

**33/40 MHz Zero-Wait 80386
Turbo Main Board**

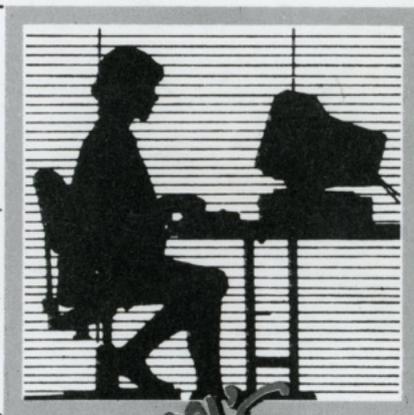
MB

-1333AEG-K

-1340AEG-K

-1333AEQ-K

-1340AEQ-K



*Users
Manual*

**Thanks for your
smart choice of our product
From now on you will enjoy the
highest quality
&
best after sale service**

(Date : 5/13/1993)

Trademarks

IBM, IBM PC, IBM PC/XT, IBM/AT, and PC-DOS are registered trademarks of International Business Machines Corp.

80286, 386,387 and Intel are registered trademarks of Intel Corp.

MS-DOS is a registered trademark of Microsoft Corp.

AMI is a registered trademark of American Megatrends Inc.

AMD is a registered trademark of Advanced Micro Devices Inc.

Other names are trademarks of their respective owner.

This information in this document is subject to change without notice.

Table of Contents

| | |
|---|----|
| Chapter 1. Introduction | 1 |
| 1.1 System Overview | 1 |
| 1.2 Features | 1 |
| 1.3 System Performance | 2 |
| Chapter 2. Mainboard Installation | 3 |
| 2.1 Layout of Mainboard..... | 3 |
| 2.2 Jumper Settings | 4 |
| 2.3 Connectors | 6 |
| 2.4 DRAM Installation | 7 |
| 2.5 Cache RAM Combination..... | 7 |
| Chapter 3. BIOS | 8 |
| 3.1 Standard CMOS Setup..... | 11 |
| 3.2 Advanced CMOS Setup | 14 |
| 3.3 Advanced Chipset Setup..... | 15 |
| 3.4 Auto Configuration with BIOS Defaults | 16 |
| 3.5 Auto Configuration with Power On Defaults | 17 |
| 3.6 Change Password..... | 18 |
| 3.7 Hard Disk Utility | 21 |
| 3.8 Write to CMOS and Exit | 22 |
| 3.9 Do not Write to CMOS and Exit..... | 23 |

Chapter 1. Introduction

1.1 SYSTEM OVERVIEW

The system use a highly integrated PC/AT chipset, for the high end 386-based AT systems. It includes System Controller (SYSC), Data Buffer Controller (DBC). It is designed for system running in 33/40MHz. It is ideal for multi-tasking and multi-user operations and fully supports MS/DOS, UNIX/ZENIX, Novell, OS/2. The ideal choice for your computing needs.

1.2 FEATURES

- Support 386DX speeds up to 33/40MHz
- Support Cyrix 486DLC cpu (for MB-1333/40AEG-K) and Cyrix 87DLC
- Provide MB-1333/40AEG-K a 132-lead Ceramic Pin Grid Array (PGA) package
- Provide MB-1333/40AEQ-K a small footprint 132-pin Plastic Quad Flat Pack (PQFP) package
- Use 82C3480 chip plus 82C3490
- AMI legal BIOS
- Intel 80387 supported
- Turbo/Slow speed selectable via Software/Hardware
- Support 256K/1M/4M SIMM Module
- DRAM Type: page mode, 80ns required

- Support DRAM memory up to 32MB on board
- A memory controller that provides shadow RAM and supports 8 bit BIOS ROM
- Direct Mapped Cache with size of 64KB/128KB/256KB
- Chip 82C3480 A0 support cache with size of 64KB/256KB
- 8042 Emulation for Fast CPU Reset and Gate A20 generation
- Provide six 16-bit slots and one 8-bit slot
- Dimension: 8.6" x 8.6"(W x L)
- Offers the highest performance for MS/DOS, OS/2, Windows, Novell, UNIX/ZENIX system, etc.

1.3 SYSTEM PERFORMANCE

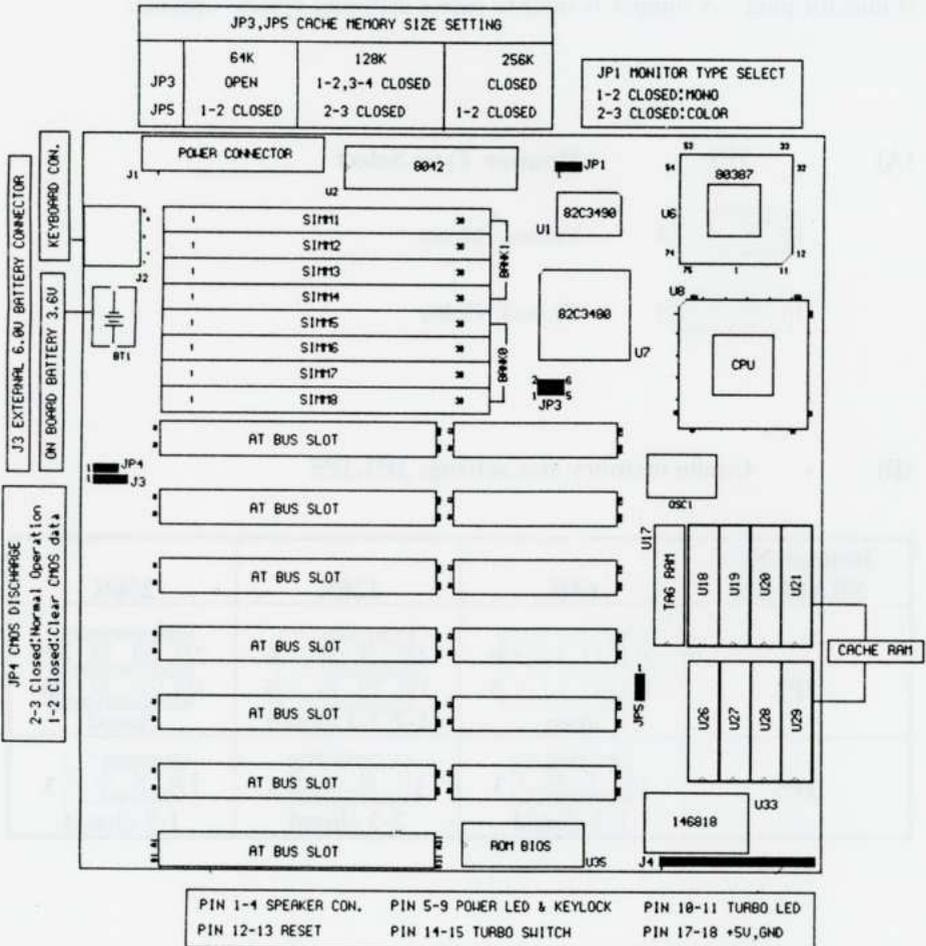
| | | |
|---------------------------|-------|-------|
| Software Under Test | 33MHz | 40MHz |
| Landmark Ver 1.14 | 53.1 | 64.1 |
| Power Meter MIPS Ver 1.5E | 7.481 | 9.128 |

33 MHz : OSC1 66.000 MHz

40 MHz : OSC1 80.000 MHz

Chapter 2. Mainboard Installation

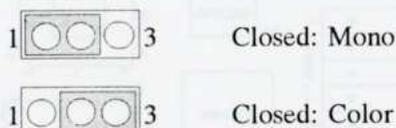
2.1 LAYOUT OF MAINBOARD



2.2 JUMPER SETTINGS

A jumper is two or three pins which may, or may not be covered by a plastic connector plug. A jumper is used to select different system options.

(A) JP1 Monitor Type Select



(B) Cache memory size setting: JP3, JP5

| Jumper No./ SRAM size | 64K | 128K | 256K |
|--------------------------|----------------|--------------------|----------------|
| JP3 | open | 1-2,3-4 closed | closed |
| JP5 | 1-2 closed | 2-3 closed | 1-2 closed |

(C) JP4 CMOS Discharge

Closed: To clear CMOS SETUP memory, if there has been any inappropriate operation incurring the system is failure.

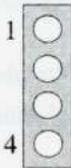


Closed: To maintain setup and extended setup data in CMOS for normal functioning.
(default)

!! NOTE !! After clear CMOS SETUP memory, please adjust pin 2-3 of JP4 to be closed again. Otherwise the system won't be booted up.

2.3 CONNECTORS

(A) J3 External 6.0V Battery Connector



- 1: Battery Positive
- 2: No Connection
- 3: Ground
- 4: Ground

(B)

| J4 | Pin No. | Assignment | Function |
|----|---------|---------------|---------------------|
| | 1 | Speaker | Speaker Connector |
| | 2 | No Connection | |
| | 3 | Ground | |
| | 4 | +5Vdc | |
| | 5 | Power LED(+) | Power LED & Keylock |
| | 6 | No Connection | |
| | 7 | Ground | |
| | 8 | Keylock | |
| | 9 | Ground | Turbo LED |
| | 10 | Turbo LED(-) | |
| | 11 | Turbo LED(+) | Reset |
| | 12 | Reset Control | |
| | 13 | Ground | Turbo switch |
| | 14 | Turbo Control | |
| | 15 | Ground | |
| | 16 | No Connection | |
| | 17 | +5Vdc | +5V, Gnd |
| | 18 | Ground | |

2.4 DRAM INSTALLATION

DRAM Access Time: 80ns, page mode.

DRAM Type: 256KB/1MB/4MB SIMM module.

| Memory Size | Bank 0 (SIMM5-SIMM8) | Bank 1 (SIMM1-SIMM4) |
|-------------|-------------------------|-------------------------|
| 1M | 256K module x 4pcs | ----- |
| 2M | 256K module x 4pcs | 256K module x 4pcs |
| 4M | 1M module x 4pcs | ----- |
| 5M | 256K module x 4pcs | 1M module x 4pcs |
| 8M | 1M module x 4pcs | 1M module x 4pcs |
| 16M | 4M module x 4pcs | ----- |
| 20M | 1M module x 4pcs | 4M module x 4pcs |
| 20M | 4M module x 4pcs | 1M module x 4pcs |
| 32M | 4M module x 4pcs | 4M module x 4pcs |

2.5 CACHE RAM COMBINATION

| SRAM Size/ Locate | Even Bank Cache RAM | Odd Bank Cache RAM | TAG RAM | Cacheable Main Memory (MB) |
|----------------------|------------------------|-----------------------|----------------|-------------------------------------|
| | U18,U19 U20,U21 | U26,U27 U28,U29 | U17 | |
| 64K | 8K x 8 x 4pcs | 8K x 8 x 4pcs | 8K x 8 x 1pcs | 8 |
| 128K | 32K x 8 x 4pcs | ----- | 8K x 8 x 1pcs | 16 |
| 256K | 32K x 8 x 4pcs | 32K x 8 x 4pcs | 32K x 8 x 1pcs | 32 |

Chapter 3. BIOS

Running AMI BIOS:

When the system is powered on, the BIOS will enter the Power-On-Self-Test (POST) routine.

The AMI BIOS performs the various diagnostic checks at the time the system is powered on; if an error is encountered, the error will be reported in one of two different ways. If the error occurs before the display device is initialized, a series of beeps will be transmitted.

If the error occurs after the display device is initialized, the screen will display the error message. In the case of a non-fatal error, a prompt to press the <F1> key may also appear on the screen.

Errors occurring due to any alteration in the system are normally registered as non-fatal errors.

!!! WARNING !!! Please boot up the system periodically , in order to keep CMOS SETUP data correct. Otherwise rechargeable battery power is not enough , and CMOS SETUP may lose data.

In the case of a fatal error, certain reference numbers will follow the error message. Copy these down before consulting your manufacturer as this will facilitate the repair of any fault. In the case of a non-fatal error, press <F1> to continue the boot procedure.

After the POST routines are completed, the following message appears:

"Hit if you want to run SETUP"

To access the AMI BIOS SETUP program, press the <F1> key. The screen in Figure 3.01 will appear.

These are the generic menu options of the BIOS SETUP Program.

■ Figure 3.01 BIOS Setup Menu

| |
|---|
| BIOS SETUP PROGRAM- AMI BIOS SETUP UTILITIES (C) 1990 American Megatrends Inc., All Rights Reserved |
| 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 |
| Standard CMOS Setup for changing Time, Date Hard Disk type, etc. ESC : Exit, ↑ ↓ ← → :Sel, F2/F3: Color, F10 : Save & Exit |

Below is a brief explanation of the high lighted functions:

1. STANDARD CMOS SETUP :

Standard CMOS Setup for Changing Time, Date, Hard Disk Type, etc.

2. AUTO CONFIGURATION WITH BIOS DEFAULTS:

Load BIOS Setup Default Values for Advanced CMOS and Advanced Chipset Setup

3. WRITE TO CMOS AND EXIT :

Writes the settings to the CMOS and Exit.

!!! WARNING !!! *Apart from "STANDARD CMOS SETUP", "AUTO CONFIGURATION WITH BIOS DEFAULTS", "WRITE TO CMOS AND EXIT", other functions are available in this system we don't recommend that you operate these other functions without first consulting your retailer.*

3.1 STANDARD CMOS SETUP

Standard CMOS Setup is the first option on the main SETUP menu. Press <ENTER> at the highlighted selection to access this option. The screen in Figure 3.02 will appear.

■ Figure 3.02 Standard CMOS Setup Screen

| BIOS SETUP PROGRAM - STANDARD CMOS SETUP | | | | | | |
|---|------------------|---------------|------|-------|-------|-----------|
| (C) Copyright 1990. American Megatrends Inc. All Rights Reserve | | | | | | |
| Date(mn/date/year): | Thu, Jan 31 1991 | Base memory : | 640K | | | |
| Time(hour/min/sec): | 15 : 23 : 15 | Ext. memory : | 0KB | | | |
| Daylight saving | : Disabled | Cyln | Head | WPcom | LZone | Sect Size |
| Hard disk C: type : | 47 User Type | 1314 | 7 | 1314 | 1314 | 17 76MB |
| Hard disk D: type : | Not Installed | | | | | |
| Floppy drive A: | : 1.2MB , 5 1/4" | | | | | |
| Floppy drive B: | : Not Install | | | | | |
| Primary display | : Not Install | | | | | |
| Keyboard | : Not Install | | | | | |

| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
|-----|-----|-----|-----|-----|-----|-----|
| 28 | 29 | 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 | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |

| | |
|---------|-----------------------|
| Month : | Jan, Feb, Dec |
| Date : | 01, 02, 03, . . . 31 |
| Year : | 1901, 1902, . . . 209 |

| | | | | | |
|----------|---|---|---|---|----------------------------------|
| ESC:EXIT | ↓ | → | ↑ | ← | :Select F2/F3:Color PU/PD:Modify |
|----------|---|---|---|---|----------------------------------|

The Standard CMOS Setup utility is used to configure the following features:

- ❑ **Date: Month, Date, and Year.** Ranges for each value are listed below in prompt box in the lower left corner of the CMOS SETUP Screen (Figure 3.02).
- ❑ **Time: Hour, Minute, and Second.** Uses 24 hour clock format, i.e., for PM numbers, add 12 to the hour. You would enter 4:30 P.M. as 16:30:00.
- ❑ **Daylight Savings:** Disabled or Enabled.
- ❑ **Hard Disk C and Hard Disk D:** Hard disk types from 1 to 46 are standard ones; type 47 is user definable. The user must enter the hard disk parameters for each drive.

!! NOTE !! *The user definition entry allows you to perform a test on a disk drive not defined in ROM. The user definition entry is valid only during the period that the test is performed.*

The drive types are identified by the following characteristics:

- ❑ **Type** This is the numerical designation for a drive with certain identification parameters.
- ❑ **Cyl.** This is the number of cylinders found in the specified drive type .
- ❑ **Heads** This is the number of heads found in the specified drive type.

- **WPcom** WPcom is the read delay circuitry which takes into account the timing differences between the inner and outer edges of the surface of the disk platter. The number designates the starting cylinder of the signal.
- **L-zone** L-zone is the landing zone of the heads. This number determines the cylinder location where the heads will normally park when the system is shut down.
- **Capacity** This is the formatted capacity of the drive based on the following formula:

$$(\text{\#of heads}) \times (\text{\#of cylinders}) \times (17 \text{ secs/cyl.}) \times (512 \text{ bytes/sec})$$

- **Not installed** is available for use as an option. This option can be used for diskless workstations and SCSI hard disks.
- **Type 47** may be used for both hard disks C and D. The parameters for type 47 under Hard Disk C and Hard Disk D may be different, which effectively allows 2 different user definable hard disk types.
- **Floppy Drive A and Floppy Drive B:** The options are 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", 1.44MB 3 1/2", and "Not installed". Not installed can be used as an option for diskless workstations.
- **Primary Display:** Options are "Monochrome", "Color 40x25", "VGA/PGA/EGA", "Color 80x25", and "Not installed". The "Not Installed" option can be used for network file servers.
- **Keyboard:** Options are "Installed" or "Not installed".

3.2 ADVANCED CMOS SETUP

!!! WARNING !!! The values listed below are standard values for the system. Any alteration to these values might cause system failure. All enquiries should be directed to your retailer.

!! NOTE !! The information about BIOS defaults on manual is just for reference, for update information, please refer to the BIOS installed on board.

■ Figure 3.03 Advanced CMOS Setup Screen

| BIOS SETUP PROGRAM - ADVANCED CMOS SETUP | | | |
|---|------------|-----------------------------|------------|
| (C) 1990 American Megatrends Inc., All Rights Reserved | | | |
| Typematic Rate Programming | : Disabled | Fast Gate A20 Option | : Disabled |
| Typematic Rate Delay (msec) | : 500 | Password Checking Option | : Setup |
| Typematic Rate (Chars/Sec) | : 15 | Video ROM Shadow C000,32K | : Enabled |
| Above 1 MB Memory Test | : Enabled | Adaptor ROM Shadow C800,32K | : Disabled |
| Memory Test Tick Sound | : Enabled | Adaptor ROM Shadow D000,32K | : Disabled |
| Hit Message Display | : Enabled | Adaptor ROM Shadow D800,32K | : Disabled |
| Hard Disk Type 47 RAM Area | : 0:300 | Adaptor ROM Shadow E000,32K | : Disabled |
| Wait For <F1> If Any Error | : Enabled | Adaptor ROM Shadow E800,32K | : Disabled |
| System boot Up Num Lock | : On | | |
| Numeric Processor Test | : Enabled | | |
| Weitek Processor | : Absent | | |
| Floppy Drive Seek At Boot | : Enabled | | |
| System Boot Up Sequence | : A: , C: | | |
| System Boot Up CPU Speed | : High | | |
| External Cache Memory | : Enabled | | |
| Internal Cache Memory | : Disabled | | |
| ESC: Exit ↓ ↑ ← → :Sel, (Ctrl)Pu/Pd: Modify, F1: Help, F2/F3: Color | | | |
| F5: Old Values, F6: BIOS Setup Defaults, F7: Power-on Defaults | | | |

3.3 ADVANCED CHIPSET SETUP

!!! WARNING !!! The values listed below are standard values for the system. Any alteration to these values might cause system failure. All enquiries should be directed to your retailer.

■ Figure 3.04 Advanced Chipset Setup Screen

| BIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP | |
|---|------------|
| (C) 1990 American Megatrends Inc., All Rights Reserved | |
| AUTO Config Function | : Enabled |
| 16 bit ISA Command Wait | : 1 WS |
| ISA CLK Speed | : 7.15MHZ |
| Slow refresh option | : 15us |
| System cacheable | : Disabled |
| Video cacheable | : Disabled |
| CWE wait time | : 1/2 CLK |
| CAS delay cycle | : Normal |
| RAS insert time | : Normal |
| ESC: Exit — — :Sel, (Ctrl)Pu/Pd: Modify, F1: Help, F2/F3: Color F5: Old Values, F6: BIOS Setup Defaults, F7: Power-on Defaults | |

3.4 AUTO CONFIGURATION WITH BIOS DEFAULTS

The BIOS Default Auto Configuration feature uses the default system values before the user has changed any CMOS values. If the CMOS is corrupted, the BIOS defaults will automatically be loaded.

■ Figure 3.05 BIOS Default Auto Configuration Screen

| |
|---|
| BIOS SETUP PROGRAM - AMI BIOS SETUP UTILITIES (C) 1990 American Megatrends Inc., All Rights Reserved |
| STANDARD CMOS SETUP ADVANCED CMOS SETUP ADVANCED CHIPSET SETUP AUTO CONFIGURATION WITH BIOS DEFAULTS |
| Load BIOS Default Value from ROM table (Y/N) ? N |
| Configure System with BIOS Setup Default Values for Chipset and Advanced CMOS Setup ESC: Exit, ↑ ↓ ← → :Sel, F2/F3:Color, F10:Save & Exit |

If you wish to use the BIOS defaults, change the prompt to <Y> and press <ENTER>. The following message will appear on the screen:

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

3.5 AUTO CONFIGURATION WITH POWER ON DEFAULTS

This feature uses the default Power On values. You may wish to use this option as a diagnostic aid if your system is behaving erratically.

■ Figure 3.06 Power On Default Auto Configuration Screen

| |
|--|
| BIOS SETUP PROGRAM -AMI BIOS SETUP UTILITIES (C) 1990 American Megatrends Inc., All Rights Reserved |
| STANDARD CMOS SETUP ADVANCED CMOS SETUP ADVANCED CHIPSET SETUP AUTO CONFIGURATION WITH BIOS DEFAULTS |
| Load BIOS Default value from ROM table (Y/N)?N |
| Configure System with BIOS Setup Default Values for Chipset and Advanced CMOS Setup ESC : Exit, ↑ ↓ ← → :Sel, F2/F3 : Color, F10 : Save & Exit |

If you wish to use the Power On defaults, change the prompt to <Y> and press <ENTER> . The following message will appear on the screen:

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

3.6 CHANGE PASSWORD

The BIOS SETUP program has a new optional password feature. Depending on the particular hardware manufacturer or system integrator, the system may be configured so that the user is required to enter a password every time the system boots, or whenever an attempt is made to enter the SETUP programs. The password function may also be disabled, which means that the prompt will not appear under any circumstances.

This section of the manual deals with changing the user password. The password check function is enabled or disabled in "Advanced CMOS Setup". The password check function is enabled by choosing either "Always" or "Setup".

The password, which will be stored in the CMOS, cannot exceed 6 characters in length. A default password, to be used if the CMOS is corrupted, is stored in the ROM. The default password is AMI. Check your system documentation in the event the default password has been changed by the manufacturer.

To change the user password, select the Change Password option from the main setup screen, by using the arrow keys to move the cursor to this selection and pressing <ENTER>. The screen in Figure 3.07 will appear.

■ Figure 3.07 Password Opening Screen

| |
|---|
| BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C)Copyright 1990. American Megarends Inc.,.All Rights... |
| Enter CURRENT Password: <input type="text"/> |
| Use Maximum 6 ASCII Character |

The first time you select this option, enter the default password AMI, or the default password specified in your system documentation, then press <ENTER> to complete your selection.

The screen will not display the characters entered. After the current password has been correctly entered, the screen in Figure 3.08 will appear, prompting you for the new password.

■ Figure 3.08 New Password Screen

| |
|---|
| BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C)Copyright 1990. American Megatrends Inc.,.All Rights.. |
| <input type="text"/> |
| Use Maximum 6 ASCII Character |

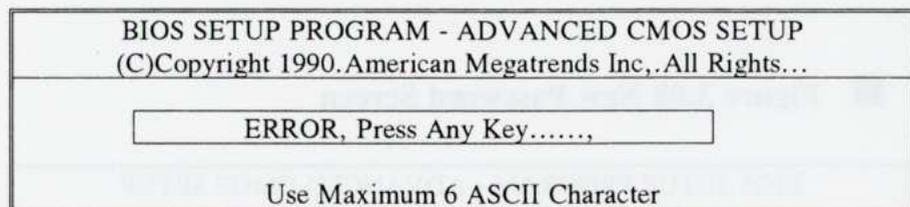
After the new password is entered, the prompt in Figure 3.09 will appear. Rekey the new password and press <ENTER> .

■ Figure 3.09 Password Confirmation Screen

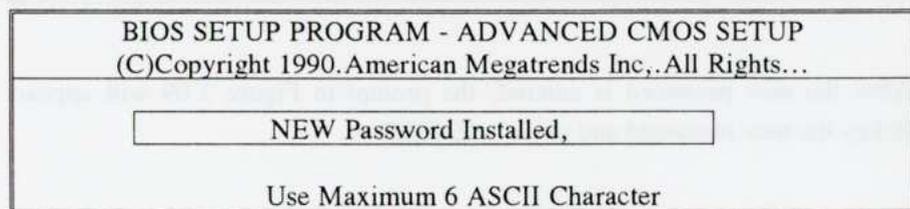
| |
|--|
| BIOS SETUP PROGRAM - ADVANCED CMOS SETUP (C)Copyright 1990. American Megatrends Inc.,.All Rights... |
| <input type="text"/> |
| Use Maximum 6 ASCII Character |

If the password confirmation is miskeyed, the error screen in Figure 3.10 will appear. If the new password confirmation is entered without error, the screen in Figure 3.11 will appear. Press <ESC > to return to the main Setup menu.

■ **Figure 3.10 Password Error Screen**



■ **Figure 3.11 Password Installation Confirmation Screen**



Once Setup is completed and the changed values have been stored in the CMOS, when the system next boots, the user will be prompted for the password if the password function is present and has been enabled.

When and if the prompt appears is dependent upon the options chosen in Advanced CMOS Setup.

If the "Always" option was chosen in Advanced CMOS Setup, the prompt will appear each time the system is powered on.

If the "Setup" option was chosen in Advanced CMOS Setup, the prompt will not appear when the system is powered on, but will appear each time an attempt is made to enter the SETUP program.

If the "Disabled" option was chosen in Advanced CMOS Setup, the password prompt will never appear.

When the password prompt appears, the new password, which is now stored in the CMOS, should be entered and the <ENTER> key pressed. If the CMOS is corrupted, e.g., the batteries fall out or are loosened, the default ROM password mentioned above should be used instead.

!! NOTE !! *When the password is changed, however, it is important that a record of the change be kept in a safe place. In the event the password check has been enabled in Setup and the user forgets or loses the new password, the default password stored in the ROM cannot be used unless the CMOS is disabled. A relatively safe way to do this would be to disconnect the CMOS batteries, though for absolute assurance please first contact your retailer.*

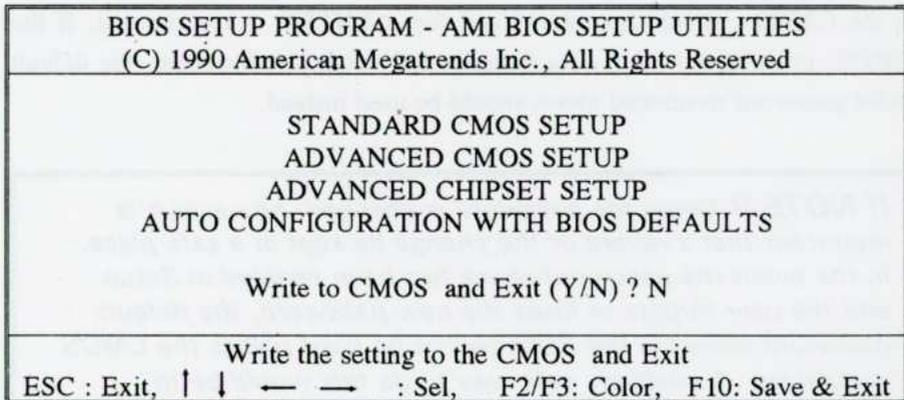
3.7 HARD DISK UTILITY

Formating the Hard Disk, Auto Interleave Detection and Media Analysis.

3.8 WRITE TO CMOS AND EXIT

The features selected and configured in the Standard Setup, Advanced CMOS Setup, Advanced Chipset Setup, and the New Password Setup will be stored in the CMOS when this option is taken. The CMOS checksum is calculated and written to the CMOS. Control is then passed back to BIOS.

■ **Figure 3.12 Write to CMOS Exit Screen**



Pressing <N> (No) and <ENTER> will return you to the Main Menu.

Pressing <Y> (Yes) and <ENTER> will save the system parameters and continue with the booting process.

3.9 DO NOT WRITE TO CMOS AND EXIT

This option passes control back to BIOS without writing any changes to the CMOS.

■ Figure 3.13 CMOS Exit Screen

| |
|---|
| BIOS SETP PROGRAM - AMI BIOS SETUP UTILITIES (C) 1990 American Megatrends Inc., All Rights Reserved |
| STANDARD CMOS SETUP ADVANCED CMOS SETUP ADVANCED CHIPSET SETUP AUTO CONFIGURATION WITH BIOS DEFAULTS |
| Want to Quit Without Saving (Y/N) ? N |
| Do not Write the setting to the CMOS and Exit ESC:Exit, ↑ ↓ ← → :Sel, F2/F3:Color, F10: Save & Exit |

Pressing <N> (No) and <ENTER> will return the user to the main menu.

Pressing <Y> (Yes) and <ENTER> will continue with the booting process without saving any system parameters.

