CH-471A

Motherboard

User's Manual

Table of Contents

1. Introduction

2. Hardware Description

3. BIOS Setup

Appendix

1 Introduction

The Mainboard is an ASIC solution of 486-based PC/AT system. Support ***CPU 80486DX*** running up to ***50 MHz, CPU 80486DX2*** running up to ***66 MHz or CPU 486DX4*** running up to ***100 MHz***. On board provide Green-PC function connector which can be use in system to support Green-PC function.

Three VESA slots support high performance add-on cards, optimized for running software operation in high performance, such as ***OS/2, Windows/386, WIndows 3.1, XENIX, UNIX*** and so on.

And Green-PC function is designed for saving power consumption. This feature meet the necessary of the future. This mainboard can provide numerous work frequency, uses different kinds of CPU, compatible for CPU upgrade.

The on board voltage regulator supports Intel 80486 DX4, Cyrix Cx486 DX2-V50/V66/V80 and AMD 3V CPU necessary for low power consumption.

Mainboard Specification

- ***CPU support***

  Intel — 80486DX/DX2, 80486SX, 80487SX PGA package.
  SL enhanced PGA package.
  P24T PGA package.
  P24C (80486DX4) PGA package.
  P24D PGA package.

  AMD — Am486DX/DX2/DX4 PGA package.

  Cyrix — Cx486S/DX/DX2/DX2-V PGA package.

  UMC — U5S PGA package.

- ***Frequency***: Support system running 25/33/40/50 MHz.
- ***System chipset***: SIS 85C471, 85C407.
- ***Cache size:*** Write back direct mapped cache with size of 32K/64K/128K/256K/512K/1MB selection.
- ***SRAM type***: TAG SRAM 8Kx8/16Kx8/32Kx8/64Kx8
  DATA SRAM 8Kx8/32Kx8/128Kx8.
- ***DRAM size***: Four banks up to 128 MB.
- ***DRAM type***: Support 256K/512K/1M/2M/4M/8M/16M 72 pin SIMM module.
- ***Slots***: Seven 16 bit ISA slots, one 8 bit ISA slot, two VESA master mode slots, one VESA SLAVE mode slot, located at ISA slot 1,2,3.
- ***Dark Green-PC function***:

  Support: HDD standby
  Monitor standby
  CPU stop clock (0 MHz) -> · Intel SL enhanced. Cyrix Cx486S/DX /DX2/DX2-V.
  CPU slow clock (8 MHz) -> Intel/AMD 486 SX/DX/DX2, AMD 486DX4.

- Support green power supply connector for controlling the AC output power and VESA VGA monitor control through VGA feature connector.
- On board adjustable voltage regulator for 3V series CPU..
- Hardware power down switch supported.

Remark:
If the CH-471A with regulator in (Q3 or Q4), then it can support 3V series CPU.

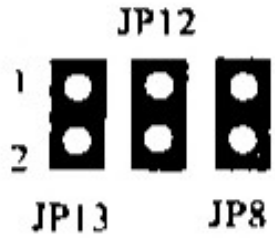
Example:

Intel 80486DX4 (P24C)
Cyrix Cx80486DX2-V66/V80.
AMD Am80486DX2-80/DX4-100.

In this chapter we will describe the system mainboard's connectors and jumpers. That will help you do the right setting of this board whenever you change the system configuration or make an upgrade. For the system layout, please refer to Appendix A.

CPU Clock Setting

JP8,12,13: Pin Header 2x1 → Clock Generator Setting



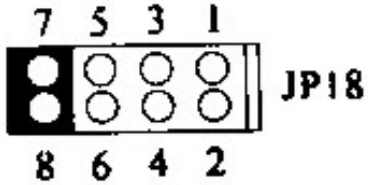
Frequency	JP8	JP12	JP13
20 MHz	OPEN	OPEN	OPEN
25 MHz	OPEN	OPEN	SHORT
33 MHz	SHORT	SHORT	SHORT
40 MHz	OPEN	SHORT	SHORT
50 MHz	SHORT	OPEN	OPEN

CPU Type Setting

JP21:Pin Header 3x1 → Intel 80486DX4(P24C), Cyrix M9 CPU Clock Multiplier

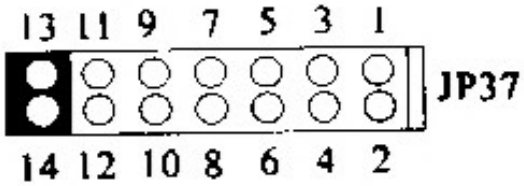
JP21 Position	Clock Multiplier	External Clock	Internal Clock	CPU Type
Open	3	25 MHz	75 MHz	80486DX4-75
Open	3	33 MHz	100MHz	80486DX4-100
1-2	2.5	33 MHz	83 MHz	80486DX4-83
2-3	2	50 MHz	100MHz	80486DX4-100

JP18:7-8 Pin Header 2x1 → AMD Am486 3 Volt CPU Clock Multiplier



JP18 Position	Clock Multiplier	External Clock	Internal Clock	CPU Type
7-8: Open	3	33 MHz	100MHz	Am486DX4-100
7-8: Short	2	40 MHz	80 MHz	Am486DX2-80
7-8: Short	2	33 MHz	66 MHz	Am486DX2-66

JP37: 13-14 Pin Header 2x1 → Cyrix CPU Clock Multiplier



JP37 Position	Clock Multiplier	External Clock	Internal Clock	CPU Type
13-14: Open	1	33 MHz	33 MHz	Cyrix Cx486DX2/DX2-V
13-14: Short	2	33 MHz	66 MHz	Cytix Cx486DX2/DX2-V

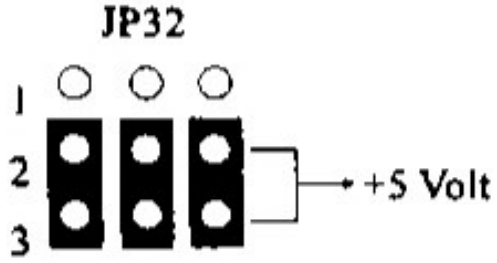
NOTE:
This jumper is for older version of Cyrix CPU. In new CPU version, this jumper can be left open.

JUMPER / CPU TYPE	JP10	JP11	JP18	JP20	JP25	JP37	JP41
Intel i486SX/SX2	1-2	2-3	All Open	Open	All Open	All Open	2-3
Intel i486DX/DX2 AMD Am486DX/DX2/DX4	1-2	2-3	All Open	1-2	All Open	All Open	1-2,3-4
Intel i486SX/SX2-SL	1-2	2-3	All Open	Open	1-2,3-4 9-10,11-12 Short	All Open	2-3
Intel i486DX/DX2-SL	1-2	2-3	All Open	1-2	1-2,3-4 9-10,11-12 Short	All Open	1-2,3-4
Intel i486DX4	1-2	2-3	All Open	1-2	1-2,3-4 9-10,11-12 Short	All Open	1-2,3-4
Intel P24D	1-2	1-2	All Open	1-2	1-2,3-4,5-6 7-8,9-10,11-12 13-14,15-16 Short	All Open	1-2,3-4
Intel P24T	1-2	1-2	All Open	1-2	1-2,3-4 9-10 Short	All Open	1-2,3-4
Cyrix Cx486S(M6)	2-3	1-2	All Open	Open	All Open	1-2,3-4,5-6 7-8,9-10,11-12 Short	2-3
Cyrix Cx486DX/DX2/DX2-V	2-3	1-2	All Open	1-2	All Open	1-2,3-4,5-6,7-8 9-10,11-12 Short	1-2,3-4
UMC U5S	2-3	1-2	1-2,3-4 5-6 Short	Open	All Open	All Open	2-3
Cyrix M9	2-3	1-2	All Open	1-2	1-2,3-4,5-6 7-8,9-10,11-12 15-16 Short	5-6	1-2,3-4

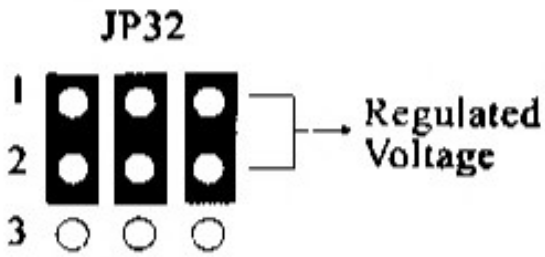
Voltage Regulator Setting

The on-board voltage regulator provide five voltage output rating support Intel 80486DX4 ,Cyrix Cx486DX2-V50/V66/V80 and AMD Am486 3 Volt CPU.

JP32: Pin Header 3x3 → CPU Power Selection

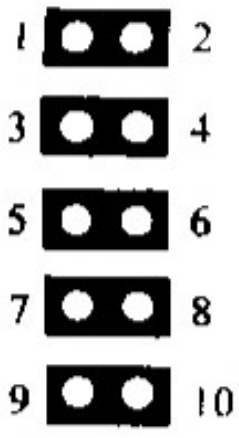


2-3 position
for 5V CPU



1-2 position
for CPU as below

JP26:Pin Header 5x2 → Regulator Output Voltage Selection



Setting	Voltage	CPU Type
1-2 Short	+3.15 Volt	Intel i486DX4
3-4 Short	+3.3 Volt	Cyrix Cx486DX2-V50 Intel i486DX4
5-6 Short	+3.45 Volt	Intel i486DX4 AMD Am486 3 volt CPU
7-8 Short	+3.6 Volt	Cyrix Cx486DX2-V66
9-10 Short	+4.0 Volt	Cyrix Cx486DX2-V80

NOTE:

1. Only one position can be closed in a time.
2. For detail voltage rating of the CPU, please see the data sheet of CPU.

Connectors and Jumper Description

J1: Keyboard Connector

J2: Power Supply Connector

J3: Hardware Reset
Open: Normal
Short: Reset

RESET

Pin 1: Reset input
Pin 2: Ground

J4: Power Saving Switch Connector

Open: Normal
Short: Power down state

NOTE:
When this switch is short, it will force the system to enter power down mode. At the same time the turbo LED will be off to indicate its status.

J5: Turbo Switch
Open: Turbo speed
Short: Low Speed

TBSW

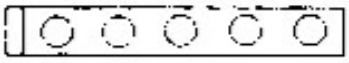
Pin 1: Turbo active
Pin 2: Ground

J6: Turbo LED

TBLD

Pin 1: LED power
Pin 2: LED cathode

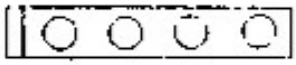
J7: Keylock and Power LED Connector



KBLOCK

Pin 1: LED Power
Pin 2 N. C.
Pin 4: Keyboard Inhibit
Pin 3.5: Ground

J8: Speaker Connector



SPKR

Pin 1: Data out
Pin 2: N. C.
Pin 3: Ground
Pin 4: +5V Vdc

JP6: Clock Down Control Selection

1-2: Short by STOPCLK control
Intel i486DX4 (P24C) CPU.
Setting 1-2 short.

2-3: SHort by SMOUT0 control
other CPU setting is 2-3 short.

JP7: Pin Header 1x3 CMOS Clear

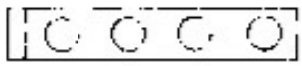
1-2 Short - Normal
2-3 Short - Clear CMOS Data

> ***CAUTION:***
> Before shorting JP7, first power off the mainboard and should be kept 1-2 short in normal operation.

JP17: Pin Header 1x3 CPU Clock Control Jumper

1-2: CPU Clock < 50 MHz
2-3: CPU clock = 50 MHz

JP19: 1-4: Used for external battery connector.



Pin 1: VDC
Pin 2: NC
Pin 3: NC
Pin 4: Ground

JP38,39: Green-PC Function Connector

Detail description see page 2-13

JP44,JP47:Pin Header 1x3 VESA Local Bus ID Selection

Wait state selection	JP44
High speed 0-wait	1-2 short
High speed 1-wait	2-3 short

VL-Bus operation clock	JP47
VESA clock and CPU clock > 33 MHz	2-3 short
VESA clock and CPU clock <= 33 MHz	1-2 short

JP45: Pin Header 1x2 Monitor Type Jumper

Open: Mono.
Short: Color.

Cache SRAM Installation

Cache SRAM Size Selection Jumpers

JP2,3,4,5,14,16: Pin header 1x3
JP1: Pin header 1x5

cache Size	JP1	JP2	JP3	JP4	JP5	JP14	JP16
32 K	1-2,3-4	2-3	1-2	1-2	1-2	1-2	1-2
64 K	2-3,4-5	1-2	1-2	2-3	1-2	1-2	1-2
128K	1-2,3-4	2-3	2-3	2-3	1-2	1-2	2-3
256K	2-3,4-5	1-2	2-3	2-3	2-3	1-2	2-3
512K	1-2,3-4	2-3	2-3	2-3	2-3	2-3	2-3
1 M	2-3,4-5	1-2	2-3	2-3	2-3	2-3	2-3

SRAM Configuration

Cache Size	TAG SRAM Size	Data SRAM Size	Q'ty	Banks	Cacheable Memory Range
32 KB	8 K x 8	8 K x 8	4 pcs	1	8 MB
64 KB	8 K x 8	8 K x 8	8 pcs	2	16 MB
128 KB	8 K x 8	32 K x 8	4 pcs	1	32 MB
256 KB	16 K x 8	32 K x 8	8 pcs	2	64 MB
512 KB	32 K x 8	128K x 8	4 pcs	1	128MB
1 MB	64 K x 8	128K x 8	8 pcs	2	128MB

NOTE:
Locations:
TAG SRAM: U11
Data SRAM: Bank 0 - U1, 3, 5, 7
Bank 1 - U2, 4, 6, 8

Cache SRAM Installation

The external cache can be configured as non-interleaved or interleaved for two bank SRAM installed, for two-bank interleaved cache can use slower cache DATA SRAMs.

The BIOS support Cache Read Burst timing and write cycles for SRAM setting. The cache read provide four burst options: 2-1-1-1, 3-1-1-1, 2-2-2-2 and 3-2-2-2, and cache write provide two options: 2T or 3T.

DATA SRAM specification of speed

Cache Configuration	Interleave	25MHz	33 MHz	40MHz	50MHz
Read 2-1-1-1 (1T) / Write 2T	Yes	-35ns	-20ns	-12ns	------
Read 2-1-1-1 (1T) / Write 2T	No	-25ns	-15ns	-----	-----
Read 2-1-1-1 (1T) / Write 3T	Yes	-40ns	-25ns	-20ns	-----
Read 2-1-1-1 (1T) / Write 3T	No	-25ns	-15ns	-----	-----
Read 3-1-1-1 (1T) / Write 3T	Yes	-45ns	-25ns	-20ns	-12ns
Read 3-1-1-1 (1T) / Write 3T	No	-25ns	-15ns	-----	-----
Read 2-2-2-2 (2T) / Write 2T	No	-35ns	-20ns	-12ns	-----
Read 2-2-2-2 (2T) / Write 3T	No	-40ns	-25ns	-20ns	-----
Read 3-2-2-2 (2T) / Write 3T	No	-65ns	-45ns	-35ns	-25ns
Read 3-2-2-2 (2T) / Write 3T	Yes	-80ns	-55ns	-45ns	-30ns

TAG SRAM specification of speed

Cache Configuration	25MHz	33 MHz	40MHz	50MHz
Read 2-1-1-1 (1T) / 2-2-2-2 (2T) / Write 2T	-25ns	-20ns	-12ns	------
Read 2-1-1-1 (1T) / 2-2-2-2 (2T) / Write 3T	-35ns	-25ns	-15ns	-----
Read 3-2-2-2 (2T) / Write 3T	-45ns	-35ns	-25ns	-20ns

DRAM Bank Configuration

DRAM Speed Options

The DRAM socket **SIM1, SIM2, SIM3** and **SIM4** support single side or double side 72 pin SIMM DRAM module.

The BIOS support 4 read and 2 write speed options. The 4 read options are **"Fastest", "Faster", "Slower"** and **"Slowest"**, and 2 write option are **0 WS** and **1 WS** (WS means wait state). The 4 option of DRAM access timing is shown below.

	Fastest	Faster	Slower	Slowest
RAS-to-CAS delay	1.5T	2T	2T	3T
Read CAS pulse width	1.5T	2T	3T	3T
RAS per charge	3T	3T	4T	5T
CAS per charge	0.5T	1T	1T	2T

The following is the configuration table:

Bank 0 (SIM 1)	Bank 1 (SIM 2)	Bank 2 (SIM 3)	Bank 3 (SIM 4)	Total
256 K x 36-S				1 MB
256 K x 36-S	256 K x 36-S			2 MB
512 K x 36-D				2 MB
256 K x 36-S	256 K x 36-S	512 K x 36-D		4 MB
512 K x 36-D	512 K x 36-D			4 MB
1 M x 36-S				4 MB
256 K x 36-S	1 M x 36-S			5 MB
256 K x 36-S	256 K x 36-S	1 M x 36-S		6 MB
512 K x 36-D	1 M x 36-S			6 MB
256 K x 36-S	256 K x 36-S	512 K x 36-D	1 M x 36-S	8 MB
512 K x 36-D	512 K x 36-D	1 M x 36-S		8 MB
1 M x 36-S	1 M x 36-S			8 MB
2 M x 36-D				8 MB
256 K x 36-S	256 K x 36-S	1 M x 36-S	1 M x 36-S	10 MB
256 K x 36-S	256 K x 36-S	4 M x 36-S		18 MB
512 K x 36-D	512 K x 36-D	1 M x 36-S	1 M x 36-S	12 MB
1 M x 36-S	1 M x 36-S	1 M x 36-S		12 MB
1 M x 36-S	1 M x 36-S	1 M x 36-S	1 M x 36-S	16 MB
2 M x 36-D	2 M x 36-D			16 MB
4 M x 36-S				16 MB
256 K x 36-S	4 M x 36-S			17 MB
512 K x 36-D	4 M x 36-S			18 MB
512 K x 36-D	512 K x 36-D	4 M x 36-S		20 MB
1 M x 36-S	4 M x 36-S			20 MB
512 K x 36-D	512 K x 36-D	1 M x 36-S	4 M x 36-S	24 MB
1 M x 36-S	1 M x 36-S	4 M x 36-S		24 MB
2 M x 36-D	2 M x 36-D	2 M x 36-D		24 MB
4 M x 36-S	4 M x 36-S			32 MB

2 M x 36-D	2 M x 36-D	2 M x 36-D	2 M x 36-D	32 MB
8 M x 36-D				32 MB
512 K X 36-D	512 K x 36-D	4 M x 36-S	4 M x 36-S	36 MB
1 M x 36-S	4 M x 36-S	4 M x 36-S		36 MB
1 M x 36-S	8 M x 36-D			36 MB
1 M x 36-S	1 M x 36-S	4 M x 36-S	4M x 36-S	40 MB
1 M x 36-S	1 M x 36-D	8 M x 36-D		40 MB
4 M x 36-S	4 M x 36-S	4 M x 36-S		48 MB
4 M x 36-S	8 M x 36-D			48 MB
4 M x 36-S	4 M x 36-S	4 M x 36-S	4M x 36-S	64 MB
4 M x 36-S	4 M x 36-S	8 M x 36-D		64 MB
1 M x 36-S	16M x 36-S			68 MB
16M x 36-S				64 MB
8 M x 36-D	8 M x 36-D			64 MB
256 K x 36-S	16M x 36-S			65 MB
1 M x 36-S	8 M x 36-D	8 M x 36-D		68 MB
1 M x 36-S	1 M x 36-D	8 M x 36-D	8 M x 36-D	72 MB
1 M x 36-S	1 M x 36-S	16M x 36-S		72 MB
4 M x 36-S	16M x 36-S			80 MB
4 M x 36-S	8 M x 36-D	8 M x 36-D		80 MB
4 M x 36-S	4 M x 36-S	8 M x36-D	8M x 36-D	96 MB
8 M x 36-D	8 M x 36-D	8 M x 36-D		96 MB
4 M x 36-S	4 M x 36-S	16M x 36-S		96 MB
8 M x 36-D	8 M x 36-D	8 M x 36-D	8M x 36-D	128MB
16M x 36-S	16M x 36-S			128MB

NOTE:
S = Single side, D = Double side.

Green Function Connectors

Monitor Power Down Control

The connector JP38 suppoer hardware method to control peripheral devicc. When power down, it will reduce power consumption. The JP38 arc activc after system "Doze Time" period.

The following is the application for the JP38.

For peripheral device using power supply AC output control pinout:

1 2

JP38

Pin 1: Control signal to power supply
Pin 2: Ground

HDD Standby Mode

The HDD standby mode support 1 to 15 minutes of power down timer value and support suspend mode when SMI is in green mode. These settings are supported in the BIOS power management program.

The following is the power down sequence of the HDD:

HDD Power Down Time → HDD Standby

The following is the power down sequence of the HDD when SMI is in green mode.

Doze Time → Standby Time → Suspend Time
→ System Standby → HDD Standby

Green PC Power Down Sequence

For SMI Green: (Intel SL Enhanced/Cyrix CPU)

Doze Time→ Standby Time→ Suspend Time→ SMIGreen State
CPU clock=8 MHz
CPU Stop clock
HDD Standby
CRT Standby (Off)

For Normal Green:

Doze Time → Standby Time → Normal Green State
CPU clock=8 MHz

HDD Standby
CRT Standby (Off).

3 BIOS Setup

BIOS Overview

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del> immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys when the message below appears briefly at the bottom of the screen.

TO ENTER SETUP BEFORE BOOT PRESS CTRL-ALT-ESC OR DEL KEY

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing the <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will be asked again.

PRESS F1 TO CONTINUE, CTRL-ALT-ESC OR DEL TO ENTER SETUP

Control keys

Up arrow	Move to previous item
Down arrow	Move to next item
Left arrow	Move to the item in the left hand
Right arrow	Move to the item in the right hand
Esc key	Main Menu - Quit and not save changes in CMOS Status Page Setup Menu and Option Page Setup Menu - Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Change color from total 16 colors
F3 key	Calendar, only for Status Page Setup Menu
F4 key	Reserved
F5 key	Restore the previous CMOS value from CMOS, only for Option Page Setup Menu
F6 key	Load the default CMOS value from BIOS default table, only for Option Page Setup Menu
F7 key	Load the default
F8 key	Reserved
F9 key	Reserved
F10 key	Save all the CMOS changes, only for Main Menu

Getting Help

Main Menu

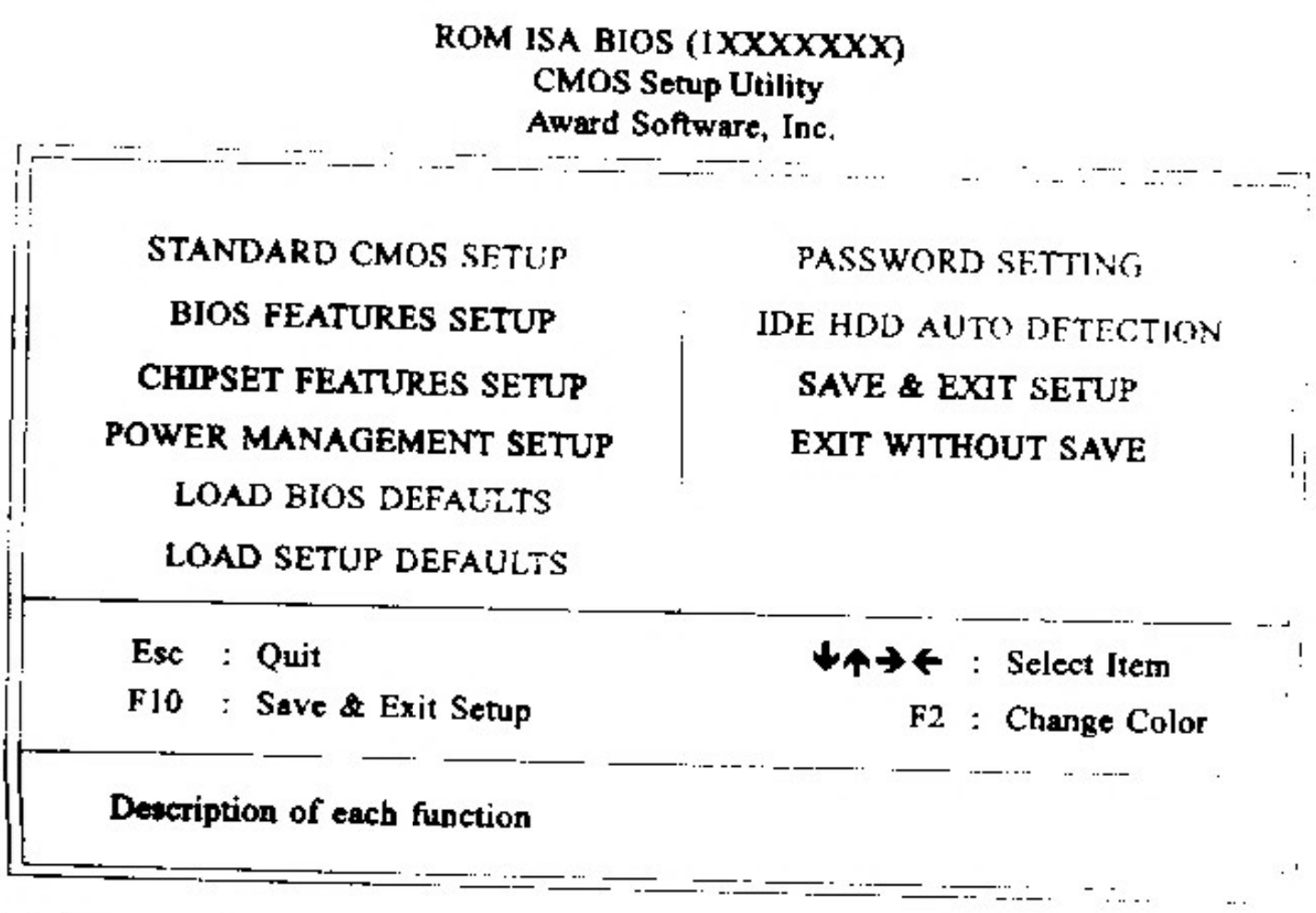
The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to be use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

The Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.



Standard CMOS Setup

This setup page includes all the items in a standard compatible BIOS.

BIOS Features Setup

This setup page includes all the items of Award special enhanced features.

Chipset Features Setup

This setup page includes all the items of chipset special features.

Load BIOS Defaults

BIOS defaults indicates the most appropriate value of the system parameter on which the system could be in maximum performance.

Load Setup Defaults

Chipset defaults indicates the values required by the system for the minimum performance.

Password Setting

Change, set, or disable password. It allows you to limit access to the system and Setup, or just to Setup.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

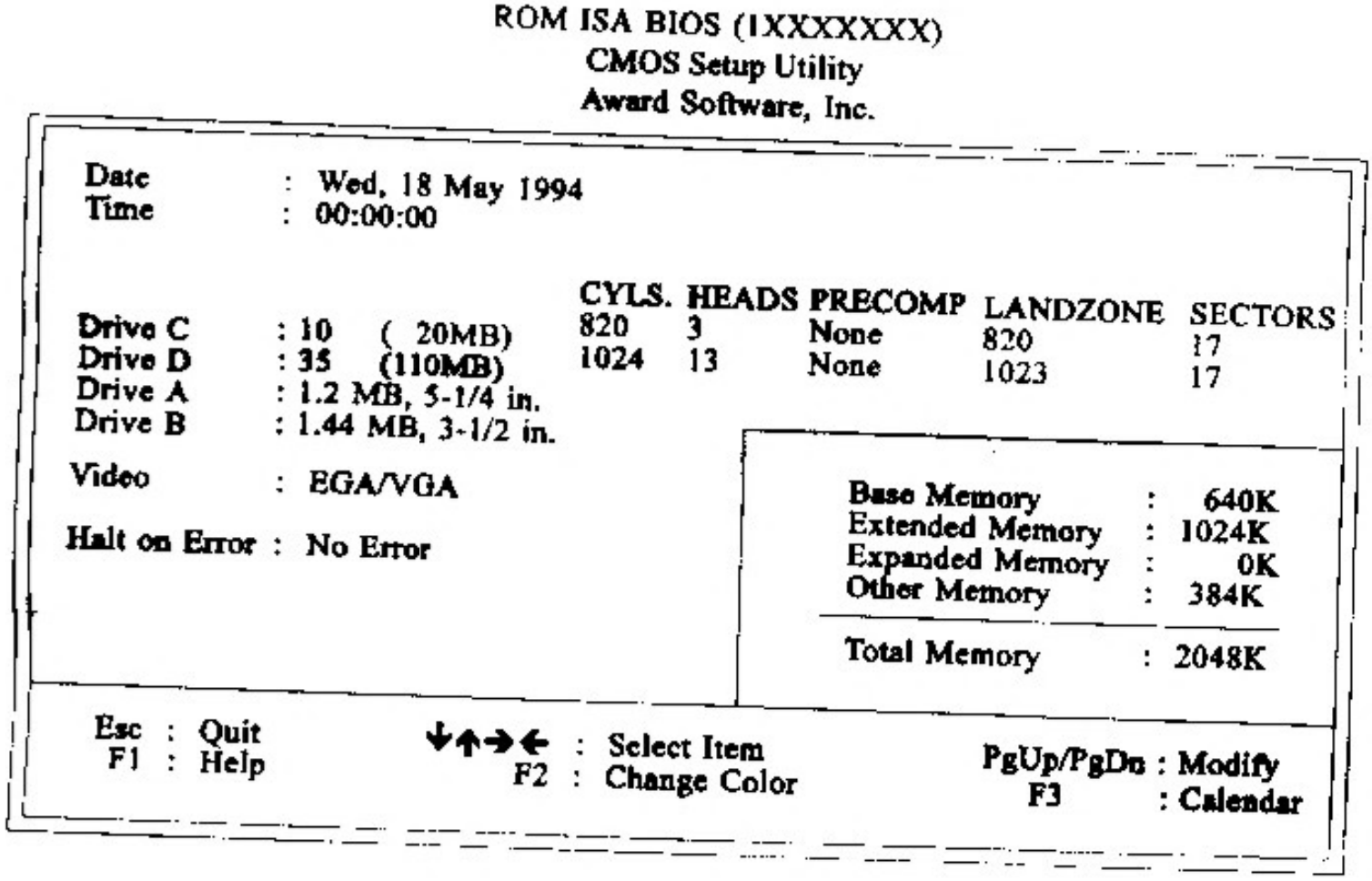
Save CMOS value changes to CMOS and exit setup.

Exit without Save

Abandon all CMOS value changes and exit setup.

Standard CMOS Setup Menu

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes one or more setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.



Date

The date format is <day>, <date> <month> <year>. Press <F3> to show the calendar.

day	The day, from Sun to Sat, determined by the BIOS and is display-only
date	The date, from 1 to 31 (or the maximum allowed in the month)
month	The month, Jan. through Dec.
year	The year, from 1990 through 2099

Time

The time format is <hour> <minute> <second>. The time is calculated base on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00.

Drive C type/Drive D type

The category identify the types of hard disk drive C or drive D that has been installed in the computer. There are 46 predefined types and a user definable type. Type 1 to type 46 are predefined. Type User is user-definable. Press PgUp or PgDn to select a numbered hard disk type or type the number and press <Enter>. Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

If you select type User, related information is asked to be entered to the following items. enter the information directly from the keyboard and press <Enter>. Those information should be provided in the documentation from your hard disk vendor or the system manufacturer.

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors

If a hard disk has not been installed select NONE and press <Enter>.

Drive A type/Drive B type

The category identify the types of floppy disk drive A or drive B that has been installed in the computer.

None	No floppy drive installed
360K, 5.25 in	5-1/4 inch PC-type standard drive; 360 kilobyte capacity
1.2M, 5.25 in	5-1/4 inch AT-type high-density drive; 1.2 megabyte capacity
720K, 3.5 in	3-1/2 inch double-sided drive; 720 kilobyte capacity
1.44M, 3.5 in	3-1/2 inch double-sided drive; 1.44 megabyte capacity
2.88M, 3.5 in	3-1/2 inch double-sided drive; 2.88 megabyte capacity

Video

The category selects the type of adapter used for the primary system monitor that must match your video display card and monitor. Although secondary monitors are supported, you do not have to select the type in Setup.

EGA/VGA	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SEGA, or PGA monitor adapters
CGA 40	Color Graphics Adapter, power up in 40 column mode
CGA 80	Color Graphics Adapter, power up in 80 column mode
MONO	Monochrome adapter, includes high resolution monochrome adapters

Error Halt

The category determines whether the computer will stop if an error is detected during power up.

No errors	Whenever the BIOS detects a non-fatal error the system will be stopped and you will be prompted.
All errors	The system boot will not be stopped for any error that may be detected
All, But keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/key	The system boot will not stop for a keyboard or disk error; it will stop for all other errors.

Memory

The category is display-only which is determined by POST (Power On Self Test) of the BIOS.

Base Memory

The POST of the BIOS will determine the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the mother board, or 640K for systems with 640K or more memory installed on the mother board.

Extended Memory

The BIOS determines how much extended memory is present during the POST. This is the amount of memory located above 1 MB in the CPU's memory address map.

Expanded Memory

Expanded Memory is a memory defined by the Lotus/Intel/Microsoftt(LIM) standard as EMS. Many standard DOS applications can not utilize memory above 640K, the Expanded Memory Specification (EMS) swaps memory which is not utilized by DOS with a section, or frame, so these applications can access to all the system memory. Memory can be swapped by EMS is usually 64K within 1 MB or memory above 1 MB, depends on the chipset design. Expanded memory device driver is required to use memory as Expanded Memory.

Other Memory

This refers to the memory located in the 640K to 1024K address space. This memory is used for different applications. DOS uses this area to load device drivers to keep as much base memory free for application programs. Most widely use for this area is Shadow RAM.

BIOS Features Setup Menu

Virus Warning

This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, run anti-virus program to locate the problem.

!WARNING!
Disk boot sector is to be modified
Type "Y" to accept write or "N" to abort write
Award Software, Inc.

Enabled	Activate automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/Chipset design. The default value is disable.

Enabled	Enable cache
Disabled	Disable cache

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power on the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (i.e., DOS). Default value is A, C.

C, A.	System will first search for hard disk drive then floppy disk drive.
A, C	System will first search for floppy disk drive then hard disk drive.

Boot Up Floppy Seek

During POST, 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.

Enabled	BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Note that BIOS can not tell from 720K, 1.2M or 1.44M drive type as they are all 80 tracks.
Disabled	BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360K.

Boot Up NumLock Status

The default value is On.

On	keypad is number keys
Off	keypad is arrow keys

Boot Up System Speed

It selects the default system speed - the speed that the system will run at immediately after power up.

High	Set the speed to high
Low	Set the speed to low

IDE HDD Block Mode

Enabled	Enable IDE HDD Block Mode
Disabled	Disable IDE HDD Block Mode

Gate A20 Option

Normal	keyboard
Fast	chipset

Memory Parity Check

Enabled	Normal memory parity check
Disabled	Ignore memory parity check

Typematic Rate Setting

This determines the typematic rate.

Enabled	Enable typematic rate
Disabled	Disable typematic rate

Typematic Rate (Chars/Sec)

6	6 characters per second
8	8 characters per second
10	10 characters per second
12	12 characters per second
15	15 characters per second
20	20 characters per second
24	24 characters per second
30	30 characters per second

Typematic Delay (Msec)

When a key is hold, the time between the first and second character will be display.

250	250 msec
500	500 msec
750	750 msec
1000	1000 msec

Security Option

This category allows you to limit access to the system and Setup, or just to 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.

NOTE:
To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable the security. Once the security password is disable, the system will boot and you can enter the Setup.

System BIOS Shadow

It determines whether system BIOS will be copied to RAM, however, it is optional from chipset design. System Shadow will improve the system performance.

Enabled	System shadow is enabled
Disabled	System shadow is disabled

Video BIOS Shadow

It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

Enabled	Video shadow is enabled
Disabled	Video shadow is disabled

C8000=CBFFF Shadow/EC000-EFFFF Shadow

These categories determine whether optional ROM will be copied to RAM by 16K byte.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

Chipset Features Setup Menu

ROM ISA BIOS (2C4i8000)
CHIPSET FEATURE SETUP
AWARD SOFTWARE, INC.

Auto Configuration	: Enabled	Fast Reset Emulation	: Enable
		Fast Reset Latency	: 2 us
AT Bus Clock	: 1/4 CLKIN	Latch Local Bus	: T3
		Local Bus Ready	: Synchronize
		Memory Hole Size	: None
DRAM Speed	: Faster	DMA Clock Select	: 4MHz
DRAM Write WS	: 1 WS	Memory Relocation	: Enable
DRAM Write CAS	: 2T		
DRAM Write Burst	: Disable		
Slow Refresh	: Disable		
Hidden Refresh	: Enable		
External Cache WB/WT	: Write Thru	ESC : Quit	: Select Item
Internal Cache WB/WT	: Write Thru	F1 : Help	PU/PD/+/- : Modify
Cache Burst Read	: 2T	F5 : Old Values	(Shift) F2 : Color
Cache Write Cycle	: 3T	F6 : Load BIOS Defaults	
System Shadow	: Non-Cacheable	F7 : Load Setup Defaults	
Video Shadow	: Non-Cacheable		

The following pages tells you the options of each item and describe the meaning of each options.

Item	Options	Descriptions
A. Auto Configuration	1. Enable	Pre-defined values for DRAM, cache. timings according to CPU type & system clock
	2. Disable	Users can configure their own timings
		Note: When this item is enabled, the pre-defined items will become SHOW-ONLY
B. AT Bus Clock (*) Remark 1	7.159 MHz 1/10 CLKIN 1/8 CLKIN 1/6 CLKIN 1/5 CLKIN 1/4 CLKIN 1/3 CLKIN 1/2 CLKIN	Defines the clock value for AT BUS Usually, AT bus clock should be programmed to 8 MHz, e.g. when system clock is 33 MHz, choose 1/4 CLKIN All values derived from CLKIN is called synchronous mode. The 7.159 MHz option is called Asynchronous mode
C. DRAM Speed (*) Remark 1	Slowest Slower Faster Fastest	Defines 4 groups of DRAM timing for different DRAM. Choose "Slower" for slower DRAM and so on
D. DRAM Write ws (*) Remark 1	0 ws 1 ws	Defines the wait states to be added during DRAM write cycle. Choose 1 WS for faster system or slower DRAM
E. DRAM Write CAS (*) Remark 1	1T 2T	Defines the CAS pulse width during DRAM write cycle 1T will have better performance

F. DRAM Write Burst	Disable Enable	To enable or disable the DRAM write burst mode Burst mode will have a better performance
		Note: If item (K) is set to Write Thru, this item shouldn't be enabled
G. Slow Refresh	Disable Enable	System will refresh the DRAM periodically to prevent data lost To enable Slow Refresh means the period between 2 refresh cycle is longer
		Note: Do not enable this item unless your memory support slow refresh
H. Hidden Refresh	Disable Enable	To enable/disable the Hidden Refresh capability of the chipset. When enable, no HOLD cycle will be asserted to CPU, so that the system will have a better performance
I. External Cache WB/WT	Write Thru Write Back	Defines the on board cache working scheme Write Back cache performs better
J. Internal Cache WB/WT	Write Thru Write Back	Defines the CPU internal cache working scheme Note: This item will not be shown on screen if the CPU does not support Write Back cache
K. Cache Burst Read (*) Remark '	1T	3-1-1-1 cache timing
	2T	3-2-2-2 cache timing

L. Cache Write Cycle (*) Remark 1	2T 3T	Defines the number of machine cycle to be used for cache write cycle Select 2T to get better performance by considering the system speed & cache RAM type.
M. System Shadow	Cacheable Non-Cacheable	Defines whether or not the system BIOS area to be cached by the on board cache RAM
N. Video Shadow	Cacheable Non-Cacheable	Defines whether or not the Video BIOS area to be cached by the on board cache RAM
O. Fast Reset Latency	2us 6us	Defines the latency time between keyboard command is detected and software reset is active
P . Latch Local Bus (*) Remark 1	T2 T3	Defines the time at which the chipset will latch the LDEV# signal from VESA slot
Q. Local Bus Ready	Synchronize	Chipset will synchronize the LRDY# signal & pass it to VESA slot in next machine cycle
	Transparent	Chipset will pass the LRDY# signal directly from VESA slot via chipset to CPU
R. Memory Hole Size	None 1MB 2MB 4MB	To define the memory hole size starting from memory address 16M downward Once this item is set, the memory hole will map to AT Bus
		Note: This item is used for some add-on cards which map their RAM to address 15-16M
S. DMA Clock Select	4MHz 8MHz	Defines the DMA clock for the system
		Note: The DMA clock setting register is in 82C206

T. Memory Relocation	Disable Enable	If the following conditions are all true, the shadow RAM located in A0000-BFFFF & D0000-EFFFF will be relocated to top memory. - No Power Management (for S-series CPU only) - D & E shadow disabled - This item enabled - Total memory size is 1M, 2M, 4M, 5M, 6M or 8M

Remark 1:
All items mark with (*) from pages 3-15 to 3-18 will be loaded with predefined values according to CPU type & speed as long as the item 'Auto Configuration' is set to 'Enabled'

Power Management Setup Menu

The Power Management Setup will appear on your screen as shown below:

FOR SMI CPU SETUP

ROM ISA BIOS (2C4i8000)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management : User Define	IRQ 4 (COM 1) : Disable
PM Control by APM : Yes	IRQ 5 (LPT or LAN) : Disable
Video Off Method : Blank Screen	IRQ 6 (Floppy Disk) : Disable
Video Off Option : Always On	IRQ 7 (LPT or LAN) : Disable
** PM Timers **	IRQ 8 (RTC, OS2) : Disable
HDD Power Down : Disable	IRQ 9 (Reserved) : Disable
System Doze : 1 Min.	IRQ 10 (Reserved) : Disable
System Standby : 10 Sec.	IRQ 11 (Reserved) : Disable
System Suspend : 10 Sec.	IRQ 12 (PS2 mouse) : Disable
** PM Timers **	IRQ 13 (387) : Disable
Local Master : Disable	IRQ 14 (Hard Disk) : Disable
Local Device : Disable	IRQ 15 (Reserved) : Disable
Video Activities : Disable	ESC : Quit : Select Item
DMA Activities : Disable	F1 : Help PU/PD/+/- : Modify
IRQ 1 (Keyboard) : Disable	F5 : Old Values (Shift) F2 : Color
IRQ 3 (COM 2) : Disable	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

The following pages tells you the options of each item & describes the meaning of each options.

Item	Options	Descriptions
A. Power Management	1. Disable	Global Power Management will be disabled
	2. User Define	Users can configure their own power management
	3. Min. Saving	Pre-defined timer values are used such that all timers are in their MAX value
	4. Max. Saving	Pre-defined timer values are used such that all timers are in their MIN value
	5. Optimize	Pre-defined timer values are used such that all timers will have a value which is most practical & reasonable
B. PM mode	1. Auto	Without monitor power down service by BIOS
	2. IRQ 12/IRQ 15	Using IRQ12 or IRQ15 as the green function interrupt service routine that service the monitor power down control by BIOS.
C. PM Control by APM	1. No	System BIOS will ignore APM when power manage the system
	2. Yes	System BIOS will wait for APM's prompt before it enter any PM mode, e.g. DOZE, STANDBY or SUSPEND Note: If APM is installed, & if there is a task running, event the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode!
		Note: If APM is not installed, this option has no effect

D. Video Off Method	1. Blank Screen	The system BIOS will only blanks off the screen when disabling video
	2. V/H SYNC+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals form VGA cards to monitor
		Note: Green monitors detect the V/H SYNC signals to turn off its electron gun
*APM=Advanced Power Management. This function is defined by Microsoft.		
E. Video Off Option	1. Always On	System BIOS will never turn off the screen
	2. Suspend -> off	Screen off when system is in SUSPEND mode
	3. Susp, Stby -> off	Screen off when system is in STANDBY or SUSPEND mode
	4. All Modes -> Off	Screen off when system is in DOZE, STANDBY or SUSPEND MODE
F. HDD Power Down (#) Remark 2	1. Disable	HDD's motor will not off
	2. 1. Min 2. Min 3. Min 4. Min 5. Min 6. Min 7. Min 8. Min 9. Min 10.Min 11.Min 12.Min 13.Min 14.Min 15.Min	Defines the continuous HDD idle time before the HDD entering power saving mode (motor off)
	3. When Suspend	BIOS will turn the HDD's motor off when system is in SUSPEND MODE
		When HDD is in power saving mode, any access to the HDD will wake the HDD up.

G. System Doze (*) Remark 1	1. Disable	System will never enter Doze mode
	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 7 Min 10 Min 15 Min 30 Min 45 Min 1 Hr. 2 Hr. 3 Hr.	Defines the continuous idle time before the system enter Doze mode. If any item defined in (J) is enabled & active, DOZE timer will be reloaded
		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be off depend on (E)
H. System Standby (*) Remark 1	1. Disable	System will never enter STANDBY mode
	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 7 Min 10 Min 15 Min 30 Min 45 Min 1 Hr. 2 Hr. 3 Hr.	Defines the continuous idle time before the system enter STANDBY mode. If any item defined in (J) is enabled & active, STANDBY timer will be reloaded

H. System Standby (*) Remark 1		Note: Normally, STANDBY mode puts the system into low speed or 8 MHz, screen may be off depend on (E)
I. System Suspend (*) Remark 1	1. Disable	System will never enter SUSPEND mode
	2. 10 Sec 20 Sec 30 Sec 40 Sec 1 Min 3 Min 5 Min 7 Min 10 Min 15 Min 30 Min 45 Min 1 Hr. 2 Hr. 3 Hr.	Defines the continuous idle time before the system enter SUSPEND mode. If any item defined in (J) is enabled & active, SUSPEND timer will be reloaded
		Note: Normally, SUSPEND mode puts the system into low speed or 8 MHz, clock is stopped, screen may be off depend on (E)
J. Local Master Local Device Video Activities DMA Activities IRQ Activities IRQ 1 (Keyboard) IRQ 3 (COM 2) IRQ 4 (COM 1) IRQ 5 (LPT or LAN) IRQ 6 (Floppy Disk) IRQ 7 (LPT or LAN) IRQ 8 (RTC, OS2) IRQ 9 (Reserved) IRQ 10 (Reserved) IRQ 11 (Reserved) IRQ 12 (PS2 mouse) IRQ 13 (387) IRQ 14 (Hard Disk) IRQ 15 (Reserved)	1. Disable	The specified event's activity will not affect the PM timers
	2. Enable	The specified event's activity causes the PM Timers to be reloaded. i.e. the Power Management Unit (PMU) monitors the specified activities as PM events

* Remark 1:
All items mark with (*) in this menu, will be loaded with predefined values as long as the item 'Power Management' is not configured to 'User Defined'.

Remark 2:
Although the item 'HDD Power Down' is not controlled by Item 'Power Management' in terms of timer value, the HDD(s) will not power down if the global power management is disabled!

If the CPU you're using is a NON-SMI CPU, i.e. CPU does not support the SMI interrupt, the System BIOS will automatically detect the CPU & the POWER MANAGEMENT SETUP will look like this:

FOR NON-SMI CPU SETUP

ROM ISA BIOS (2C4i8000)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	**: User Define**	IRQ 4 (COM 1)	: Disable
PM Mode	**: Via IRQ15**	IRQ 5 (LPT or LAN)	: Disable
		IRQ 6 (Floppy Disk)	: Disable
PM Control by APM	: Yes	IRQ 7 (LPT or LAN)	: Disable
Video off method	: V/Hsync + blank	IRQ 8 (RTC, OS2)	: Disable
Video off option	: Always ON	IRQ 9 (Reserved)	: Disable
		IRQ 10 (Reserved)	: Disable
** PM Timers **		IRQ 11 (Reserved)	: Disable
HDD Power Down	: Disable	IRQ 12 (PS2 mouse)	: Disable
System Doze	: 1 Min.	IRQ 13 (387)	: Disable
System Standby	: 10 Sec.	IRQ 14 (Hard Disk)	: Disable
System Suspend	: 10 Sec.	IRQ 15 (Reserved)	: Disable
** PM Timers **			
Local Master	: Disable		
Local Device	: Disable	ESC : Quit	: Select Item
Video Activities	: Disable	F1 : Help	PU/PD/+/- : Modify
DMA Activities	: Disable	F5 : Old Values	(Shift) F2 : Color
IRQ 1 (Keyboard)	: Disable	F6 : Load BIOS Defaults	
IRQ 3 (COM 2)	: Disable	F7 : Load Setup Defaults	

The difference between a SMI & a NON-SMI CPU is that the SMI CPU's Power Management is controlled by software (System BIOS). Those items, such as 'PM Control by APM' are meaningless for a NON-SMI CPU. The BIOS will detect which kind of CPU it is & automatically hidden those items not available for a NON-SMI CPU.

Password Setting

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

ENTER PASSWORD:

Type the password, up to eight characters, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable password, just press <Enter> when you are prompted to enter password. A message will confirm the password being disabled.

PASSWORD DISABLED:

Once the password is disabled, the system will boot and you can enter the Setup once again. If you select System at Security Option of BIOS Features Setup Menu, you will be prompted for the password every time the system is rebooted or any time you try to enter Setup. If you select Setup at Security Option of BIOS Features Setup Menu, you will be prompted only when you try to enter Setup.

Power-On Boot

After you have made all the changes to CMOS values and the system can not boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. Upon re-starting the system, immediately press <Insert> to load BIOS default CMOS value for boot up.

BIOS Reference - POST Codes

NOTE:
ISA POST codes are typically output to port address 80h.

POST (hex)	Name	Description
C0	Turn Off Chipset Cache	OEM Specific-Cache control
1	Processor Test 1	Processor Status (IFLAGS) Verification. Tests the following processor status flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify they are set, then turn each flag off and verify it is off..
2	Processor Test 2	Read/Write/Verify all CPU registers except SS, SP, and BP with data pattern FF and 00.
3	Initialize Chips	Disable NMI, PIE, AIE, UEI SQWV Disable video, parity checking, DMA Reset math coprocessor Clear all page registers, CMOS shutdown byte Initialize timer 0, 1, and 2, including set EISA timer to a known state Initialize DMA controllers 0 and 1 Initialize interrupt controllers 0 and 1 Initialize EISA extended registers.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed in order to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, Initialize keyboard	Keyboard controller initialization
6	Reserved	
7	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.

C6	Cache presence test	External cache size detection
8	Setup low memory	Early chip set initialization Memory presence test OEM chip set routines Clear low 64K of memory Test first 64K memory.
9	Early Cache Initialization	Cyrix CPU initialization cache initialization
A	Setup Interrupt Vector Table	Initialize first 120 interrupt vectors with SPURIOUS_INIT_HDLR and initialize INT 00h-1Fh according to INT_TBL
B	Test CMOS RAM checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.
E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM-Enable shadow according to Setup
F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts then verify no interrupt mask register is on.

18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity/IO Check)	Verify NMI can be cleared.
1A		Display CPU clock
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests a clear EISA mode flag. Test EISA Configuration Memory Integrity (Checksum & communication interface).
20	Enable Slot 0	Initialize slot 0 (System Board).
21-2F	Enable Slots 1-15	Initialize slots 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1 MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1 MB using various patterns. NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be "skipped" with ESC key in EISA mode.
33-3B	Reserved	
3C	Setup Enabled	
3D	Initialize & Install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values
40		Display virus protest disable or enable
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and any drives.
42	Initialize Hard Drive & Controller	Initialize hard drive controller and any drives.

43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i,e., any non-fatal errors that were detected during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker Enable NMI, Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present C8000h to EFFFFh. NOTE: When FSCAN option is enabled, will initialize from C8000h to F7FFFh.
53	Initialize Time Value	Initialize timer value in 40h: BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup.
61	Set Boot Speed	Set system speed for boot
62	Setup NumLock	Setup NumLock status according to Setup
63	Boot Attempt	Set low stack Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display Press F1 to disable NMI, F2 reboot.
E1-EF	Setup	E1-Page 1, E2-Page 2, etc.
FF	Boot	

BIOS Reference - BIOS Default Drive Table

This is a current list of the drive type table contained in Setup.

Type	Size (MB)	Cylinders	Heads	Sectors	Write Precomp	Land Zone	Example Model
1	10	306	4	17	128	305	TEAC SD510, MMI 112, 5412
2	20	615	4	17	300	615	Seagate ST225, ST4026
3	30	615	6	17	300	615	
4	62	940	8	17	512	940	
5	46	940	6	17	512	940	
6	20	615	4	17	None	615	Seagate ST125, Tandon TM262
7	30	462	8	17	256	511	
8	30	733	5	17	None	733	Tandon TM 703
9	112	900	15	17	None	901	
10	20	820	3	17	None	820	
11	35	855	5	17	None	855	
12	49	855	7	17	None	855	
13	20	306	8	17	128	319	Disctron 526, MMI M125
14	42	733	7	17	None	733	
15		Reserved		17			
16	20	612	4	17	0	633	Micro science HH725, Syquest 3250, 3425
17	40	977	5	17	300	977	
18	56	977	7	17	None	977	
19	59	1024	7	17	512	1023	
20	30	733	5	17	300	732	
21	42	733	7	17	300	732	
22	30	306	5	17	300	733	Seagate ST4038
23	10	977	4	17	0	336	
24	40	1024	5	17	None	976	Seagate ST4051

25	76	1224	9	17	None	1023	Seagate ST4096
26	71	1224	7	17	None	1223	Maxtor 2085
27	111	1224	11	17	None	1223	Maxtor 2140, Priam S14
28	152	1224	15	17	None	1223	Maxtor 2190, Priam S19
29	68	1024	8	17	None	1223	Maxtor 1085, Micropolis 1325
30	93	918	11	17	None	1223	Maxtor 1105, 1120, 4780
31	83	925	11	17	None	1223	Maxtor 1170
32	69	1024	9	17	None	926	CDC 9415
33	85	1024	10	17	None	1023	
34	102	1024	12	17	None	1023	
35	110	1024	13	17	None	1023	
36	119	1024	14	17	None	1023	
37	17	1024	2	17	None	1023	
38	136	1024	16	17	None	1023	
39	114	918	15	17	None	1023	Maxtor 1140, 4380
40	40	820	6	17	None	820	Seagate ST251
41	42	1024	5	17	None	1023	Seagate 4053 Miniscribe 3053/6053
42	65	1024	5	17	None	1023	Miniscribe 3053/6053 RLL
43	40	809	6	17	None	852	Miniscribe 3650
44	61	809	6	26	None	852	Miniscribe 3675 RLL
45	100	776	8	33	None	775	Conner CP3104
46	203	684	16	38	None	685	Conner CP3204
User							

Appendix A: System Layout