponds to the notched corner of the socket. There is also an extra pin on the inside of the corner with the round dot.

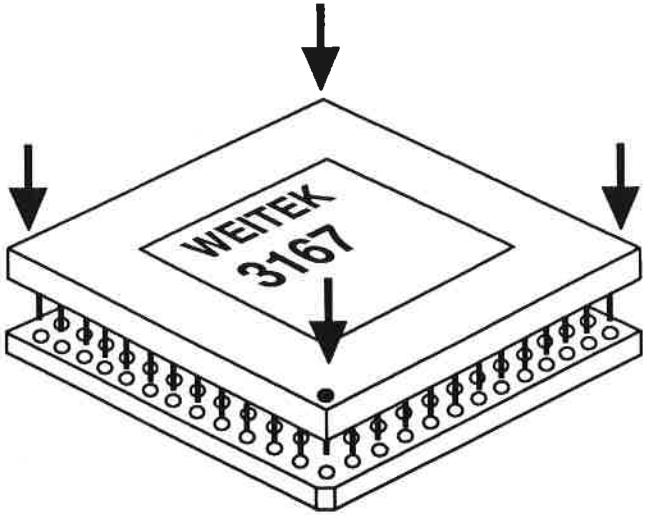


Figure 2-3. Installing a Weitek 3167 Coprocessor

3. Align the individual pins with the holes in the socket.
4. Press the chip carefully into the socket, and then run the Setup program. In ADVANCED CMOS SETUP, set **Weitek Processor** to "Present."

3 BIOS Setup

Once you have configured the mainboard, and have assembled the components, you can turn on the completed system. At this point, run the software setup to make sure your system information is correct.

Software setup is accomplished via Basic Input-Output System (BIOS) programming. You setup the BIOS program to tell the operating system what devices are connected to the mainboard.

BIOS setup is also called CMOS setup. You need to run the BIOS setup if hardware is not identical with information contained in the CMOS RAM, or if the CMOS RAM has lost power.

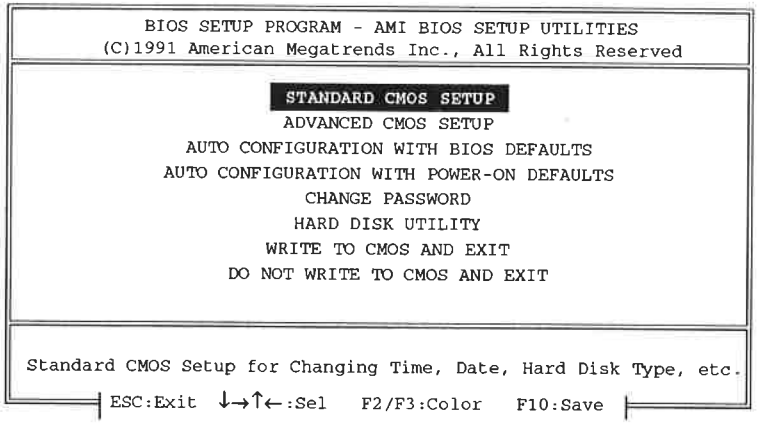
AMI BIOS Setup

The BIOS 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:

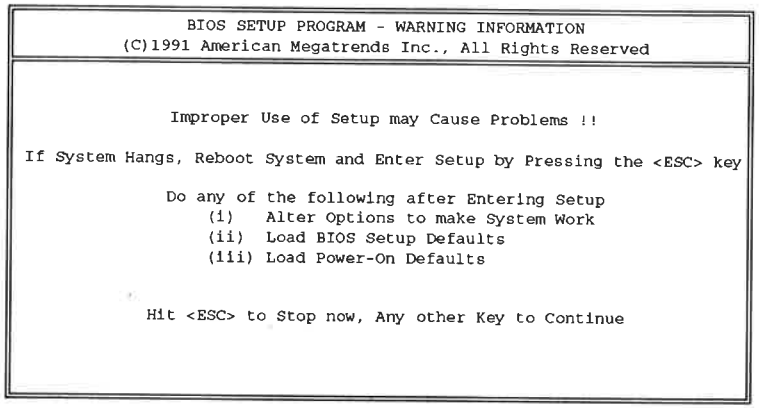
   "Hit <DEL> if you want to run SETUP"

2. Press the <DEL> key to enter the AMI BIOS setup program and the following screen appears:



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.)

   A warning message appears each time one of the first three options, (Standard CMOS Setup, Advanced CMOS Setup, and Advanced Chipset Setup) is selected, before any changes are allowed to any of the setup parameters.



4. Press <ESC> at anytime to return to the Main Menu.

5. In the Main Menu, choose "WRITE TO CMOS AND EXIT" to save your changes and reboot the system. Choosing "DO NOT WRITE TO CMOS AND EXIT" ignores your changes and exits the program.

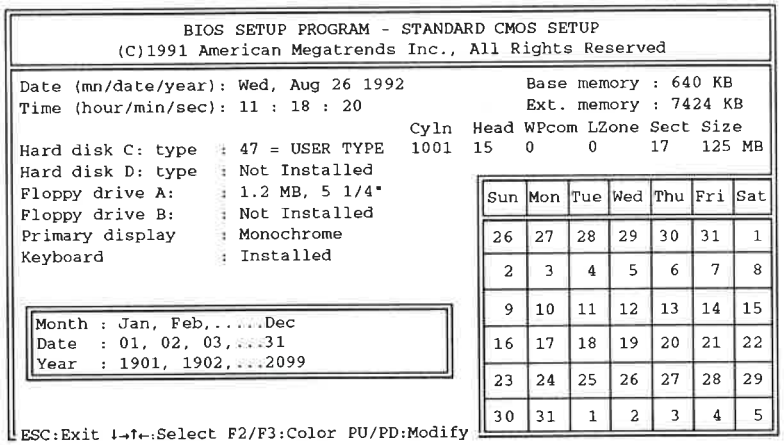
Main Menu Options

The Main Menu options of the AMI BIOS are described below.

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.



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 you enter numeric values directly.

Date (mn/date/year) Type the current date.

Time (hour:min:sec) Type the current time.

Hard disk C & D Choose from the standard hard disk types 1 to 46. Type 47 is user definable. If a hard disk is not installed choose "Not installed."

Floppy drive A & B Choose 360KB , 5 1/4"
1.2MB , 5 1/4" (default)
720KB , 3 1/2"
1.4M , 3 1/2" or
Not installed

Primary display Choose Monochrome, (default)
Color 40x25,
VGA or EGA, .
Color 80x25, or
Not installed

Keyboard Choose Not installed or Installed. (default)

3. After you have finished with the Standard CMOS Setup program, press the <ESC> key to return to the Main Menu.

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. **(The screen below shows the BIOS and 386DX-40 CPU default settings.)**

```
                BIOS SETUP PROGRAM - ADVANCED CMOS SETUP
          (C)1991 American Megatrends Inc., All Rights Reserved

Typematic Rate Programming : Disabled   Adaptor ROM Shadow C800,32K: Disabled
Typematic Rate Delay (msec): 500        Adaptor ROM Shadow D000,32K: Disabled
Typematic Rate (Chars/Sec) : 15         Adaptor ROM Shadow D800,32K: Disabled
Above 1MB Memory Test      : Disabled   Adaptor ROM Shadow E000,32K: Disabled
Memory Test Tick Sound     : Enabled    Adaptor ROM Shadow E800,32K: Disabled
Hit <DEL> Message Display  : Enabled    System  ROM Shadow F000,64K: Enabled
Hard Disk Type 47 RAM Area : 0:300      Two Way or Direct Map      : Two Way
Wait For <F1> If Any Error : Enabled    Cas Read Wait State        : 4 W/S
System Boot Up Num Lock    : On         Cas Write Wait State       : 2 W/S
Numeric Processor Test     : Enabled    AT Bus Clk                 : SCLK/5
Weitek Processor           : Absent     Hidden Refresh             : Enabled
Floppy Drive Seek At Boot  : Disabled   Keyboard GA20 Emulation    : Enabled
System Boot Up Sequence    : A:, C:
System Boot Up Speed       : High
External Cache Memory      : Enabled
Internal Cache Memory      : Enabled
Password Checking Option   : Setup
Video   ROM Shadow C000,32K: Enabled

ESC:Exit ↓→↑←,Sel (Ctrl)Pu/Pd:Modify F1:Help F2/F3:Color
F5:Old Values  F6:BIOS Setup Defaults   F7:Power-On Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields 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.

A short description of the screen items follows:

Typematic Rate Programming — Choose Enabled or Disabled. Enable this option to adjust the keystroke repeat rate. Adjust the rate via Typematic Rate Delay and Typematic Rate.

Typematic Rate Delay — Choose the delay between holding down a key and when the character begins repeating.

Typematic Rate — Choose the rate a character keeps repeating.

Above 1 MB Memory Test — Choose Enabled or Disabled. Enable this option to invoke the POST memory routines on the RAM above 1MB. Disable and BIOS only checks the first 1MB of RAM.

Memory Test Tick Sound — Choose Enabled or Disabled. Enable this option to turn on the "ticking" sound during the memory test. Disable to turn off this sound.

Hit <DEL> Message Display — Choose Enabled or Disabled. Disable this option to prevent "Hit <DEL> if you want to run SETUP" message from appearing when system boots-up.

Hard Disk Type 47 Data Area — The choice "0:300" is recommended for most cases. However, if the system is involved with Novell Netware, choose "DOS 1KB" to avoid conflicts with DOS. (Novell uses 0:300 for operation system programming.)

Wait for F1 if any Error Choose Enabled or Disabled. Enable this option to display "Press <F1> to continue" when a POST non-fatal error occurs. Disable to eliminate the need for user response to a non-fatal error message.

System Boot Up Num Lock Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts numeric keypad in arrow key mode at boot-up.

Numeric Processor Test Choose Enabled or Disabled. This option lets you enable the numeric processor test.

Weitek Processor Choose Present or Absent. Marks the Weitek numeric processor as present or absent.

Floppy Drive Seek at Boot Choose Enabled or Disabled. The default is "Disabled" to provide a fast boot and to reduce possible damage to the heads.

System Boot Up Sequence The AMI BIOS first attempts to boot from drive A: and then, if unsuccessful, from hard disk C:. You can reverse this sequence with this option.

System Boot Up Speed Choose High or Low. This option determines the speed at which the system boots up.

External Cache Memory Choose Enabled or Disabled. This option lets you enable or disable the external on-board cache memory.

Internal Cache Memory Choose Enabled or Disabled. Use this option to enable or disable internal cache of the **Cyrix 486 DLC** CPU.

*Note: This option is only active when the **Cyrix** CPU is installed.*

Password Checking Option Choose Setup, or Always. Use this feature to prevent unauthorized system boot-up or unauthorized use of BIOS Setup.

"Always" – Each time the system is booted the password prompt appears.

"Setup"– If a password is set, the password prompt only appears if you attempt to enter the Setup program. If a password is not set, this choice disables the Password Checking Option.

Video or Adaptor ROM Shadow ROM shadow copies BIOS code from slower ROM to faster RAM. BIOS can then execute from RAM. These 32K segments can be shadowed from ROM to RAM. BIOS is shadowed in a 32K segment if it is enabled and it has BIOS present.

System ROM Shadow If enabled and the BIOS is present in this segment, then the system BIOS (64K) is shadowed.

Two Way or Direct Map Choose Two Way or Direct Map. The default is Two Way.

Cas Read Wait State Set according to Table 3-1. (page 3-10)

Cas Write Wait State Set according to Table 3-1. (page 3-10)

AT Bus Clk Set according to Table 3-1. (page 3-10)

Hidden Refresh Choose Enabled or Disabled. The default is Enabled.

Keyboard GA20 Emulation Choose Enabled or Disabled. The default is Enabled.

3. After you have finished with the Advance CMOS Setup program, press the <ESC> key to return to the Main Menu.

Install the required OSC1 and set the following items in the Advanced CMOS Setup screen according to which CPU is installed on the mainboard. See the table below.

Table 3-1. Advanced CMOS Settings

CPU	Required OSC1	CAS Read W/S	CAS Write W/S	AT Bus Clk
386DX-25	50 MHz	2 W/S	1 W/S	SCLK/3
386DX-33 486DLC-33	66.67 MHz	3 W/S	2 W/S	SCLK/4
386DX-40	80.00 MHz	4 W/S*	2 W/S*	SCLK/5*

*** Default setting**

Auto Configuration with BIOS Defaults

This Main Menu item loads the default system values. If the CMOS is corrupted the defaults are loaded 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."

Auto Configuration with Power-On Defaults

This Main Menu item uses the default Power-On values. Use this option as a diagnostic aid if your 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."

Change Password

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

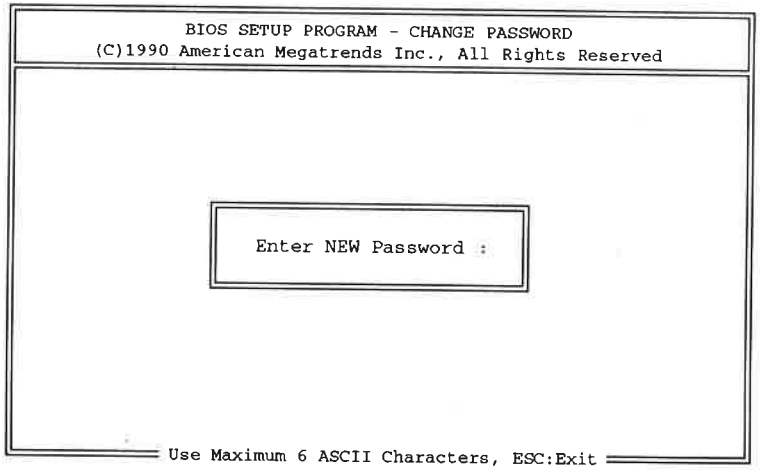
The password cannot be longer than 6 characters.

Change the password as follows:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

   "Enter Current Password:"

2. The first time you run this option, enter a password and press <Enter>. The screen will not show the characters entered.



3. After you correctly enter the current password, the following message appears prompting you for the new password:

   "Enter NEW Password:"

4. Enter the new password and the following appears:

   "Re-Enter NEW Password:"

5. Re-enter the new Password. If the password is miskeyed, the following error message appears:

   "ERROR, Press Any Key..."

   If the password is keyed in correctly the following confirmation message appears:

   "NEW Password Installed"

6. Press <ESC> to exit to the Main Menu.

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

If you are 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>.

Important: Keep a safe record of the new password. **If you forget or lose the password, the only way to access the system is to set jumper JP5 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.**

Appendix A
POST Error Codes

Each time you turn on the system, the POST (Power On Self Test) diagnostic routines check to make sure your system is running properly. While the system boots up, the POST routines communicate errors to you 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 signaled as a series of beeps, since your display may not come on. Non-fatal errors allow boot-up to continue, and error messages appear on the screen.

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 your system does not boot-up and starts beeping, write down the number of beeps you hear 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

Display 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 you 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
CH-2 Timer Error	Consult an authorized repair person
INTR #1 Error	Consult an authorized repair person
INTR #2 Error	Consult an authorized repair person
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

Message	Action
Keyboard Is Locked...Unlock It	Unlock the keyboard lock to continue boot-up
Keyboard Error	Make sure you have the AMI keyboard BIOS installed, or set the Standard CMOS Setup's "Keyboard" option to "Not Installed."
KB/Interface Error	Consult an authorized repair person
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
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
C: Drive Failure	Consult an authorized repair person
D: Drive Failure	Consult an authorized repair person
CMOS Time & Date Not Set	Check Standard CMOS Setup to see if correct date and time are selected
Cache Memory Bad, Do Not Enable Cache!	Consult an authorized repair person
8042 Gate-A20 Error	Replace the 8042 chip
Address Line Short!	Consult an authorized repair person

Message	Action
DMA #2 Error	Consult an authorized repair person
DMA #1 Error	Consult an authorized repair person
DMA Error	Consult an authorized repair person
No ROM BASIC	Consult an authorized repair person
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.