Table of Contents

1-1 About this Manual

This manual is arranged to help you set up and run this 486 main board as soon as possible.

Information is presented in three chapters: In this *Introduction*, we tell you what you should receive in your 486 main board as well as provide information on the features and specifications of the product. The chapter enclosed with a diagram showing the layout of the 486 main board.

Chapter 2, *Main Board Setup*, includes detailed information on how to install and configure your 486 main board.

Chapter 3, *Memory installation*, describes the size and configuration of your system's on-board memory and external cache memory and gives instructions for installing the memory devices on the system board.

When the above steps have all been completed, you will need to adjust the BIOS setup using the software utility described in the *Appendix*.

1-2 The Green PC Function

The Power Management Unit (PMU) of this board strictly controls and dramatically reduces overall system power consumption. This is an accomplishment of the activity monitors which detect the system inactivity timer time-out, and signals the power-saving devices to slow down the clock frequency or remove the power sources from various peripherals.

There are four Power management mode in this board : Normal, Doze, Standby and Suspend mode.

- NORMAL mode : This mode is the normal operation mode of the PC system. In this mode, the doze timer start counting if no activity is taking place and the programable time-out period has expired.

- DOZE mode : In this mode, CPU frequency is slowed to 1/2 of normal frequency.

- STANDBY mode : There are two options in standby mode. One option is to put CPU in the STOPGRANT state, and the other is to scale the CPU and system clock to a lower frequency
- SUSPEND mode : In this mode. The PMU will stop the CPU clock (0MHz), slow down the system clock, power down the External Cache and so on.

More detail information refer to P29~P33.

1-3 Main Board Specifications :

- **Fully PC/AT Compatible System**

- **Support CPU Type:**

  -Intel 486SX/SX2/DX2/DX4/SL-Enhanced/OverDrive/P24D CPUs

  -AMD Am486DX/DX2/DXL/DXL2 CPUs

  -Cyrix Cx486DX/DX2 (M7) CPUs

  -UMC U5S

  -System clock 25/33/40/50MHz

  - Optional 239-pin PGA or 237-pin ZIF CPU Socket

- **Memory:**

  -72-pin SIMM Socket x 4

   (1/2/4/8/16/32 MB 32/36-bit 70/80-ns SIMM Modules acceptable)

  -Maximum 64MB on board

- **Cache memory :**

  -Support Cache memory size 0/128/256KB(32Kx8, DIP)

  -512KB Optional for OEM only(64Kx8 DIP)

- **Expension Slots:**

  -ISA slot 16 bit x 6, 8 bit x1

  -VESA slot x 3

  (Master mode x 2, one is in VESA2, another is either in VESA1 or in VESA3, it will auto detect and switch by itself. Users don't need to set any jumper)

- **Shadow RAM:**

  -System BIOS, Video BIOS and Other Adapter ROM BIOS

- **BIOS:**

  -Award system BIOS

- **PCB Size** : 220mm x 250mm

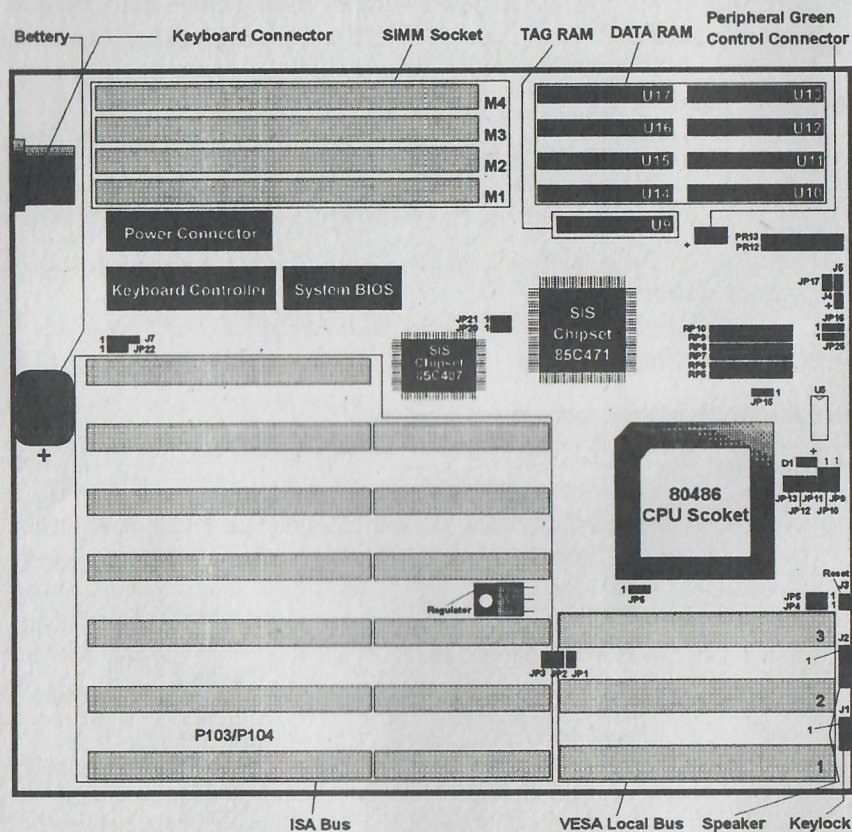- **Software/Hardware turbo speed toggle**

- **Green PC :**

  -Meet EPA Green PC standard : power consumption under 30W on the Doze, Standby or Suspend mode

1-4 Main Board Layout

Fig. The Main board Layout (PCB Rev. P103/P104)

Distinct character stoics between PCB Rev. P103 and P104:
Rev. P104 add JP6 and JP25 to support new **Cyrix 486 DX2V/DX4V(4V)** CPU and **AMD 486 DX2/DX4(3.3V)** CPU.

| Jumper & Connector No.	Function	REF. Page
J1	Speaker Connector	P.15
J2	Keyboard Lock Connector	P.14
J3	Reset Switch Connector	P.16
J4	Turbo LED Connector	P.17
J5	Turbo Switch Connector	P.16
J6	Peripheral Green Control Connector	P.17
J7	External Battery Connector	P.15
JP1-JP2	CPU Power Voltage Setting Jimper	P.12
RP5-RP10, JP6,JP10, JP20,JP21	CPU Type Setting Jumper	P.11
JP11-JP13	System Clock Setting Jumper	P.10
JP4	VL-Bus Wait State Setting Jumper	P.17
JP5	VL-Bus Clock Setting Jumper	P.18
JP15	Internal CPU Speed Setting Jumper	P.12
JP17	Power Saving Toggle Switch Connector	P.17
JP22	CMOS Data Clear Jumper	P.18
RP12-RP13	Cache Size Setting Jumper	P.17
CN1	Keyboard Connector	P.14
CN2	Power Supply Connector	P.13
TR1	Regulator Socket (for 3.3/4V CPU used)	
D1	Green LED Connector	P.18
Rev. P104Addendum		
JP6	CPU Power Voltage Setting Jumper	P.12
JP25	AMD (3.3V) CPU Setting Jumper	P.12

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Main Board Setup

If your main board has already been installed by the dealer, you will still want to refer to this chapter in case you plan to make any changes or upgrade your system.

2-1 How to set Jumper

 switch is used to select between various operating modes. A jumper switch consists of two or three gold pins projecting up from the system board. Placing the plastic jumper cap over two pins connects those pins and makes a particular selection. Using the cap to connect two pins, in this way is commonly referred to as shorting those pins. If the cap is not placed on any pins , this is referred to leave the pins open.

Pins   Cap   Setting

3 Pin Jumper   1-2 : Pin 1 and Pin 2 short together
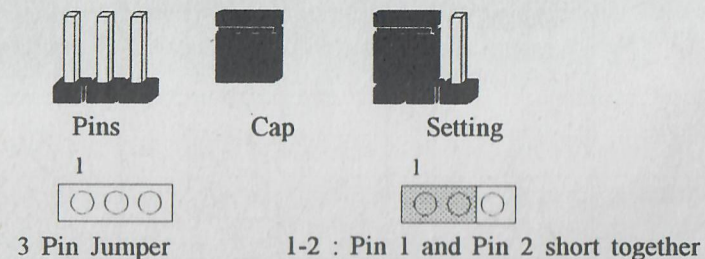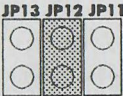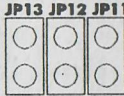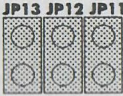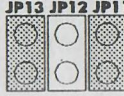
2-2 CPU Type and System Clock Configuration

The main board can support all 486 serial microprocessors up to DX4 (P24C), running at system clock speed up to 50Mhz. If you are installing or upgrading the CPU on this board, you must set the CPU type (RP5-

RP10,JP6,JP10,JP20,JP21) and configure the system clock generator jumper (JP11-JP13) to match the speed rating of the Microprocessor.

System Clock Setting Configuration (JP11~JP13)

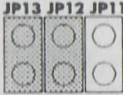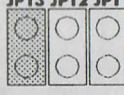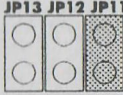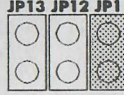| System Clock	CPU Type	MX8315 / UM9515 (U5) is on board	IMI SC466 (U5) is on board
25MHz	486SX-25 486SX2-50 486DX-25 OverDrive-25 486DX2-50 486DX4-75	JP13 JP12 JP11	JP13 JP12 JP11
33MHz	486SX-33 486DX-33 OverDriver-33 486DX2-66 486DX4-100	JP13 JP12 JP11	JP13 JP12 JP11
40MHz	486SX-40 486DX-40 486DX2-80	JP13 JP12 JP11	JP13 JP12 JP11
50MHz	486DX-50	JP13 JP12 JP11	JP13 JP12 JP11

WARNING!!

Before you configure JP11-JP13, please make sure which component is used on U5.

CPU Type Jumper Setting

CPU TYPE	UMC U5, 486SX/SX2/ SL-Enhanced	486DX/ DX2/DX4/ SL-Enhanced	ODPR486 (486OverDrive)	P24D (486DX WRITE BACK)	CYRIX 486DX/DX2
JP20 & JP21	2~3	2~3	2~3	2~3	1~2
JP9 & P10	1~2	1~2	1~2	1~2	1~2
JP16	1~2	1~2	2~3	1~2	1~2
RP5	SHORT				
RP6		SHORT	SHORT		SHORT
RP7				SHORT	
RP8	SHORT	SHORT	SHORT		
RP9					SHORT
RP10				SHORT	

WARNING!!

1. If Cyrix CPU is used, you must set CPU Type Jumpers and short Pin1-Pin2 of JP15.
2. Using the new Intel, AMD and Cyrix released CPU, you must make sure these jumpers (JP1,JP2,JP4 and JP25) are set correctly.

Internal CPU Speed Select Jumper (JP15)

JP15 + **JP25** Cyrix CPU is used.
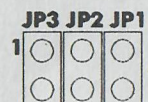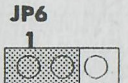
JP15 Intel DX4 CPU is used, and set CPU Speed to two times system clock.
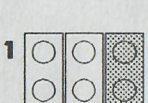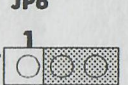
JP15 Intel DX4 CPU is used, and set CPU Speed to three times system clock.

JP25 AMD DX2 (3V) is used

JP25 AMD DX4 (3V) is used

CPU Power Voltage Setting (JP1,JP2,JP3,JP6)

JP3 JP2 JP1   JP6

3V CPU is used
(such as Intel and AMD DX2/DX4)

JP6

4V CPU is used
(such as Cyrix DX2V/DX4V)

5V CPU is used
(default)

** The **JP6** and **JP25** supported by PCB Rv. **P104** only.*

2-3 Connectors and Jumper Setting

Connectors are used to connect the system board to other parts of the system, including the power supply, the keyboard and the various controllers on the front panel of the system case. When connecting connect-wires to the connectors you should remember that some of them must be aligned in a specific way in order to have proper function.

Power Supply Connector (CN2)

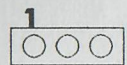When installing the board, the power supply connector is usually the last connector to be connecting before installing the system peripherals. Before connect the power supply, check that it is not connected to power source. Most power supplies have two sets of six-wire connectors that must be connected to the system board. Two of the wires on each connector are black. When connect these two connectors to the power supply connector, align them so that the two black wires on each connector are positioned in the middle.

1	POWER GOOD	Orange
2	+5V	Red
3	+12V	Yellow
4	-12V	Blue
5	GROUND	Black
6	GROUND	Black
1	GROUND	Black
2	GROUND	Black
3	-5V	White
4	+5V	Red
5	+5V	Red
6	+5V	Red

Keyboard Lock Connector (J2)

When this connector is connected to the keylock on the front panel of the system case, the lock can disable the keyboard, preventing other users to operate your computer. It is important to orient the cable correctly when connecting the keylock to the main board. As clearly labeled on the board, Pin 1 of the keyboard lock connector is counted from the left.

Pin	Definition
1	+5V DC
2	Ground
3	Ground
4	Keylock
5	Ground

Keyboard Lock Connector / Pin Definitions

Keyboard Connector (CN1)
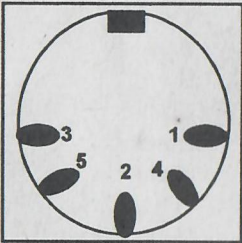
Pin	Definition	
1	Keyboard	Clock
2	Keyboard	Data
3	(None)	
4	Gound	
5	+5V	DC

Keyboard Connector / Pin Definitions

Speaker Connector (J1)

An external speaker mounted inside the case can connect to the main board via this connector.

Pin	Definition	
1	Speaker	Signal
2	No	Connection
3	GND	
4	+5V	DC

Speaker connector / Pin Definition

External or Internal Battery Power Connector (J7)

This connector may be used to connect an external 4.5V to 6V battery to back up or replace the on-board battery. When connecting the external battery, it is very important that the connecting wire be oriented correctly.

Pin	Definition		
1	+4.5	-	6V DC
2	No	Connection	
3	Ground		
4	Ground		

Battery Connector / Pin Definitions

System Reset Switch Connector (J3)

This connector should be connected to the Reset switch on the front panel of the system case. The Reset switch may be used to reset the computer, causing it to perform a cold restart from the power-on self test without turning off the power.

Pin	Definition
1	System Reset
2	GND

Reset Switch Connector / Pin Definitions

Hardware Turbo Switch Connector (J5)

The hardware turbo switch connector is used to connect the board to a hardware turbo switch on the front panel of the system unit. If connected, the hardware turbo switch can be used to toggle the turbo (high speed) mode on or off.

Low Speed

High Speed

JP5
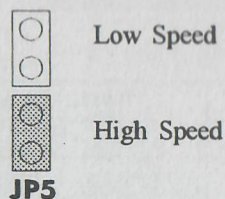
Other high/low speed changed by Keyboard
"CTRL-ALT–": Set to Low speed
"CTRL-ALT-+": Set to High speed

Turbo LED Connector (J4)

J4

The turbo LED connector is connected to a turbo LED on the front panel of the system case. If connected, the turbo LED will light on whenever the system is running in turbo (high speed) mode.

Power Saving Toggle Switch Connector (JP17)

There are four power management modes in this board: Normal, Doze, Standby and Suspend mode.
If you have power saving control switch on the front panel of the system case, you can trigger system into Suspend mode directly, system will slow down the CPU clock to zero MHz, power down the external cache and so on, then auto wake up by keyboard, mouse and this toggle switch ...etc.

JP20

1-2 short, forces CPU into Suspend mode

Peripheral Green Control Connector (J6)

JP6
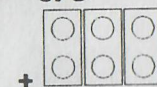
There are two major ways to reduce the energy consumprion of peripheral devices. One is to put the device on idle or standby state without turning off the power. Some peripheral devices, such as IDE hard disk drive has standby or idle mode build in. The other way is to turn off the power supply of the peripheral device. This connect is used for later function.

VL-BUS Wait State Setting (JP4)

0 Wait State
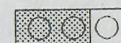
1 Wait State (default)

3 2 1

VL-BUS Clock Setting (JP5)

⊙⊙◯ <= 33MHz

◯⊙⊙ > 33MHz
3 2 1
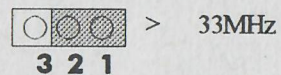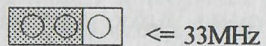
CMOS DATA Clear Jumper (JP22)

The CMOS jumper is used to clear the system configuration data currently stored in the CMOS RAM and reload the default system configuration setting. (The function would be useful if you forget the user's password for the system.)

◯◯◯ Default

◯⊙⊙ Clear CMOS Data
1 2 3
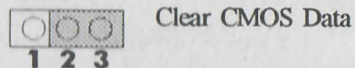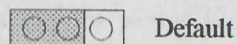
Green LED Connector (D1)

+
◯ ◯

LED Turn ON: System run in power saving mode.

LED Turn OFF: System run in normal mode.

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Jumper Setting Quick Reference

RP SEL,JP9,JP10,JP16,JP20,JP21 : CPU Type Jumper Setting

CPU Type	JP21, JP20	JP10, JP9	JP16	RP SEL
U5S,486SX/SX2/ SL-Enhanced	2-3	1-2	1-2	RP5, RP8
486 DX/DX2/DX4//SL-Enhanced	2-3	1-2	1-2	RP6, RP8
486 OverDrive	2-3	1-2	2-3	RP6, RP8
P24D (486DX Write Back)	2-3	1-2	1-2	RP7, RP10
Cyrix 486 DX/DX2 (M7)	1-2	1-2	1-2	RP6, RP9

U5S is UMC 486SX CPU

Keyboard Connector

J7 : External Battery Connector

JP22 : CMOS Data Clear
  1-2 Short: Default
  2-3 Short: Clear COMS Data

Battery

JP15,JP25 : Cyrix CPU selection & CPU speed setting.

JP15 Cyrix CPU is used

JP15 Intel DX4 is used, and set CPU speed to two times system clock.

JP15 Intel DX4 is used, and set CPU speed to three times system clock.

JP25 AMD DX2 (3V) is used.

JP25 AMD DX4 (3V) or Cyrix is used.

J6 : Peripheral Green Control Connector

RP12,RP13 : Cache Size Selection

Cache	128K	256K
RP SEL	RP12	RP13

JP17 : Power Saving Toggle Switch Connector

J5 : Turbo Switch
J4 : Turbo LED

D1 : Green LED

JP5 : VL-Bus Clock Setup
  1-2 : <= 33MHz
  2-3 : > 33MHz (default)

J3 : Reset Switch

JP4 : VL-Bus Wait State Setup
  1-2 : 0 wait state
  2-3 : 1 wait state (default)

J2 : Keyboard lock Connector

J1 : Speaker Connector

JP11~JP13 : CPU Clock Selection

TR1 : Regulator Socket

Power Connector

K/B Controller   BIOS

80486

VESA 3
VESA 2
VESA 1

P103/P104

JP1~JP3,JP6 : CPU Power Select

The 3V CPU is used (such as Intel and AMD DX4)

4V CPU is used (such as Cyrix DX2V/DX4V)

5V CPU is used (default)

* The JP6 and JP25 supported by PCB Rev. P104 only.

System Clock	JP13	JP12	JP11
25MHz	O	S	O
33MHz	S	S	S
40MHz	S	S	O
50MHz	O	O	S

System Clock	JP13	JP12	JP11
25MHz	O	O	O
33MHz	S	O	S
40MHz	S	O	O
50MHz	O	O	S

If MX8315 is on U5

If IMISC466 is on U5.

^ '0' - Open, 's' - short.

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to take away Quick Reference for use.

Memory Installation

This 486 main board can operate from 1MB up to 64MB system memory installed on-board. There is also an external cache memory on the system board that may be installed from 0KB or 256KB in size.

This chapter describes the types of memory devices that should be used with the main board and explains how to install the memory.

3-1 External Cache Memory Configuration

When you first install the cache memory on your system board or each time you upgrade or modify it, you need to adjust the cache memory size setting for the system. The cache memory size for the system is set by adjusting RP12~RP13.

RP SEL

RP13
RP12

External Cache Size Settings			
Cache Menory Size	RP SEL	TAG RAM U9	DATA RAM
128K	RP12 short	8Kx8	32Kx8 x 4 pcs (U10~U13)
256K	RP13 short	16kx8 / 32K8x8	32Kx8 x 8pcs (U10~U17)

* 256/512KB ("64Kx8 DIP" Scheme optioned by OEM Only)

3-2 MAIN MEMORY(DRAM) AND CACHE CONFIGURATION

This board will support any combination fo 72-pin SIMMsx4 up to 64MB. Please select the memory type as belows.

1		72
	M4	
	M3	
	M2	
	M1	
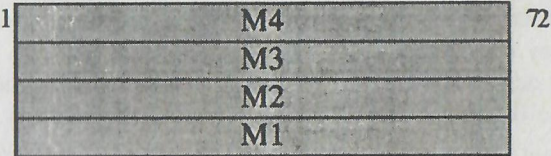
ALL POSSIBLE MEMORY CONFIGURATION

M1	M2	M3	M4
S/S	-	-	-
S/S	S/S	-	-
S/S	S/S	S/S	-
S/S	S/S	S/S	S/S
S/S	S/S	D/S	-
D/S	-	S/S	-
D/S	-	S/S	S/S
D/S	-	D/S	-

* S/S = SINGLE SIDE 72 PIN SIMMs are all 1MB, 4MB or 16MB Modules
* D/S = DOUBLE SIDE 72 PIN SIMMs are all 2MB, 8MB or 32 MB Modules

CONDITION

NO.	SIZE	M1	M2	M3	M4
1	1MB	1MB-S	-	-	-
2	2MB	1MB-S	1MB-S	-	-
3	2MB	2MB-D	-	-	-
4	4MB	4MB-S	-	-	-
5	5MB	1MB-S	4MB-S	-	-
6	6MB	1MB-S	`MB-S	4MB-S	-
7	6MB	2MB-D	-	4MB-S	-
8	8MB	4MB-S	4MB-S	-	-
9	8MB	8MB-D	-	-	-
10	10MB	1MB-S	1MB-S	4MB-S	4MB-S
11	10MB	1MB-S	1MB-S	8MB-D	-
12	10MB	2MB-D	-	8MB-D	-
13	12MB	4MB-S	4MB-S	4MB-S	-
14	12MB	8MB-D	-	4MB-S	-
15	16MB	4MB-S	4MB-S	4MB-S	4MB-S
16	16MB	8MB-D	-	8MB-D	-
17	16MB	8MB-D	-	4MB-S	4MB-S
18	20MB	4MB-S	16MB-S	-	-
19	24MB	8MB-D	-	16MB-S	-
20	32MB	16MB-S	16MB-S	-	-
21	32MB	32MB-D	-	-	-
22	36MB	4MB-S	16MB-S	16MB-S	-
23	36MB	4MB-S	32MB-D	-	-
24	40MB	4MB-S	4MB-S	16MB-S	16MB-S
25	40MB	4MB-S	4MB-S	32MB-D	-
26	40MB	8MB-D	-	32MB-D	-
27	40MB	8MB-D	-	16MB-S	16MB-S
28	48MB	16MB-S	16MB-S	16MB-S	-
29	48MB	16MB-S	32MB-D	-	-
30	64MB	16MB-S	16MB-S	32MB-D	-
31	64MB	16MB-S	16MB-S	16MB-S	16MB-S
32	64MB	32MB-D	-	32MB-D	-

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Award BIOS Setup Program

```
            ROM ISA BIOS (2C4I9C31)
              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...
```

Figure 1 Setup Program Initial Screen

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This content of information is stored in CMOS RAM so that the Setup information is retained even the power is turned off.

Entering Setup: Power on the computer and press <Del> immediately will allow you to enter Setup program.

A-1 Standard CMOS Setup

Choose the **"STANDARD CMOS SETUP"** option from the **CMOS SETUP UTILITY** Menu (Fig. 1) and the below screen is displayed. This standard Setup Menu allows users to configure system components such as date, time, hard disk drive, floppy disk drive, display and memory. Once a field is highlighted, on-line help information is displayed in the left bottom of the Menu screen.

```
              ROM ISA BIOS (2C4I9C31)

                STANDARD CMOS SETUP

               AWARD SOFTWARE, INC.

   Date (mm:dd:yy) : Wed, Jan 19 1994
   Time (hh:mm:ss) : 8 : 30 : 50

                    CYLS.   HEADS PRECOMP   LANDZONE SECTORS   MODE
   Drive C : None (0Mb)    0      0      0          0       0      -----
   Drive D : None (0Mb)    0      0      0          0       0      -----

   Drive A : 1.2M, 5.25 in.
   Drive B : None                      Base Memory       640K
                                   Extended Memory      7168K
   Video   : EGA/VGA               Expended Memory         0K
   Halt On : All Errors              Other Memory       384K
                                            Total       8192K

   ESC : Quit          ↑↓→←  : Select Item      PU/PD/+/- : Modify
   F1  : Help          (Shift) F2 : Change Color
```

Figure 2 Standard CMOS Setup Screen

Except SCSI have disk, to install hard disk (such as **MFM**, **ESDI** or **IDE**) in your system, **all need to have their specifications recorded here**. **SCSI** drives operate using **device drivers** and are not supported directly by BIOS. For IDE hard drives, the BIOS provides **three mode** to support both normal IDE hard disks and also drives larger than 528MB:

Normal - for IDE drives smaller than 528MB.

LBA - for drives larger than 528MB and up to 8.4GB (Giga Bytes) that use Logic Block Addressing mode.

Large - for drives rarer than 528MB that do not use LBA function.
These can only be used with the MS-DOS and is uncommon.

A-2 BIOS Features Setup

By choosing the **"BIOS FEATURES SETUP"** option from the **CMOS SETUP UTILITY** Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.

```
                 ROM ISA BIOS (2C4I9C31)

                   BIOS FEATURES SETUP

                  AWARD SOFTWARE, INC.

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

   Typematic Rate Setting : Disabled   ESC: QUIT          ↑↓←→  SELECT
   Typematic Rate (Chars/Sec) : 6      F1: HELP                    ITRM
   Typematic Delay (Msec)  : 250       F5: OLD VALUES
   Security Option         : Setup     F6: LOAD BIOS DEFAULTS  PU/PD/+/- MODIFY
                                       F7: LOAD SETUP DEFAULTS (SHIFT) F2: CLOLR
```

Figure 3 BIOS Feature Setup Screen

A. VIRUS PROTECTION

Virus Warning: ■ **Disabled** □ **Enabled**
This feature protects the boot sector and partition table of your bard disk. Any attempt to write to them will halt the system and cause a warning message to appear. In this happens, you can either allow the operation to continue or stop it.

B. CACHE CONTROL

CPU Internal Cache: □ **Disabled** ■ **Enabled**

External Cache: □ **Disabled** ■ **Enabled**

C. BOOT UP FEATURES

Boot Sequence: ■ **A:C** □ **C:A**
Selects the drive where the system search first for operation system to run with.

Swap Floppy Drive: ■ Disabled □ Enabled

If you enable this feature, the system will swap the floppy drive assignment so that Drive A will function as Drive B, Drive B will function as Drive A.

Boot Up Floppy Seek: ■ Enabled □ Disabled

During POST (power on self test) , BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 760K, 1.2M and 1.44M are all 80 tracks. If you disable this function, there will not be any warning message for 360K floppy drive installed.

Boot UP Num Lock Status: ■ ON □ OFF

ON: Keypad is set to number-mode keys

Off: Keypad is set to arrow-mode Keys

Boot Up System Speed: ■ High □ Low

If set to high speed, the system will run at high speed at immediately after power up.

D. IDE HDD BLOCK MODE: □ Enabled ■ Disabled

This feature enhances hard disk performance by making multi-sector trasfers instead of one sector per transfer. Most IDE drives, except very early designs, can use this feature.

E. TYPEMATIC RATE SETTING: ■ Disable □ Enable

Define the setting of the Keyboard's typematic rate.

Typematic rate (Chars/Sec): □ 2 ■ 6 □ 30

Specifies the Key repeat rate.

Typematic Delay (msec): ■ 250 □ 500 □ 750 □ 1000

When holding down a Key, the time between the first and second character displayed.

F. PASSWORD CONTROL

Security Option: □ System ■ Setup

System: The system will not boot and access to setup will be denied if the correct password is not entered at the prompt.

Setup: The system will boot, but access to setup will be denied if the correct password is not entered at the prompt.

G. SYSTEM BIOS SHADOW

Video BIOS Shadow: □ Disabled ■ Enabled

Enables the system shadowing to achieve the best performance of the system.

C8000-CFFFF, D0000-D7FFF, D8000-DFFFF, E0000-E7FFF, E8000-EFFFF

Shadow: ■ Disabled □ Enabled

If you have a shadowing of the BIOS at any of above segment, you may set the approariate memory cacheable function to "Enabled"

A-3 Chipset Features Setup

By choosing the **"CHIPSET FEATURES SETUP"** option from the **CMOS SETUP UTILITY** Menu, the screen below is displayed. This sample screen contains the manufacturer's default values for the mainboard.

By choosing the "Enable" option for "Auto Configuration". The BIOS will automatically detect the CPU speed and will auto-configurate the bus frequency, DRAM speed, cache and read/write cycle.

```
            ROM  ISA  BIOS (2C4I9C31)
          CHIPSET  FEATURES  SETUP
          AWARD  SOFTWARE,  INC.

Auto Configuration: Enabled
At Bus Clock : 1/4 CLKIN
DRAM Speed: Faster
DRAM Write WS: 1WS
DRAM Write CAS: 1T
DRAM Burst Read: 2T
Cache Write Cycle: 2T
System Shadow: Non-Cacheable
Video Shadow: Non-Cacheable

ESC : Quit          ↑↓→←       Select Item
P1  : Help           PU/PD/+/-  Modify
F5  : Old Values     (Shift) F2 Color
F6  : Load BIOS Defaults
F7  : Load Setup Defaults
```

Figure 4 Chipset Features Setup Screen

Above all the entries on the screen are optional settings for this mainboard and you should not change them.

A-4 Power Management Setup

This section provides informations of functioning the Green PC power management features. For enabling the power management function, please select **"POWER MANAGEMENT SETUP"** option from the **"CMOS SETUP UTILITY"** Menu. You will be presented with a screen similar to one of the illustrated two screens below. The following two tables show you the screen with the manufacturer's default setting for this mainboard.

```
                ROM   ISA   BIOS  (2C4I9C31)
              POWER   MANAGEMENT   SETUP
                 AWARD   SOFTWARE,  INC.

Power Management      : User Define    IRQ 3   (COM 2)          : Enabled
PM Control by APM     : Yes            IRQ 4   (COM 1)          : Enabled
Video off option      : Susp/Stdby off IRQ 5   (LPT or LAN)     : Enabled
IRQ 12/15 for PM      : IRQ12          IRQ 6   (Floppy Disk)    : Enabled
**PM Timers**                         IRQ 7   (LPT or LAN)     : Enabled
HDD Power Down        : 10 Min         IRQ 8   (RTC, OS2)       : Disabled
System Doze           : 3 Min          IRQ 9   (Reserved)       : Enabled
System Standby        : 10 Min         IRQ 10  (Reserved)       : Enabled
System Suspend        : 10 Min         IRQ 11  (Reserved)       : Enabled
                                       IRQ 12  (PS2 mouse)      : Enabled
**PM Events**                         IRQ 13  (387)            : Enabled
Local Master          : Enable         IRQ 14  (Hard Disk)      : Enabled
Local Device          : Enable         IRQ 15  (Reserved)       : Enabled
Video Activities      : Enable
DMA Activities        : Enable         ESC  : Quit      ↑↓→←      : Select Item
IRQ 1 (Keyboard)      : Enable         F1   : Help      PU/PD/+/- : Modify
                                       F5   : Old Values (Shift) F2 : Color
                                       F6   : Load BIOS Defaults
                                       F7   : Load Setup Defaults
```

Figure 5-1 Power Management Setup for Non- SL-Enhanced CPU Screen

```
                ROM   ISA   BIOS  (2C4I9C31)
              POWER   MANAGEMENT   SETUP
                 AWARD   SOFTWARE,  INC.

Power Management      : User Define    IRQ 3   (COM 2)          : Enabled
PM Control by APM     : Yes            IRQ 4   (COM 1)          : Enabled
Video off option      : Susp/Stdby off IRQ 5   (LPT or LAN)     : Enabled
**PM Timers**                         IRQ 6   (Floppy Disk)    : Enabled
HDD Power Down        : 10 Min         IRQ 7   (LPT or LAN)     : Enabled
System Doze           : 3 Min          IRQ 8   (RTC, OS2)       : Disabled
System Standby        : 10 Min         IRQ 9   (Reserved)       : Enabled
System Suspend        : 10 Min         IRQ 10  (Reserved)       : Enabled
                                       IRQ 11  (Reserved)       : Enabled
**PM Events**                         IRQ 12  (PS2 mouse)      : Enabled
Local Master          : Enable         IRQ 13  (387)            : Enabled
Local Device          : Enable         IRQ 14  (Hard Disk)      : Enabled
Video Activities      : Enable         IRQ 15  (Reserved)       : Enabled
DMA Activities        : Enable
IRQ 1 (Keyboard)      : Enable         ESC  : Quit      ↑↓→←      : Select Item
                                       F1   : Help      PU/PD/+/- : Modify
                                       F5   : Old Values (Shift) F2 : Color
                                       F6   : Load BIOS Defaults
                                       F7   : Load Setup Defaults
```

Figure 5-2 Power Management Setup for Intel SL-Enhanced CPU Screen

A1. Selecting "Power Management" Mode:

The four optional **power Management** Modes could be set by pressing the arrow keys ↑↓→←. And the system will enter into the respective "Power Management" modes as you selected, once the keyboard and mouse are detected as in idle.

1. Disabled Mode:

This Mode disabled the power management function, and the system will be in the normal operation (Non-Green) mode.

2. Max. saving Mode:

Select this mode, you will be presented the system defaulted Min. figures of four related timers, (HDD power Down Timer at "1min", system Doze Timer at "10sec", system Standby Timer at "10sec", system Suspend at "10sec") to facilitate the minimized power management function.

3. Min. saving Mode:

Select this mode, you will be presented the system defaulted **Max. figures of four related timers**, (HDD power Down Timer at "15min", system Doze Timer at "10min", system Standby Timer at "10min", system Suspend at "10min") to facilitate the **minimized power management function**.

4. User Define Mode:

User could define their own required delay timings of **PM Timers** by setting up the following four related timers:

a. HDD Standby Timer:

The entry period of this flexible standby mode timer is 1~15 min. Once the system stops reading from or writing to HDD, the standby timer at your defined timing starts counting. If there's no any activity and the programmable time-out period expired, **the system will shut off the HDD power to enter standby mode**. The HDD won't resume its function until the read/write command is executed.

b. Doze Timer select :

The entry period of this flexible standby mode timer is 10sec~3hr.

The option may scale CPU and system clock at the lower frequency (8MHz), and motivate the enabled **PM Events**. By touching the system keyboard or mouse, the CPU and system clock will auto-wake-up to a normal operation.

c. System Standby Timer :

The entry period of this flexible Suspend mode timer is 10sec~3hr.

In this mode, the Inactive timer starts counting. If there's no activity during the programmable period, the system will scale CPU and system clock at the lower frequency (8MHz) and motivate the enabled **PM Events**.

Besides, it will enable the monitor to enter Inactive mode with blank screen. And the monitor won't work again until the system keyboard or mouse is touched.

d. System Suspend Timer :

This timer will be only presented and adjustable / functional if the system is installed with Intel SL-Enhanced series CPUs.

The entry period of this flexible standby / Suspend mode timer is 10sec~3hr.

If there's no any activity and the programmable time-out period expired, the system will shut off the CPU, HDD and monitor power to enter Suspend mode. The power consumption under this mode is even lower than that of standby mode.

A2. Selection "Monitor Events In Full on Mode"

PM Events include:

Local Master / Local Device / Video Activities

DMA Activities / IRQ1 (Keyboard) / IRQ3(COM2) / IRQ4 (COM1) / IRQ5 (LPT or LAN) / IRQ6 (Floppy Disk) / IRQ7 (LPT or LAN) / IRQ8 (RTC, OS2) / IRQ9 (Reserved) / IRQ10 (Reserved) / IRQ11 (Reserved) / IRQ12 (PS2 mouse) / IRQ13 (387) / IRQ14 (Hard Disk) & IRQ15 (Reserved)

The default setting of **IRQ 8(RTC, OS2)** event is "Disable" in order to make sure the Power Management mode be executed under OS2.

User could define personalized combination of **PM Events** by selecting "Enable" which will be checked whether the related function is still working or not before the respective defined power management mode is asked to be motivated.

B. Selecting "Video Off" option :
(APM : Advanced Power Management)

1. YES option :

Selection "Yes" means that the defined Power Management Mode won't be executed until all the application softwares running under OS stop working.

That means, if there is any software still running under OS, the Power Management Mode will be executed only after all the software under OS stop working.

2. No option :

The defined Power Management Mode will be executed once the respective timer(s) is(are) time out.

C. Selecting "Video Off" option :

This option will be only presented and adjustable / functional

1. Always On option :

Monitor won't enter any Power Management Mode under any circumstance.

2. All modes → Off option :

Monitor will enter the defined Power Management Mode with blank screen once the respective PM timer is time out.

3. Susp/Stdby → Off option :

Monitor will enter the defined Power Management Mode with blank screen only when the time-out period of standby or suspend timer is expired.

4. Suspend → Off option :

Monitor will become blank screen only when the time-out period of suspend timer is expired.

D. IRQ 12/15 for PM (only for Intel non-SL-Enhanced series CPUs):

The IRQ 12 and IRQ 15 are ready for the funciton of PM. However, the appropriate selection from the both for this implementaton is based on the I/O environment of installed systems, and the match is detailed as follows:

I/O	Approrpriate IRQ No.
PS/2 mouse	15
IDE 2 Drive	12

A-5 Load Setup Defaults

"LOAD SETUP DEFAULTS" loads the default system values directly from ROM. If the stored record created by the setup program becomes corrupted (and therefore unusable), these defaults will be loaded automatically when you turn the computer on.
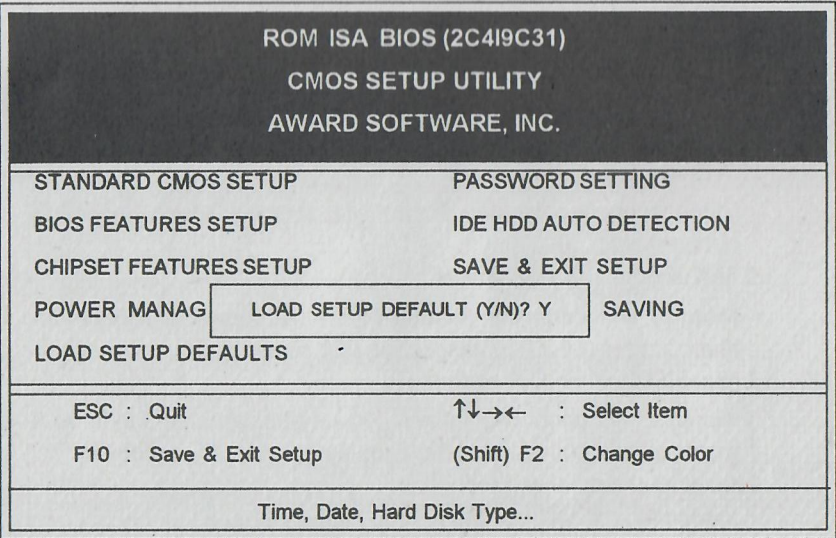
```
          ROM ISA BIOS (2C4I9C31)
            CMOS SETUP UTILITY
           AWARD SOFTWARE, INC.

 STANDARD CMOS SETUP          PASSWORD SETTING

 BIOS FEATURES SETUP          IDE HDD AUTO DETECTION

 CHIPSET FEATURES SETUP       SAVE & EXIT SETUP

 POWER MANAG  LOAD SETUP DEFAULT (Y/N)? Y    SAVING

 LOAD SETUP DEFAULTS

 ESC :  Quit              ↑↓→←   :  Select Item
 F10 :  Save & Exit Setup  (Shift) F2  :  Change Color

          Time, Date, Hard Disk Type...
```

Figure 6 Load Setup Defaults Screen

A-6 Password Setting

To change password, choose the **"PASSWORD SETTING"** option from the setup main menu and press [Enter]

1. If the CMOS data is not connect or this option has never been used, there is a default password which is stored in the ROM. The screen will display the following messages: **Enter Password**
    Press the [Enter] key and continue to change the password

2. If the CMOS data is correct or this option has been used to change the default password, the user is asked for the password stored in the CMOS. The screen will display the following message: **Enter Password**

3. After pressing the [Enter] key (ROM password) or current password (user-defined password), you can change the password stored in the CMOS. The password can be at max. 8 characters length.

Remember, to enable this feature, you must first select the "Security Option" either "Setup" or "System" in the BIOS FEATURES SETUP (Please refer to Figure 3).

A-7 Auto Detect Hard Disk

"IDE HDD AUTO DETECTION" This utility can **AUTO DETECT IDE HARD DISK TYPE.** If you do not know the **HARD DISK TYPE**

```
        ROM  ISA  BIOS (2C4I9C31)

        IDE HDD AUTO DETECTION

        AWARD SOFTWARE, INC.


              CYKS,  Heads  PRECOMP  LANDZONE  SECTORS   MODE
Drive C: (124Mb)   936    16    65535      935        17     normal
Drive D: (0Mb)      0     0       0         0          0

              Select Drive C option (N:skip) : Y

   OPTIONS  SIZE   CYLS   HEAD  PRECOMP  LANDZONE  SECTORS  MODE
    1 (Y)   124Mb  936     16    65535      935       17    NORMAL

                       ESC : Skip
```
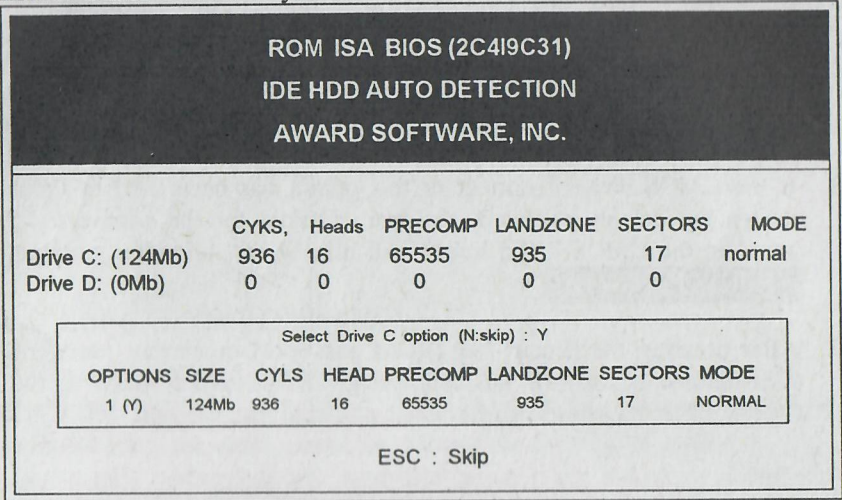
Figure 7 IDE HDD Auto Detection Screen

A-8 Save and Exit Setup

"SAVE & EXIT SETUP". If you select this and press the [enter] key, the values entered in the setup utilities will be recorded in the CMOS memory of the chip set. The microprocessor will check this whenever you turn on your system, and compare this to what it finds as it checks the system. This record is required for the system operation.

A-9 Exit Without Saving

"EXIT WITHOUT SAVING". Selecting this option and pressing the [Enter] key let you exit the Setup program without recording any new values or changing old ones.