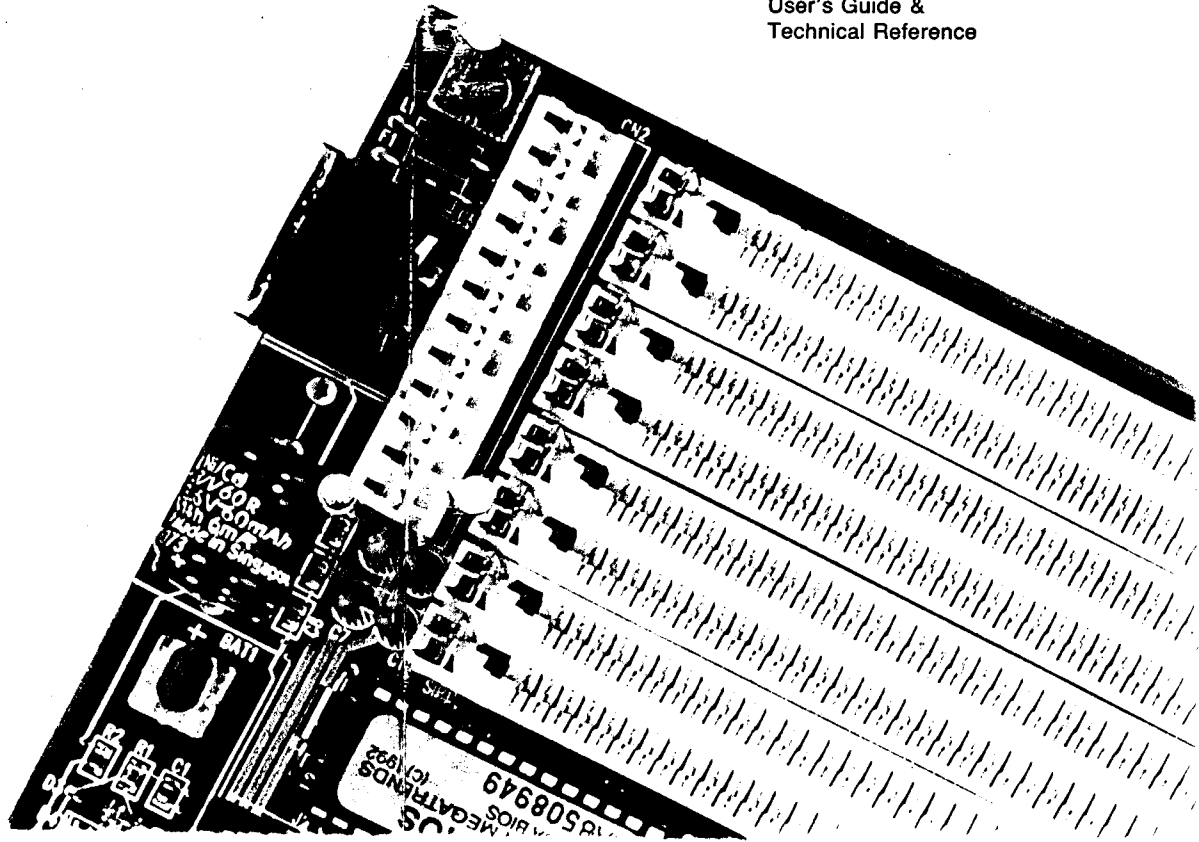# 80486

486VESA Green Mainboard
User's Guide &
Technical Reference

Printed in Taiwan R.O.C.

SOYO™

About This Guide

This User's Guide is for assisting 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 in this document is subject to change without notice.

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Edition: August 1995

Version 3.0

25Q/R/T SERIAL

100% POST-CONSUMER RECYCLED PAPER

Table of Contents

1 Introduction

The 486 VESA mainboard is a high-performance system board that supports Intel 486DX2/DX/SX/SL Enhanced 486, P24T, P24D, Cyrix, and UMC CPUs. The mainboard is fully compatible with industry standards, while incorporating many technical enhancements.

The 486 VESA mainboard offers superior system performance, compatibility, and reliability, and is the ideal choice for a wide variety of system applications.

Key Features

- Fully AT compatible. Supports Intel 486DX2/DX/SX/SL Enhanced 486, P24T, P24D, Cyrix M7 CPUs, AMD CPUs, and UMC CPUs.
- Supports Power Management Mode
  - Supports the SMM and the SMI
  - CPU Stop Clock Function
  - Four Power Saving States (on / doze / standby / inactive)
  - Supports the APM control
  - Supports Suspend Switch control
  - Power Saving also on non-SMI CPU
  - More System Event Monitoring and the Power Saving Control
- Direct map cache controller that supports 256K cache size
- Fast page burst mode DRAM controller
- Memory configurations from 1MB to 64MB using combinations of 80ns 256K, 512K, 1M, 2M, 4M, 8M and 16M SIMM modules.
- Shadow RAM in Increments of 32KB
- Supports LBA mode hard disks
- Hardware turbo switch
- Seven 16-bit ISA slots, three master VESA slots
- Built-in 8042 keyboard controller
- Support for both 5V and 3.45V / 3.6V / 4.0V CPUs.

Unpacking the Mainboard

The mainboard package contains:

- The 486 VESA 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.

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. To ground yourself, grasp 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.

SY-25 Q/R serial
Mainboard Layout w/ default settings*

*Default settings are for an Intel DX2-66 SL Enhanced CPU, 256K cache

Figure 1-1. Mainboard Layout

Note: If you use a CPU not listed in this manual, please contact your dealer to determine the correct CPU setting.
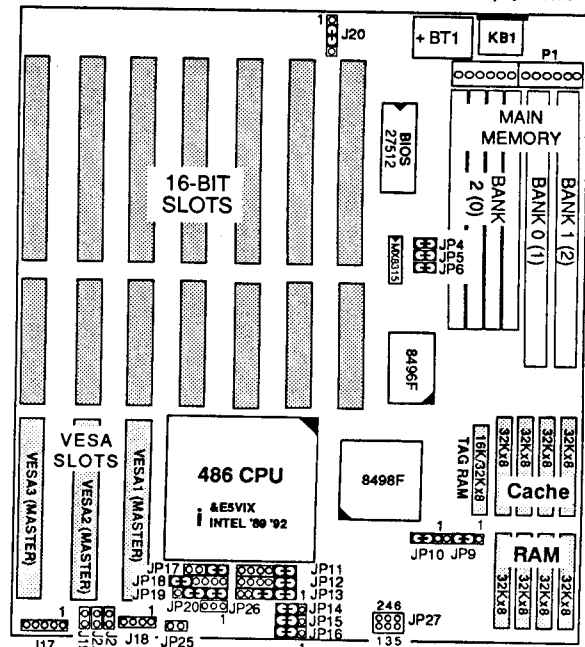
SY-25 T serial
Mainboard Layout w/ default settings*

*Default settings are for an Intel DX2-66 SL Enhanced CPU, 256K cache
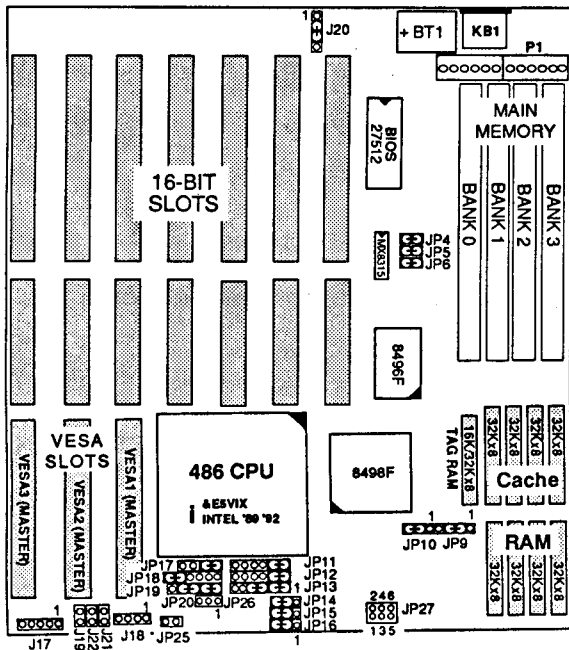
Figure 1-2. Mainboard Layout

Note: If you use a CPU not listed in this manual, please contact your dealer to determine the correct CPU setting.

2 Hardware Setup

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

CAUTION: Turn off power to the mainboard, system chassis, and peripheral devices before performing any work on the mainboard or system.

J20: CMOS Reset Jumper

J20 lets you discharge CMOS memory in the event you forget your password or encounter a BIOS Setup problem. Before you install the mainboard make sure that J20 is set to retain CMOS memory.

CMOS Setting	J20
Retain CMOS Data (Default)	
Discharge CMOS	
External Battery (pins 1 and 4)	

JP20, JP24: Reserved

JP25: Suspend Switch Connector

Attach the suspend switch to connector JP25. The connector is open for normal operation, closed for Green operation (power saving).

CPU Type Configuration

Configure the 486 VESA mainboard's CPU by inserting the specified CPU and setting jumpers as described in the diagrams that follow. Note that the CPU Type jumpers on the mainboard have **yellow** caps and the Clock Setting jumpers have **red** caps.

Intel/AMD CPU Jumper Settings

Intel
486SX-25/33 Settings
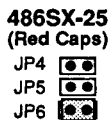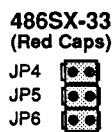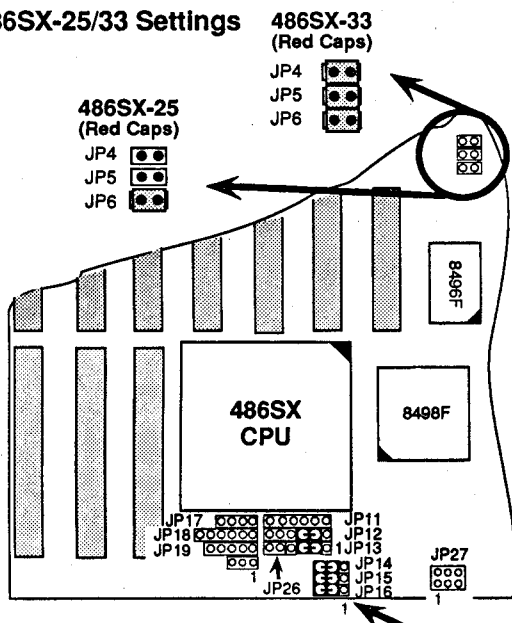
Intel/AMD
486DX- 25/33/40*/50* & DX2-50*/66*/80* Settings
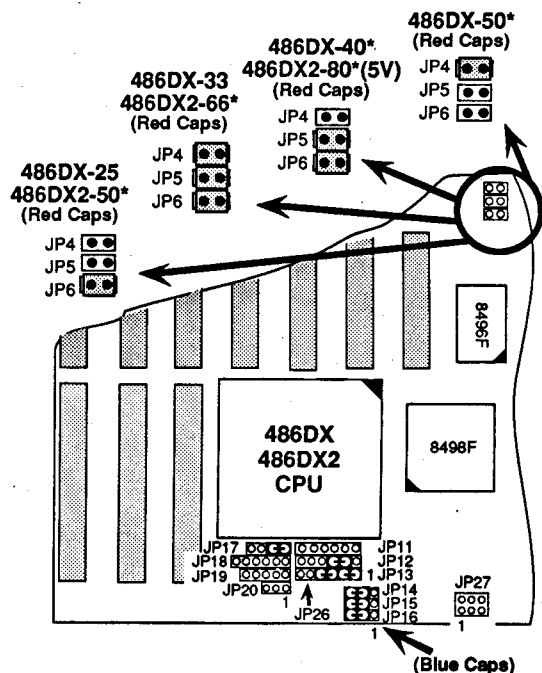
Figure 2-2. 486DX-25/33/40/50, 486DX2-50/66 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

Intel
486DX-25/33SL, DX2-50*/66* SL Settings
DX4-75/100 ODP (5V) (Green CPU)

486DX-33, 486DX2-66*
486DX4-100 ODP
(Red Caps)

486DX4-75 ODP,
486DX-25, 486DX2-50*
(Red Caps)
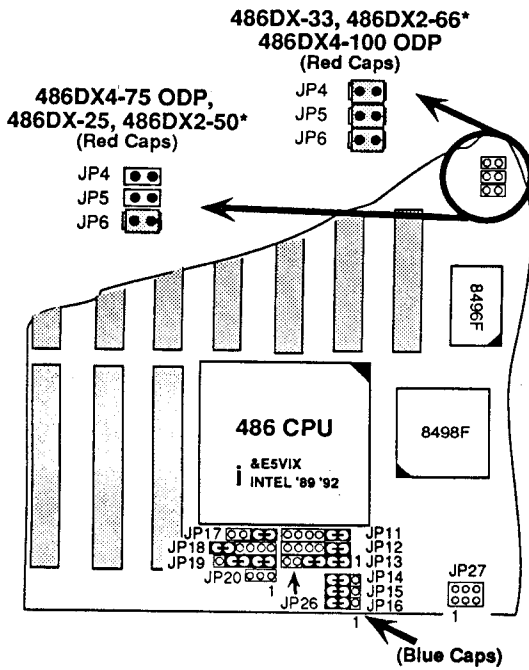
Figure 2-3. Intel 486DX-25/33, DX2-50/66 SL Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

Intel
P24T-66*/80* (Green CPU) Settings
(Pentium Overdrive, 238-pin, internal 2.5x clock, 8K WB cache)

P24T-80*
(Red Caps)
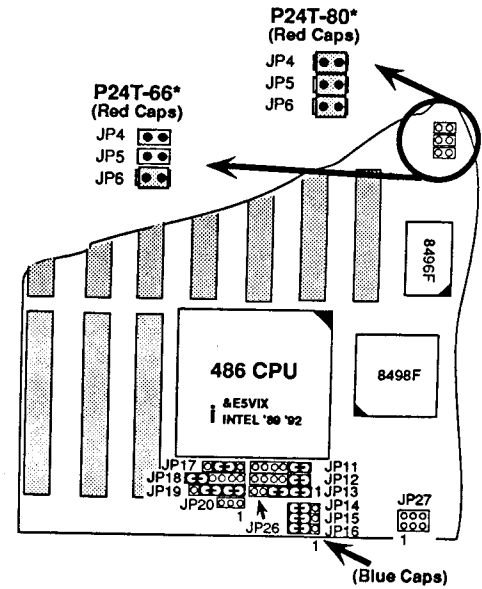
P24T-66*
(Red Caps)

Figure 2-4. Intel P24T-66/80 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

Intel
486DX4-75*/100* SL (3.45V) Settings
(Green CPU)

486DX4-100*
(Red Caps)

486DX4-75*
(Red Caps)
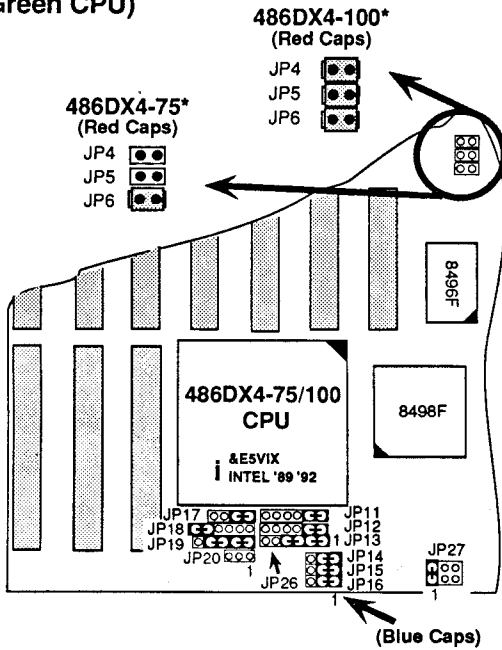
Figure 2-5. Intel DX4-75/100 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

WARNING: The Intel DX4-75/100 CPU is a 3.45 volt CPU. You must make sure jumpers JP14-JP16 are set correctly to avoid damaging the CPU.

Intel
P24D-50*/66* (Green CPU) Settings
(Internal 8K WB Cache)

P24D-66*
(Red Caps)

P24D-50*
(Red Caps)

Figure 2-6. Intel P24D-50/66 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

AMD
486DXL-33/40*, 486DXL2-50*/66*/80* (5V) Settings
(Green CPU)
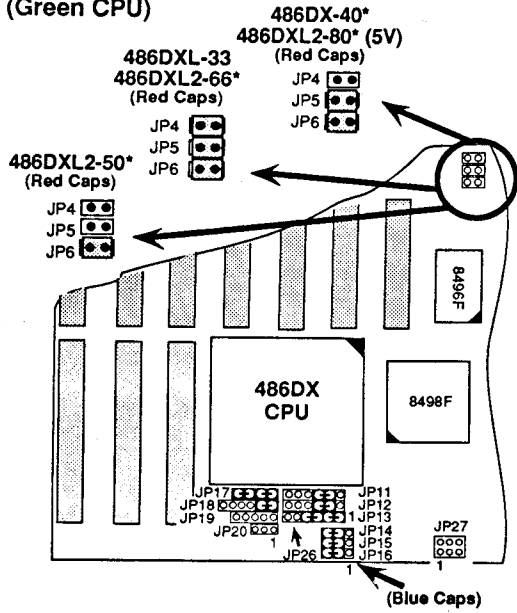
Figure 2–7. AMD 486DXL / DXL2 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

AMD
486DX2- 80* (3.45V),
486DX4- 100* (3.45V) Settings
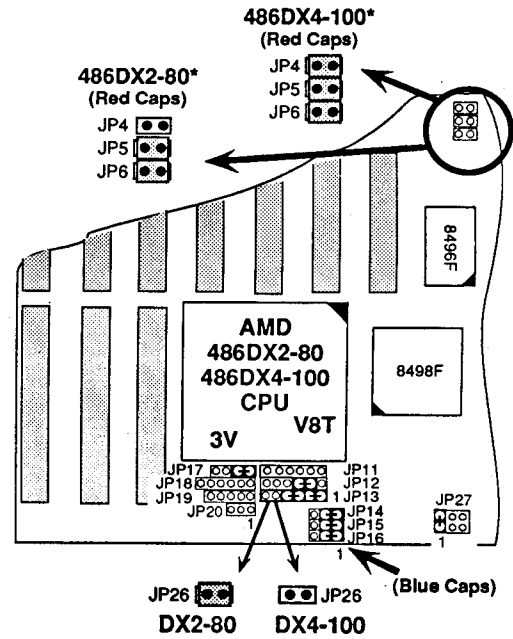
Figure 2–8. AMD 486DX2-80, DX4-100 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

WARNING: The AMD DX2-80 and DX4-100 are 3.45 volt CPUs. You must make sure jumpers JP14–JP16 are set correctly to avoid damaging the CPU.

Cyrix CPU Jumper Settings

Cyrix
486DX- 33/40*/50* & DX2-50*/66* (5V) Settings
486DX2-V66 (3.6V)
486DX2-80 (4V)
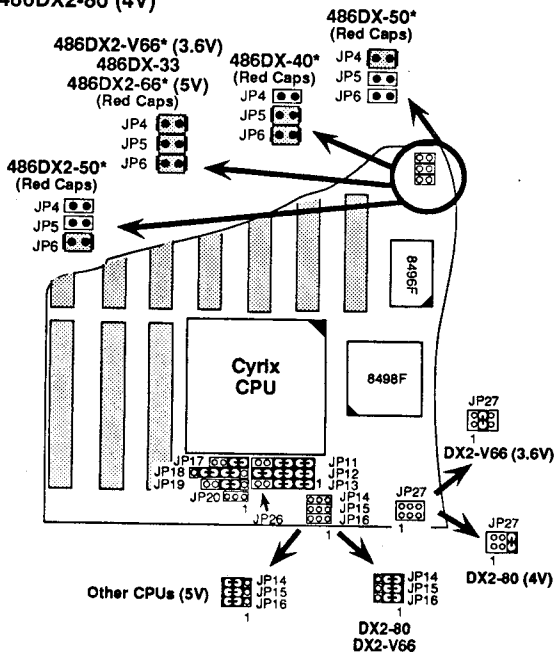
Figure 2–9. Cyrix 486DX/DX2 Jumper Settings

* For these CPUs a cooling fan is necessary for system stability.

WARNING: The Cyrix DX2-V66 CPU is a 3.6 volt CPU, and the Cyrix DX2-80 is a 4 volt CPU. You must make sure jumpers JP14–JP16 are set correctly to avoid damaging the CPU.

UMC CPU Jumper Settings

UMC
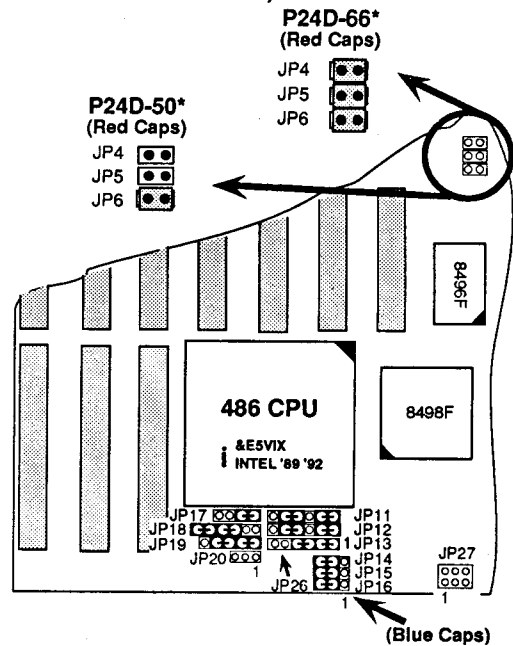## U5S-25/33/40 Settings
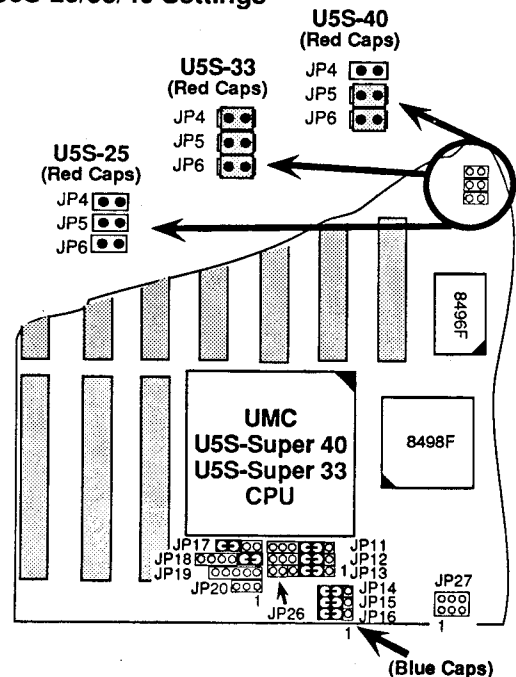
Figure 2–10. UMC 486SX Jumper Settings

Cache Configuration

The 486 VESA mainboard has a write-back caching scheme. You can configure the mainboard's external cache for 256KB by setting jumper switches and installing cache chips. Refer to the following pages for jumper switch settings and cache socket locations.

Cache Jumper Settings

You must set jumpers JP9 and JP10 to configure cache size. See the illustrations below. Note that the cache jumpers on the mainboard have **white** jumper caps.

Cache Size and RAM Locations

You can configure 256KB cache size using either 32Kx8 or 64Kx8 cache chips. The table below describes the chip type and socket locations for each configuration.

Cache Size	Cache RAM	Tag RAM	Cacheable Range
256KB	32K x 8 / U10~U13, U17~U20	32K x 8 / U14 or 16K x 8 / U14	32 MB
256KB	64K x 8 / U10~U13	32K x 8 / U14 or 16K x 8 / U14	32 MB

Note: *Tag and Data RAM use 20ns for all conditions.*

256K Cache (2 banks of SRAM) (White Caps) Settings
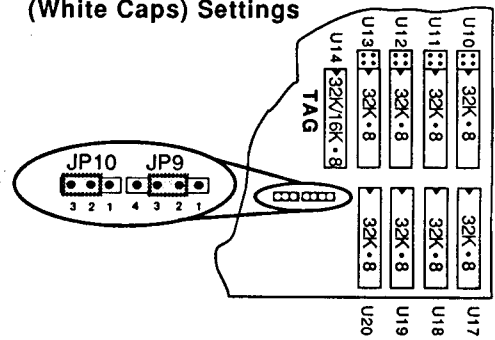
Cache Size	JP9	JP10
256K (2 Banks of SRAM)	2-3	2-3

256K Cache (1 bank of SRAM) (White Caps) Settings
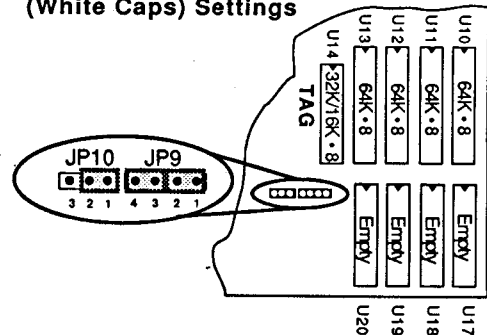
Cache Size	JP9	JP10
256K (1 Bank of SRAM)	1-2, 3-4	1-2

Memory Configuration 1 (SY-25 Q/R serial)
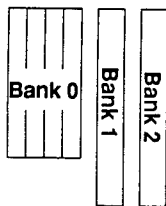
Bank 0: 4 x 30-pin SIMM
Bank 1: 1 x 72-pin SIMM
Bank 2: 1 x 72-pin SIMM

Single-Sided SIMM
1MB = 256K x 36(32)
4MB = 1MB x 36(32)
16MB = 4MB x 36(32)
64MB = 16MB x 36(32)

Double-Sided SIMM
2MB = 512K x 36(32)
8MB = 2MB x 36(32)
32MB = 8MB x 36(32)

You **must** follow the memory combinations table below. Unlisted combinations are **invalid.**

Total	Bank 0	Bank 1	Bank 2
1MB	1MB	—	—
2MB	1MB	1MB	—
4MB	4MB	—	—
5MB	1MB	4MB	—
6MB	1MB	1MB	4MB
8MB	4MB	4MB	—
12MB	4MB	4MB	4MB
16MB	16MB	—	—
17MB	1MB	16MB	—
18MB	1MB	1MB	16MB
20MB	4MB	16MB	—

Total	Bank 0	Bank 1	Bank 2
24MB	4MB	4MB	16MB
32MB	16MB	16MB	—
36MB	4MB	16MB	16MB
48MB	16MB	16MB	16MB
64MB	64MB	—	—

Note: *Supports parity SIMM (X36) and non-parity SIMM (X32).*

Memory Configuration 2 (SY-25 Q/R serial)
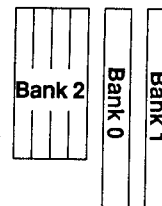
Bank 0: 1 x 72-pin SIMM
Bank 1: 1 x 72-pin SIMM
Bank 2: 4 x 30-pin SIMM

Single-Sided SIMM
1MB = 256K x 36(32)
4MB = 1MB x 36(32)
16MB = 4MB x 36(32)
64MB = 16MB x 36(32)

Double-Sided SIMM
2MB = 512K x 36(32)
8MB = 2MB x 36(32)
32MB = 8MB x 36(32)

You **must** follow the memory combinations table below. Unlisted combinations are **invalid.**

Total	Bank 0	Bank 1	Bank 2
1MB	1MB	—	—
2MB	1MB	1MB	—
2MB	2MB	—	—
4MB	2MB	2MB	—
4MB	4MB	—	—
5MB	1MB	4MB	—
6MB	1MB	1MB	4MB
6MB	2MB	4MB	—
8MB	4MB	4MB	—
8MB	8MB	—	—
12MB	4MB	4MB	4MB
12MB	4MB	8MB	—
16MB	8MB	8MB	—
16MB	16MB	—	—
17MB	1MB	16MB	—
18MB	1MB	1MB	16MB
18MB	2MB	16MB	—

Total	Bank 0	Bank 1	Bank 2
20MB	4MB	16MB	—
24MB	4MB	4MB	16MB
32MB	16MB	16MB	—
32MB	32MB		
36MB	4MB	16MB	16MB
36MB	4MB	32MB	
48MB	16MB	16MB	16MB
48MB	16MB	32MB	
64MB	32MB	32MB	

Note: *Supports parity SIMM (X36) and non-parity SIMM (X32).*

Memory Configuration (SY-25 T serial)

The mainboard supports four banks of 72-pin SIMM (Single In-line Memory Modules). The mainboard requires SIMM of at least 80ns access time.

Single Side SIMM	Doubled Side SIMM
1MB = 256K x 36(32)	2MB = 512K x 36(32)
4MB = 1MB x 36(32)	8MB = 2MB x 36(32)
16MB = 4MB x 36(32)	32MB = 8MB x 36(32)
64MB = 16MB x 36(32)	

Note: *Supports parity SIMM (x36) and non-parity SIMM (x32).*

You must follow the memory combinations table below. Unlisted combinations are invalid.

Total	Bank 0	Bank 1	Bank 2	Bank 3
1MB	1MB	—	—	—
2MB	1MB	1MB	—	—
2MB	2MB	—	—	—
4MB	1MB	1MB	2MB	—
4MB	2MB	2MB	—	—
4MB	4MB	—	—	—
5MB	1MB	4MB	—	—
6MB	1MB	1MB	4MB	—
6MB	2MB	4MB	—	—
8MB	1MB	1MB	2MB	4MB
8MB	2MB	2MB	4MB	—
8MB	4MB	4MB	—	—
8MB	8MB	—	—	—
10MB	1MB	1MB	4MB	4MB
12MB	2MB	2MB	4MB	4MB
12MB	4MB	4MB	4MB	—
12MB	4MB	8MB	—	—
16MB	4MB	4MB	4MB	4MB
16MB	8MB	8MB	—	—
16MB	4MB	4MB	8MB	—
16MB	16MB	—	—	—
17MB	1MB	16MB	—	—
18MB	1MB	1MB	16MB	—

(table cont.)

Total	Bank 0	Bank 1	Bank 2	Bank 3
18MB	2MB	16MB	—	—
20MB	2MB	2MB	16MB	—
20MB	4MB	8MB	8MB	—
20MB	4MB	16MB	—	—
24MB	2MB	2MB	4MB	16MB
24MB	4MB	4MB	16MB	—
24MB	4MB	4MB	8MB	8MB
24MB	8MB	16MB	—	—
24MB	8MB	8MB	8MB	—
28MB	4MB	8MB	8MB	8MB
32MB	8MB	8MB	8MB	8MB
32MB	8MB	8MB	16MB	—
32MB	16MB	16MB	—	—
32MB	32MB	—	—	—
36MB	2MB	2MB	16MB	16MB
36MB	4MB	16MB	16MB	—
36MB	4MB	32MB	—	—
40MB	4MB	4MB	16MB	16MB
40MB	8MB	8MB	8MB	16MB
40MB	4MB	4MB	32MB	—
48MB	16MB	16MB	16MB	—
48MB	8MB	8MB	16MB	16MB
48MB	8MB	8MB	32MB	—
48MB	16MB	32MB	—	—
64MB	16MB	16MB	16MB	16MB
64MB	16MB	16MB	32MB	—
64MB	64MB	—	—	—
64MB	32MB	32MB	—	—
65MB	1MB	64MB	—	—
68MB	4MB	64MB	—	—
68MB	4MB	32MB	32MB	—
72MB	4MB	4MB	64MB	—
72MB	4MB	4MB	32MB	32MB
80MB	16MB	64MB	—	—
80MB	16MB	32MB	32MB	—
80MB	8MB	8MB	32MB	32MB
96MB	16MB	16MB	64MB	—
96MB	16MB	16MB	32MB	32MB
96MB	32MB	32MB	32MB	—
128MB	64MB	64MB	—	—
128MB	32MB	32MB	32MB	32MB

Connectors

Attach the 486 VESA 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. J17 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 J19. Closing the Reset switch restarts the system.

J20 - External Battery Connector

J20 is a 4-pin connector to which you can attach an external battery. Pin 1 of J20 is positive (+) and pin 4 is negative (–). (Refer to Page 4.)

J21 - Turbo Switch Connector

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

J22 - Turbo LED Connector

J22 connects 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 lights.

KB1 - Keyboard Connector

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

P1 - Power Supply Connectors

The mainboard requires a power supply with at least 200 watts and a "power good" signal. P1 has two six-pin male header connectors.
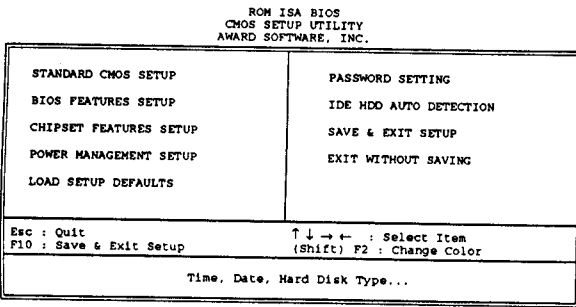
Plug the dual connectors from the power directly onto the board connector while making sure the black leads are in the center.
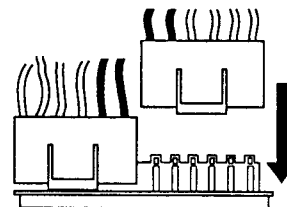
3 BIOS Setup

The mainboard's BIOS setup program is the ROM ISA BIOS from Award Software Inc. Enter the Award BIOS program's Main Menu as follows:

1. Turn on or reboot the system. After a series of diagnostic checks, you are asked to press DEL to enter Setup.

2. Press the <DEL> key to enter the Award BIOS program and the main screen appears:

```
                    ROM ISA BIOS
                 CMOS SETUP UTILITY
                 AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────┐
│  STANDARD CMOS SETUP          PASSWORD SETTING           │
│                                                          │
│  BIOS FEATURES SETUP          IDE HDD AUTO DETECTION     │
│                                                          │
│  CHIPSET FEATURES SETUP       SAVE & EXIT SETUP          │
│                                                          │
│  POWER MANAGEMENT SETUP       EXIT WITHOUT SAVING        │
│                                                          │
│  LOAD SETUP DEFAULTS                                     │
│                                                          │
├─────────────────────────────────────────────────────────┤
│  Esc : Quit                ↑↓→←  : Select Item           │
│  F10 : Save & Exit Setup   (Shift) F2 : Change Color     │
├─────────────────────────────────────────────────────────┤
│            Time, Date, Hard Disk Type...                 │
└─────────────────────────────────────────────────────────┘
```
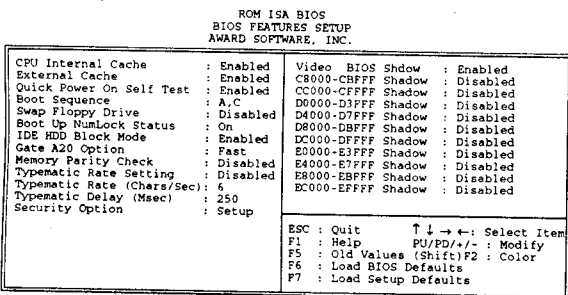
3. Choose an option and press <Enter>. Modify the system parameters to reflect the options installed in the system. (See the following sections.)

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

5. In the Main Menu, choose "SAVE AND EXIT SETUP" to save your changes and reboot the system. Choosing "EXIT WITHOUT SAVING" ignores your changes and exits the program.

The Main Menu options of the Award BIOS are described in the sections that follow.

Standard CMOS Setup

Run the Standard CMOS Setup as follows.

1. Choose "STANDARD CMOS SETUP" from the Main Menu. A screen appears.

```
                    ROM ISA BIOS
                STANDARD CMOS SETUP
                AWARD SOFTWARE, INC.
┌──────────────────────────────────────────────────────────────────┐
│ Date (mm:dd:yy) : Sat, Jan 1 1994                                 │
│ Time (hh:mm:ss) :  7 : 30 : 33                                    │
│                                                                    │
│                      CYLS. HEADS PRECOMP LANDZONE SECTORS MODE     │
│ Drive C : User ( 773Mb)  1572  16   65535   1571    63  NORMAL     │
│ Drive D : None (   0Mb)    0    0     0       0      0   ----       │
│                                                                    │
│ Drive A : 1.44M, 3.5 in.                                          │
│ Drive B : None                  ┌──────────────────────────────┐  │
│                                 │ Base Memory:        640K      │  │
│ Video   : EGA/VGA               │ Extended Memory:  64512K      │  │
│                                 │ Other Memory:       384K      │  │
│ Halt On : All Errors            ├──────────────────────────────┤  │
│                                 │ Total Memory:     16384K      │  │
│                                 └──────────────────────────────┘  │
├──────────────────────────────────────────────────────────────────┤
│ Esc : Quit          ↑↓→←     : Select Item    PU/PD/+/- : Modify   │
│ F11 : Help        (Shift) F2 : Change Color   F3 : Toggle Calendar │
└──────────────────────────────────────────────────────────────────┘
```

2. Use arrow keys to move between items and select values. Modify selected fields using PgUp/PgDn/+/– keys. Some fields let you key in values directly.

Date (mm/dd/yy)	Type the current date.
Time (hh:mm:ss)	Type the current time.
Drive 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." (default)
Drive A & B	Choose 360KB , 5 1/4", 1.2MB , 5 1/4", 720KB , 3 1/2", 1.4M , 3 1/2" (default), 2.88 MB, 3 1/2" or Not installed
Video	Choose Monochrome, Color 40x25, VGA/EGA (default), Color 80x25

3. When you finish, press the <ESC> key to return to the Main Menu.

BIOS Features Setup

Run the BIOS Features Setup as follows.

1. Choose "BIOS FEATURES SETUP" from the Main Menu and a screen with a list of items appears. (**The screen below shows the BIOS default settings.**)

```
                    ROM ISA BIOS
                 BIOS FEATURES SETUP
                 AWARD SOFTWARE, INC.
┌────────────────────────────────────────────────────────────────────┐
│ CPU Internal Cache      : Enabled  │ Video  BIOS  Shdow   : Enabled  │
│ External Cache          : Enabled  │ C8000-CBFFF Shadow : Disabled   │
│ Quick Power On Self Test: Enabled  │ CC000-CFFFF Shadow : Disabled   │
│ Boot Sequence           : A,C      │ D0000-D3FFF Shadow : Disabled   │
│ Swap Floppy Drive       : Disabled │ D4000-D7FFF Shadow : Disabled   │
│ Boot Up NumLock Status  : On       │ D8000-DBFFF Shadow : Disabled   │
│ IDE HDD Block Mode      : Enabled  │ DC000-DFFFF Shadow : Disabled   │
│ Gate A20 Option         : Fast     │ E0000-E3FFF Shadow : Disabled   │
│ Memory Parity Check     : Disabled │ E4000-E7FFF Shadow : Disabled   │
│ Typematic Rate Setting  : Disabled │ E8000-EBFFF Shadow : Disabled   │
│ Typematic Rate (Chars/Sec): 6      │ EC000-EFFFF Shadow : Disabled   │
│ Typematic Delay (Msec)  : 250      │                                 │
│ Security Option         : Setup    │                                 │
│                                    ├─────────────────────────────────┤
│                                    │ ESC : Quit    ↑↓→←: Select Item │
│                                    │ F1  : Help    PU/PD/+/- : Modify│
│                                    │ F5  : Old Values (Shift)F2:Color│
│                                    │ F6  : Load BIOS Defaults         │
│                                    │ F7  : Load Setup Defaults        │
└────────────────────────────────────────────────────────────────────┘
```
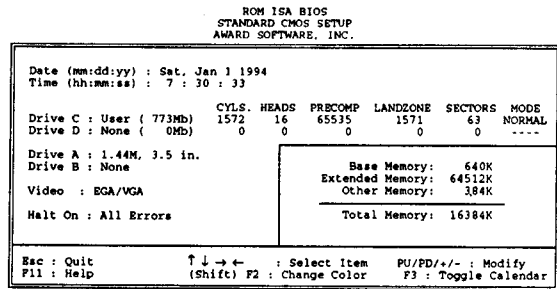
2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/– keys. <F> keys are explained below:

<F1>:	"Help" gives options available for each item.
Shift <F2>:	Change color.
<F5>:	Get the old values. These values are the values with which the user started the current session.
<F6>:	Load all options with the BIOS Setup default values.
<F7>:	Load all options with the Setup default values.

A short description of screen items follows:

CPU Internal Cache	This option enables/disables the CPU's internal cache. (The Default setting is Enabled.)
External Cache	This option enables/disables the external cache memory. (The Default setting is Enabled.)
Quick Power On Self Test	Enabled provides a fast POST at boot-up.
Boot Sequence	The default setting attempts to first boot from drive A: and then from hard disk C:. You can reverse this sequence with "C: A:", but then drive A: cannot boot directly.
Swap Floppy Drive	Enabled changes the sequence of the A: and B: drives. (The Default setting is Disabled.)
Boot Up Num Lock Status	Choose On or Off. On puts numeric keypad in Num Lock mode at boot-up. Off puts this keypad in arrow key mode at boot-up.
IDE HDD Block Mode	This option enables/disables the IDE HDD Block Mode function. Not all HDDs support this function.
Gate A20 Option	Choose Fast or Normal. Fast allows RAM accesses above 1MB using the fast gate A20 line.
Memory Parity Check	This option enables/disables the memory parity check function. (The Default setting is Disabled.)
Typematic Rate Setting	Enable this option to adjust the keystroke repeat rate.
Typematic Rate (Chars/Sec)	Choose the rate a character keeps repeating.
Typematic Delay (Msec)	Choose how long after you press a key that a character begins repeating.

Security Option   Choose Setup or System. Use this feature to prevent unauthorized system boot-up or use of BIOS Setup.

"System" – 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.

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

3. After you have finished with the BIOS Features Setup program, press the <ESC> key and follow the screen instructions to save or disregard your settings.

Chipset Features Setup

The Chipset Features Setup option changes the values of the chipset registers. These registers control system options in the computer.

Note: Change these settings only if you are familiar with the Chipset.

Run the Chipset Features Setup as follows.

1. Choose "CHIPSET FEATURES SETUP" from the Main Menu and the following screen appears. (The screen below shows default settings.)

```
                        ROM ISA BIOS
                    CHIPSET FEATURES SETUP
                     AWARD SOFTWARE, INC.

 Auto Configuration       : Enabled

 DRAM Wait State Select   : 2 WS
 DRAM Page Mode           : Fast
 L2 Cache Read Wait State : 3-2-2-2
 L2 Cache Write Wait State: 0 WS
 L1 Cache Update Scheme   : Wr-Through
 System BIOS Cacheable    : Disabled
 Video BIOS Cacheable     : Disabled

 Keyboard Controller Clock: 9.5Mhz
 ISA Bus Clock Option     : CLKI/4

 Local Ready Delay Setting: Delay 1T    ESC : Quit          ↑↓→←: Select Item
 Signal LDEV# Sample Time : In T2       F1  : Help        PU/PD/+/- : Modify
 CPU ADS# Delay 1T or Not : No Delay    F5  : Old Values (Shift)F2 : Color
                                        F6  : Load BIOS Defaults
                                        F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and select values. Modify selected fields using the PgUp/PgDn/+/– keys.

3. After you have finished with the Chipset Features Setup, press the <ESC> key and follow the screen instructions to save or disregard your settings.

A short description of selected screen items follows:

L1 Cache Update   Choose Wr-Through (default) or Wr-Back. For P24D
Scheme   and P24T CPUs, you should select Wr-Back. For other
                      CPUs use Wr-Through.

CPU ADS# Delay 1T Choose No Delay (default) or Delay 1T. When the CPU
or Not.   clock is 50MHz, you must select Delay. Otherwise,
                       choose No Delay.

Power Management Setup

The Power Management Setup option sets the system's power saving functions.

Run the Power Management Setup as follows.

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

```
                        ROM ISA BIOS
                    POWER MANAGEMENT SETUP
                     AWARD SOFTWARE, INC.

 Power Management     : Disabled    * Monitor Event in Inactive Mode
                                    IRQ 1 Event Monitor     : Enabled
 Video Off Method     : V/H SYNC+Blank  IRQ 3 Event Monitor : Enabled
                                    IRQ 4 Event Monitor     : Enabled
 HDD Standby Timer    : Disabled    IRQ 5 Event Monitor     : Enabled
 Doze Timer Select    : 512 Min     IRQ 6 Event Monitor     : Enabled
 Standby Timer Select : 512 Min     IRQ 7 Event Monitor     : Enabled
 Inactive Timer Select: 512 Min     IRQ 9 Event Monitor     : Enabled
                                    IRQ 10 Event Monitor    : Enabled
                                    IRQ 11 Event Monitor    : Enabled
 * Monitor Event in Full On Mode    IRQ 12 Event Monitor    : Enabled
 VESA Slave Activity   : Disabled   IRQ 14 Event Monitor    : Enabled
 LPT Port Activity     : Enabled    IRQ 15 Event Monitor    : Enabled
 COM Port Activity     : Enabled    Master Device Monitor   : Enabled
 ISA Master Activity   : Enabled
 IDE Activity          : Enabled    ESC : Quit       ↑↓→←: Select Item
 Floppy Activity       : Enabled    F1  : Help       PU/PD/+/- : Modify
 VGA Activity          : Disabled   F5  : Old Values (Shift)F2 : Color
 Keyboard Activity     : Enabled    F6  : Load BIOS Defaults
                                    F7  : Load Setup Defaults
```

2. Use the arrow keys to move between items and to select values. Modify the selected fields using the PgUp/PgDn/+/- keys.

A short description of selected screen items follows:

Power Management   Options are as follows:

User Define   Let's you define the HDD and system power down times.

Disabled   Disables the Green PC Features.

Min Saving   Doze timer = 512 Min
                 Sleep timer = 512 Min
                 Inactive timer = 512 Min

Max Saving   Doze timer = 0.5 Min
                 Sleep timer = 2 Min
                 Inactive timer = 2 Min

Optimize   Doze timer = 8 Min
               Standby timer = 8 Min
               Inactive timer = 8 Min

Video Off Method   When Suspend mode occurs, the monitor screen shuts
                       off. If any IRQ event occurs, the screen comes back on.

HDD Standby Timer When the set time has elapsed, the BIOS sends a
                       command to the HDD to enter standby (sleep) mode,
                       which turns off the motor. Time is adjustable from 1 to
                       15 minutes. The default setting is Disabled. Some older
                       model HDDs may not support this advanced function.

Doze Standby Timer When the set time has elapsed, the BIOS sends a
                        command to the system to enter doze mode (system
                        clock drops to 8MHz). Time is adjustable from 0.5 to
                        512 minutes.

Standby Timer Select The default is Disabled. Time is adjustable from 2
                          minutes to 512 minutes.

Inactive Timer Select The default is Disabled. Only an SL-Enhanced (or SMI)
                           CPU can enter this mode. Time is adjustable from 2
                           minutes to 512 minutes. Under inactive mode, the CPU
                           stops completely (no instructions are executed.)

Monitor Event in   The BIOS monitors these items for activity while the
Full On Mode   system is in the ON mode. If activity occurs from the
                       Enabled item the system will not enter Green mode
                       (power saving).

Monitor Event in   The BIOS monitors these items for activity while the
Inactive Mode   system is in the ON mode or the Inactive mode.

3. After you have finished with the Power Management Setup, press the <ESC> key to return to the Main Menu.

Load Setup Defaults

This item loads the system values you have previously saved. Choose this item and the following message appears:

"Load SETUP Defaults (Y/N)? N"

To use the SETUP defaults, change the prompt to "Y" and press <Enter>.

Password Setting

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. Change the password as follows:

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

"Enter Password:"

2. Enter a password and press <Enter>.

   (If you do not wish to use the password function, you can just press <Enter> and a "Password disabled" message appears.)

3. After you enter your password, the following message appears prompting you to confirm the new password:

"Confirm Password:"

4. Re-enter your password and then Press <ESC> to exit to the Main Menu.

Important: If you forget or lose the password, the only way to access the system is to set jumper J20 to clear the CMOS RAM. All setup information is lost and you must run the BIOS setup program again.

IDE HDD Auto Detection

This Main Menu item automatically detects the hard disk type and configures the STANDARD CMOS SETUP accordingly.

Note: *This function is only valid for IDE hard disks.*

```
                    ROM ISA BIOS
                  CMOS SETUP UTILITY
                 AWARD SOFTWARE, INC.
┌──────────────────────────────────────────────────────────┐
│                                                          │
│                   CYLS.  HEADS  PRECOMP  LANDZONE  SECTORS│
│  Drive C : User (  49Mb)  790    15      65535      789     57 │
│  Drive D : User (   0Mb)    0     0          0        0      0 │
│        ┌───────────────────────────────────────┐         │
│        │ Do you accept this drive C (Y/N)? N   │         │
│        └───────────────────────────────────────┘         │
│                                                          │
│                     ESC : Skip                           │
└──────────────────────────────────────────────────────────┘
```

NOTE