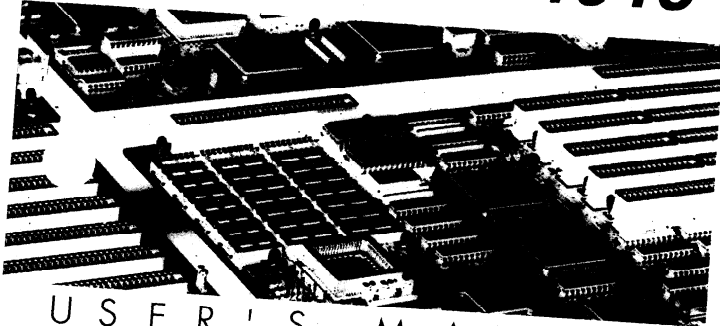
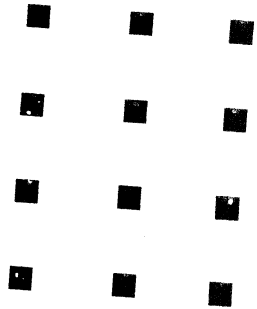


UC 4913

Rev 1.3



USER'S MANUAL



INTRODUCTION

This manual has been designed to be useful for several purposes. If the UC4913 is already set up in functioning system, it will be helpful to review the manual to become familiar with the features of the board and where things are. This will be helpful in the unlikely event there is a problem with the system.

For those who want to alter the board's configuration or to upgrade it, the manual will serve as a guide to both procedure and specifications. While the necessary information is included in the manual, we recommend that unless you feel confident of your ability to do the work, it would be best to have your dealer or a local service shop do it. Before making alterations to the system, check to see that doing so will not violate the system warranty. If it does, have the work done by an authorized dealer.

IMPORTANT: **The** chip-set requires correct configuration information; otherwise a malfunction may result.

CAUTION: Static electricity can cause serious damage to integrated circuit chips. To avoid building up a static electric charge on your body, touch a grounded object before touching the chips and at frequent intervals as you handle the chips. If chips are handed from one person to another, the two should touch hands first, then pass the chips.

Information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

Contact your dealer for warranty details.

Trademarks

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Chapter 1

Introduction

1.1 General Specifications and Features

The UC4913 is a cost-effective high performance mainboard based on IBM PC/AT compatible system. It uses the **UM82C491** real single chip which provides high integration **486/AT** based system design.

Processor: 80486 **SX/DX** PGA or 80486 **SX/DX** PQFP **25, 33, 50** MHz.
80486 DX2 **50,66** MHz.
P23T 50,66 MHz.
CYRIX M6 40 MHz CPU.
AMD 40 MHz CPU.

Chipset: -**UM82C491** real single chip.
-**UM82C493A** TTL integration.

System
BIOS: AMI BIOS 64KB.

K/B BIOS: AMI-8042KF.

System
Memory: Supports 2 banks system memory up to 64 MB.

Cache
Memory: **64KB, 128KB or 256KB.**

Slots: Six 16-bit, two **8-bit** ISA slots and 3 VESA slots.

Motherboard: 4 Layers **2/3** baby AT size.

Connectors: -Power.
-AT Keyboard.
-Reset.
-Speaker.
-External battery.

- Turbo switch.
- Turbo LED
- Keylock.

Feature

- Fully IBM PC/AT compatible.
- Support up to 64MB system memory.
- Supports 64K, 128K or 256K cache.
- Support six 16-bit, two 8-bit ISA slots.
- Support three VESA bus masters and slaves mode.

Chapter 2

Memory Configuration

The UC4913 DRAM configurations are discussed, followed by DRAM module installation and removal. Users are recommended to read through this chapter before installing or removing memory.

2.1 System Memory

The total size of on-board **memory depends** on the combinations of different types of DRAM modules installed on the memory banks.

Option	Bank 0	Bank 1	Memory Amount
1	256 KB	None	1MB
2	256 KB	256 KB	2MB
3	256 KB	1 MB	5MB
4	1 MB	None	4 MB
5	1 MB	1 MB	8MB
6	1 MB	4MB	20MB
7	4MB	None	16MB
8	4MB	4MB	32 MB
9	16MB	None	64MB

2.1.1 DRAM Module Insertion

The **SIMMs** must be seated on the sockets as firmly **as** possible, and because of the fragility of the slot, you must be careful when inserting or removing the module.

1. Align the module so the pin-1 marking and corner notch of the module correspond to the SIMM socket pin **1** marking at the rear of the board. The module can fit in the socket one **way** only. Do not force it!
2. Push the module against the clip arms with your thumbs until a “click” sound is heard; the little plastic tabs appear in the latching holes on the RAM module board, and the clip arms fully grab the module board.

2.1.2 DRAM Module Removal

If possible, use a SIMM extraction tool; otherwise use the following method:

1. Carefully use your thumbs to bend outward the plastic tab ends on both sides of the slot.
2. The RAM module board is **automatically ejected** off the clip arms.
3. Take it out of the socket.
4. Repeat the steps **1** through **3** to release the other RAM modules.

2.2 Cache Memory Subsystem

The UC4913 accepts optional 64-KB, 128-KB or 256-KB of SRAM for cache memory support. The SRAM chip should be 8Kx8 bit or 32Kx8 bit. The TAG RAM is for addressing code or data from main memory to Cache memory. The table below lists all the possible cache size selections.

Option	TAG RAM (U13)	DATA RAM (U14,U16,U18,U20)	DATA RAM (U15,U17,U19,U21)
64K	8Kx8 (20ns)	8Kx8 (20ns)	8Kx8 (20ns)
1 2 8 K	8Kx8 (20ns)	32Kx8 (20ns)	None
256K	32Kx8 (20ns)	32Kx8 (20ns)	32Kx8 (20ns)

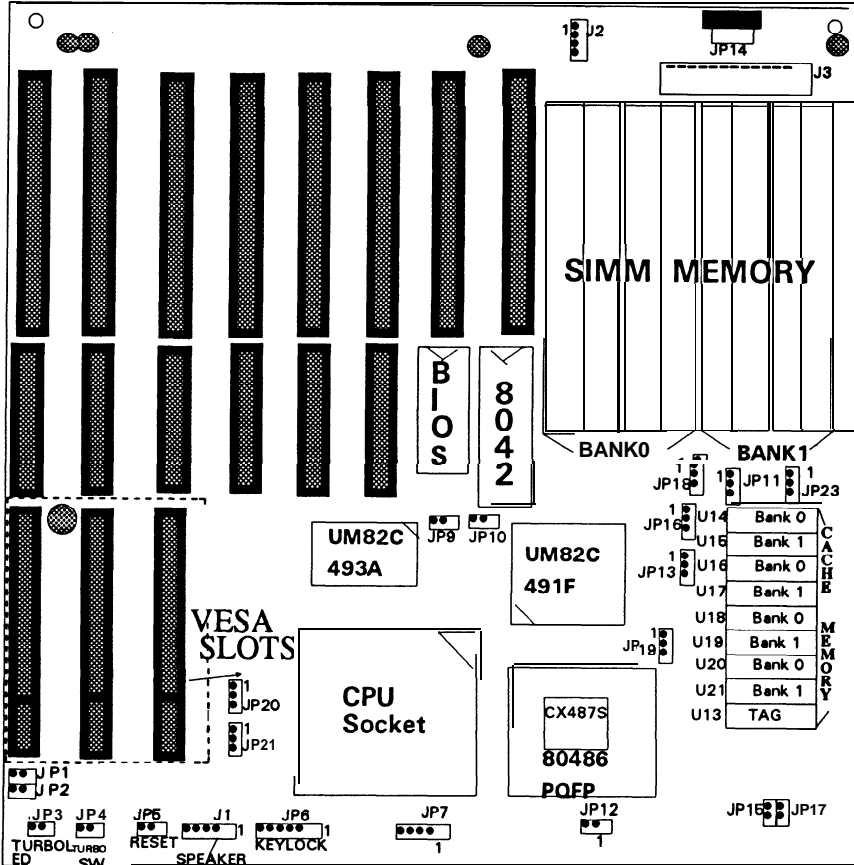
Chapter 3

Jumper Settings and Connectors

This chapter will assist you in setting up the UC4913 before you install it in a system case. If your UC4913 has already been installed and you do not wish to change the configuration settings, you can skip over this section.

3.1 Jumper Settings

The UC4913 has several jumper switches that must be set to define a system configuration. These switches are three-pin components on the mainboard. They are turned off and on by placing or removing a cover cap over the pins. This is called a short or closed jumper. All jumpers must be set to one of the possible two settings.



The table below summarizes the function and settings of each jumper on the uc4913.

Function		Jumper Settings
CPU Mode Select	486PQFP	JP12 opened
	486PGA	JP 12 closed
Type of CPU used	80486DX,DX2,P23T, JP7 pin 1,2 & 3,4 closed AMD 486DX,M6/C6 module	
	80486SX,M6,AMD486SX	JP7 pin 2,3 closed
Clock Select	25 MHz	JP9 closed JP 10 closed
	33 MHz	JP9 opened JP 10 closed
	40 MHz	JP9 closed JP10 opened
	50MHz	JP9 opened JP10 opened
Monitor Type Select	Mono	JP1 1 pin 1,2 closed
	Color	JP11 pin 2,3 closed
Cache Memory Size Setting	64 K	JP13 opened JP 15 opened JP16 pin 1,2 closed JP17 opened
	128K	JP13 pin 2,3 closed JP15 opened JP 16 pin 2,3 closed JP 17 closed
	256 K	JP13 pin 1,2 closed JP 15 closed JP16 pin 1,2 closed JP17 closed
Weitek Power9000 VESA VGA Card	Installed	JP18 pin 2,3 closed
	Non-Installed	JP18 pin 1,2 closed
Local Bus Speed Select	< = 33MHz	JP2 opened
	> 33MHz	JP2 closed
Local Bus Write Wait Select	0 Wait	JP1 opened
	1 Wait	JP 1 closed

C6 Coprocessor (M6/C6 module or on board C6)	C6 present	JP21 pin 2,3 closed JP20 pin 2,3 closed JP19 pin 1,2 closed
	C6 absent	JP21 pin 1,2 closed JP20 pin 1,2 closed JP19 pin 2,3 closed
CPU Clock	= 50MHz	JP23 pin 1,2 closed
	< = 40MHz	JP23 pin 2,3 closed

3.2 Connectors

There are several connectors located on the UC4913. They are used to connect with some peripheral devices to enhance the operating performance of the system.

Refer to Figure 3.1 for the positions of all the connectors on the mainboard. Their **functions** are listed below:

Connector	Function
J3	Power Connector
JP14	Keyboard Connector
J2	External Battery Connector
JP4	Turbo Switch Connector
JP6	Keylock Connector
JP3	Turbo LED Connector
JP5	Reset Connector
J1	Speaker Connector

Chapter 4

Built-in BIOS Setup Program

This chapter provides detailed instructions on how to configure your system using the Built-in BIOS Setup program and gives some technical information about your computer. If you are not very familiar with microcomputers, please read this chapter carefully before proceeding. If you do not want to change the system's configuration, you can skip this chapter.

Before you start to add optional devices to your system, you should first learn how to set up your system and adjust its jumpers (Refer to Chapter 3 for detailed information). You may run the Setup program of the UC4913 only after all jumper setting adjustments have been completed. At this time you should record what the configuration is, and keep it for reference.

4.1 Setup Summary

1. Install any extra memory **SIMMs**.
2. Make all connections to board.
3. Install control cards, monitor, and any peripheral devices and drivers.
4. Turn on system.
5. At setup prompt, press the **Del** key.
6. Type the password if you set the password checking option to "Setup" or "Always" in the Advanced CMOS Setup program.
7. Choose Standard CMOS, Advanced CMOS or Advanced **Chipset** Setup.
8. Follow screen prompts.

4.2 BIOS Setup

Every AT-compatible computer has battery supported CMOS memory otherwise called "non-volatile" RAM. It stores information about your computer and peripheral device configuration. Unlike ordinary RAM, it retains the information even after you turn off your computer.

A computer needs to know certain things about itself so it can operate correctly when powered on. A special type of software **called** BIOS (Basic Input Output System) is contained in read-only memory (ROM) chips on the mainboard. The BIOS reads information from the CMOS memory every time you power on the computer. It then instructs the CPU and other devices to operate according to this information. If the information it retrieves is incorrect or insufficient,

the system may not be able to operate properly until accurate information is supplied. You do this by means of the SETUP program built in the system BIOS.

4.2.1 When Should You Run Setup ?

1. Although someone may have set up the system for you, you may want to adjust the system to fit your needs.
2. Whenever you change some components in your system, (for example, if you add a hard disk or more memory), you must run Setup to record the new system configuration. If you don't do so after adding memory, the computer will prompt you to run Setup.
3. The last and most unlikely possibility is the loss of information in the CMOS memory. You may never encounter this situation. But if you do, you can restore the information by running the Setup.

4.2.2 How to Recall the Setup Program ?

You can run the built-in SETUP program in several ways:

1. When powering-on the system
When you turn on the system power or press the reset button on the system case while the system is running (not every system has this button), the BIOS will first test the functionality of the system components and display a start-up message similar to the following:

XXXX KB OK
Hit < Del >, if you want to run Setup

The numeral digits will continue to count at the top left of the screen. This represents the BIOS testing the mainboard memory chips. Before the above message disappears, you can press the **< Del >** key to run the Setup program.

2. To reset the system
By pressing **< Ctrl > < Alt > < Del >** key combination when the system is up and running (assuming you are running under DOS or other environments that support this feature), the system will immediately reset itself and boot up. Before booting up from a diskette or hard disk, you can also see the below start-up message :

Hit < Del >, if you want to run Setup

3. When the BIOS prompts you
In the self-test process, if the BIOS detects inconsistent or incorrect

configuration information or some physical system error, it will display an error message on the screen, and prompt you to take action; for example:

```
Run SETUP UTILITY
Press <F1> to RESUME
```

Press the **<F1>** key, and continue.

4. To Enter password

If you set the password checking option to the “Setup” or “Always” field in the Advanced CMOS Setup program, after pressing the “**Del**” key to run the Setup program, the Enter password message will be displayed on the screen. Refer to section 4.6, Using the Change Password Setup.

4.2.3 Running the SETUP Program

When you call up the Setup program, the screen displays a “main menu” similar to the following:

On-screen instructions at the bottom of the screen explain how to use the program.

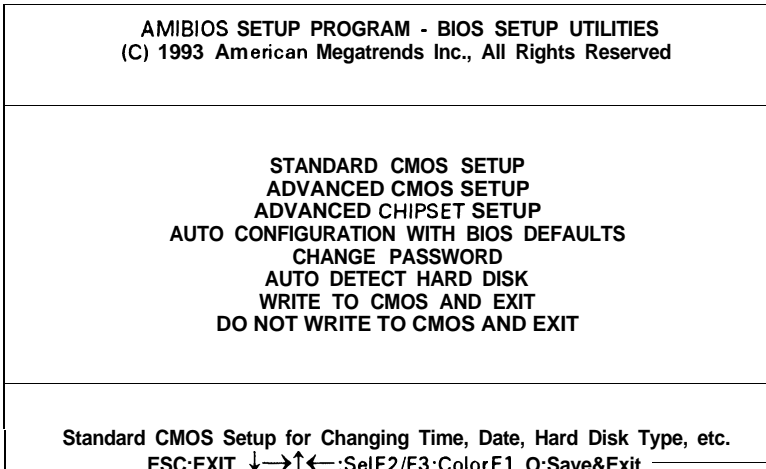


Figure 4.1 BIOS Setup Main Menu Options

The following is a brief description of the six options of the Setup main menu:

■ STANDARD CMOS SETUP

Display the standard CMOS Setup screen to check or modify general configuration information. The standard CMOS setup displays the date, time, floppy type, hard disk type, video type, etc.

■ ADVANCED CMOS SETUP

The ADVANCED CMOS SETUP option is used to set the various system options for the user, including the above 1 MB memory test, etc.

■ ADVANCED CHIPSET SETUP

This Setup option is for the user who wishes to program the **chipset** registers. The **chipset** registers control most of the system options in the computer, etc.

■ AUTO CONFIGURATION WITH BIOS DEFAULTS

This option allows for automatic configuration of all the options in the Advanced CMOS Setup/Advanced **Chipset** Setup with the BIOS defaults.

■ CHANGE PASSWORD

The password is required for entering the Setup program or booting your system. The user can change the current password stored in the CMOS by accessing this option.

■ AUTO DETECT HARD DISK

This option allows for automatic detect the type of hard disk drive, include the number of cylinders and heads, write pre-compensation time, read/ write head landing zone, number of sectors per track.

■ WRITE TO CMOS AND EXIT

Choose this option to save the changes you have made in the "Standard Setup", "Advanced Setup" and "Advanced **Chipset**" options, and then exit to reboot the system.

■ DO NOT WRITE TO CMOS AND EXIT

Choose this option to abandon all previous settings and then exit to reboot the system.

To choose an item from the Setup main menu, move the cursor to appropriate line using the Up <↑> and Down <↓> arrow keys and press <Enter>. The screen will display a warning message as below:

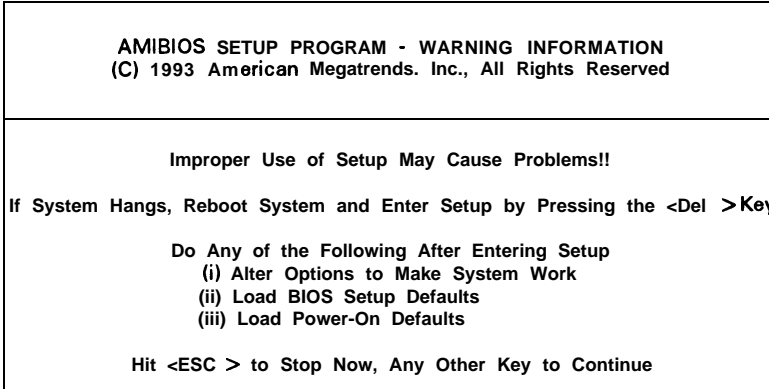


Figure 4.2 BIOS Setup Warning Message

4.3 Running the Standard CMOS Setup

To check or modify the general system configuration, choose “STANDARD CMOS SETUP” from the Setup main menu and press <Enter>. The screen will display the following:

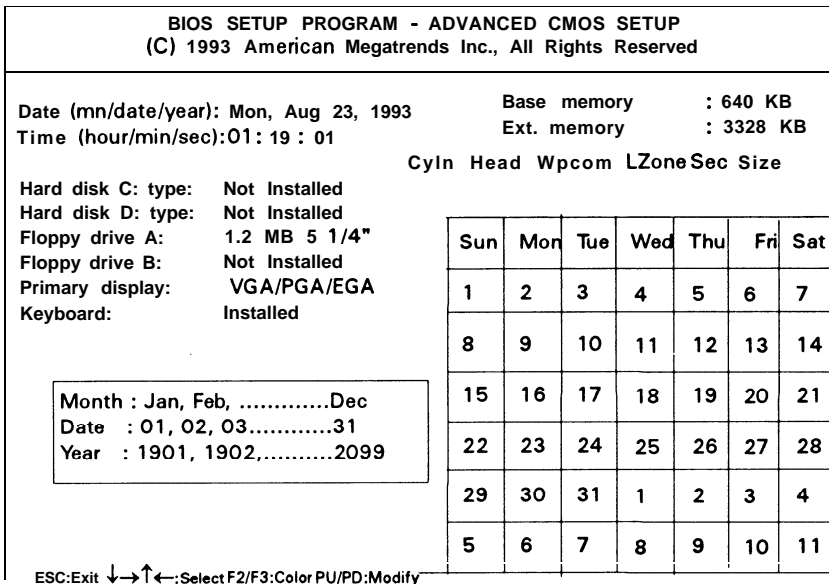


Figure 4.3 The Standard CMOS Setup Program Screen

On-screen instructions in the lower left corner of the screen explain how to use the program. After making all selections, press <ESC> key and then return to the main menu program to choose another Setup program.

■ **Date**

In the Date fields, you manually **set the electronic calendar on** the mainboard only if the values are incorrect.

■ **Time**

Time fields include hour, minutes, seconds, but you can only set the value of hour and minute. Check and adjust these fields according to your clock or wrist watch.

■ **Floppy Drive A and B**

In this field you may specify the capacity and format of the floppy drives installed in your system.

■ **Hard Disk C: and Hard Disk D:**

In these fields, you specify the physical and electronic properties of the “standard” hard disk drives installed in your system. Relevant specifications include the number of cylinders and heads, write pre-compensation time, read/write head landing zone, number of sectors per track.

The BIOS provides 46 **predefined** types of popular hard disk drives. You select the appropriate type by scrolling forward/backward using the <PgUp> and <PgDn> keys. The relevant specifications of the selected drive will be immediately displayed on the corresponding field positions.

If for some reasons your particular drive is not one of the 46 **predefined** types, simply scroll down to select type 47, then use the left <←> and right <→> arrow keys to move to the **Cyln(Cylinders)**, **Head**, **WPcom(Write Pre-Compensation)**, **LZone(Landing Zone)**, and **Sec(Sectors)** fields and directly key in the appropriate values. The Setup program will calculate the capacity of the drive based on the input cylinder, head and sector numbers and display the result on the capacity field for your reference.

Refer to Appendix A for the table of hard disk types.

■ **Primary Display**

In the display field, you specify the display adapter installed in your system.

■ **Keyboard**

This setting is used to select “Installed” or “Not Installed” for the keyboard during the Power On Self Test. Normally, it should be set as “Installed”.

■ Base Memory and Extended Memory

A small section in the upper right corner of the screen displays important status information on your system, including base and extended memory amount. They are updated automatically by the Setup program according to status detected by the BIOS self-test; no manual change is allowed.

4.4 Running the Advanced CMOS Setup

When you choose the “RUN Advanced CMOS Setup” option in the Setup main menu, the screen displays the following menu:

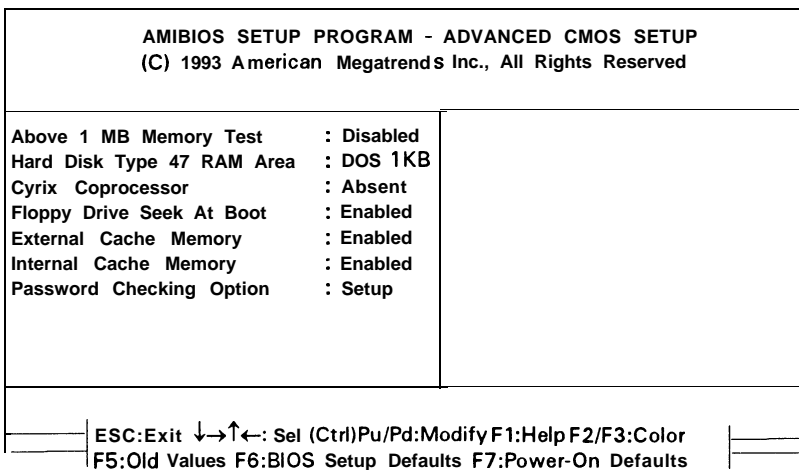


Figure 4.4 The Advanced CMOS Setup Program Screen

■ Above 1 MB Memory Test

You can disable this option to pass the memory test if a lot of memory is installed in the system, or you can enable this option to test all the memory.

■ Hard Disk Type 47 RAM Area

The purpose of this field is to specify the address of the memory area used by the system BIOS for storing extended information, such as to save the user definable drive type 47.

You have the following options:

- 0:300
To reserve the stack area at address 30h:0.

- **DOS 1KB**

To reserve the top 640 KB in the DOS base memory and reduce the size of base memory by 1 KB.

- **Cyrix Coprocessor**

The available options are listed below:

Absent

Present

- **Floppy Drive Seek At Boot**

The available options are listed below:

Disabled.

Enabled.

- **External /Internal Cache Memory**

The available options are listed below:

Disabled.

Enabled.

- **Password Checking Option**

The purpose of this field is to determine whether the password is asked for in every boot (set to "Always") when entering into the Setup program (set to "Setup") If you would like to disable password, please refer to section 4.6.

4.5 Running the Advanced Chipset Setup

To program the registers of the **chipset**, choose the “Advanced **Chipset Setup**” option from the Setup main menu and press <Enter> . The screen will display the following menu:

AMIBIOS SETUP PROGRAM - ADVANCED CHIPSET SETUP (C) 1993 American Meg&rends inc., All Rights Reserved			
Auto-Config Function	: Enabled	Memory Remapping	: Enabled
Cache Read Option	: 3-2-2-2	F Segment Shadow RAM	: Enabled
Cache Write Option	: 2 W.S.	E Segment Shadow RAM	: Disabled
DRAM Type	: FastPage	C000-C3FF Shadow RAM	: Enabled
DRAM Wait State(s)	: 2 W.S.	C400-C7FF Shadow RAM	: Enabled
Keyboard Clock Select	: CPUCLK/4	16 BIT DMA WAIT STATES	: 1 w.s
AT Clock Select	: CPUCLK/4	8 BIT DMA WAIT STATES	: 1 w.s
IO Recovery Time	: 5/3 BCLK		
Hold PD Bus	: 1~2 T		
Refresh Cycle	: Slow		
Coprocessor Ready	: Delay 1T		
Check ELBA# Signal	: in T2		
Non-Cacheable Block1 Enable	: Disabled		
Non-Cacheable Block-1 Size	: 4MB		
Non-Cacheable Block-1 Base	: OKB		
Non-Cacheable Block-2 Enable	: Disabled		
Non-Cacheable Block-2 Size	: 16MB		
Non-Cacheable Block-2 Base	: OKB		
ESC: Exit ↓→↑←Sel (Ctrl) Pu/Pd: Modify F1: Help F2/F3: Color			
F5: Old Values F6: BIOS Setup Defaults F7: Power-On Defaults			

Figure 4.5 The Advanced Chipset Setup

■ Auto-Config Function

If this function is enabled, it is no use about the under list function:(AUTO)

- Cache Read Option
- Cache Write Option
- DRAM Type
- DRAM Wait State(s)
- Hold PD Bus for **DMA/Master**
- Keyboard Clock Select
- AT Clock Select
- IO Recovery Time of **ISA/PCB**

If disabled, user selected values for above parameters will be used. The available options are listed below:

- Disabled
- Enabled

■ Cache Read Option

Due to constraint for technology, speed of currently available SRAM may not be high enough to catch up with the speed of the CPU, which means that at every step of program execution, the CPU must wait for the **SRAM** to respond. This option determines the number of cycle times to be inserted when CPU read data to SRAM.

Moreover, the setting depends on the speed of the CPU and SRAM. If the CPU is of high speed, the timing of SRAM processing data needs an extension, except for some **SRAMs** that can be high enough to catch up with the speed of CPU.

The available options are as follows:

- 2-1-1-1
- 3-1-1-1
- 3-2-2-2

■ Cache Write Option

The setting of Cache Write Hit Wait State makes no difference from that of Cache Read Hit Burst. It is important to check your speed of the CPU & SRAM before you change the default value.

The options are available as follows:

- 0 WS
- 1 WS
- 2 w s

■ DRAM Type

The available options are listed below:

- Fast Page
- Page Mode

■ DRAM Wait State(s)

This option determines the number of wait states to be inserted when the CPU writes data into the local DRAM. The available options are as follows:

- 0 WS
- 1 WS
- 2 w s

■ Keyboard Clock Select

The available options are listed below:

- CPUCLK/6 (50 MHz is recommended)
- CPUCLK/5
- CPUCLK/4 (33 MHz is recommended)
- CPUCLK/3 (25 MHz is recommended)
- CPUCLK12 (16/20 MHz is recommended)
- 9.5 MHz
- 7.2 MHz

■ AT Clock Selection

The AT Clock is an output clock for the I/O channel. This field is used to specify the I/O BUS clock source used by the system. The user does not need to change this setting.

The available options are listed below:

- CPUCLK/8
- CPUCLK/6 (50 MHz is recommended)
- CPUCLK/5
- CPUCLK/4 (33 MHz is recommended)
- CPUCLK/3 (25 MHz is recommended)
- CPUCLK/2 (16/20 MHz is recommended)

■ I/O Recovery Time Delay

This field is used to specify the I/O command recovery time except for some add-on cards which cannot work properly. It is recommended to set this option at “low” value to enhance the I/O performance.

■ Hold PD Bus

The available options are listed below:

- 1-2T
- 2-3T

■ Refresh Cycle

The available options are listed below:

- Slow
- Fast

■ CoProcessor Ready

The available options are listed below:

- Delay 1T
- No Delay

■ Check ELBA# Signal

The available options are listed below:

- in T1
- in T2 (Default)

■ Non-Cacheable Block1 /Block2 Enable

If this function is disabled, the setting of Non-Cacheable Block-1/Block-2 Size and Non-Cacheable Block-1/Block-2 Base will be invalid.

■ Non-Cacheable Block-1 /Block-2 Size

For some special I/O cards which need to use system memory, you should reserve some memory space for use. The size of the block-1/block-2 can be as small as 16KB/64KB or as large as 4MB/16MB. The address of the block-1/block-2 is a multiple number of its size.

The options of Non-Cacheable Block-1 Size are as follows:

- 16 KB
- 32KB
- 64KB
- 128 KB
- 256KB
- 512 KB
- 1MB
- 2MB
- 4MB

The options of Non-Cacheable Block-2 Size are as follows:

- 64KB
- 128 KB
- 256 KB
- 512 KB
- 1 MB
- 2MB
- 4MB
- 8 MB
- 16MB

According to the above settings, you should set the proper address.

■ Non-Cacheable Block-1 /Block-2 Base

This function is to set the address of Non-Cacheable Block-1/Block-2 Base from starting.

■ Memory Remapping

This option enables or disables the system to map the 384KB memory to address above the 1MB boundary. This function cannot be used when the system memory is below 1MB. If shadow RAMs are enabled, only 256KB memory can be remapped.

■ F/E Segment Shadow RAM

The available options are listed below:

- Disabled
- Enabled

- Cached
- . Into-486

■ **C0000-C3FFF Shadow RAM**

If you have a shadowing of the video BIOS at **C0000-C3FFF,16K**, you can enable this memory cacheable **function**.

■ **C4000-C7FFF Shadow RAM**

If you have a shadowing of the video BIOS at **C4000-C7FFF,16K**, you can enable this memory cacheable function.

■ **16 BIT DMA WAIT STATES**

The available options are listed below

- 1 W.S. (default)
- 2 **W.S.**
- 3 **W.S.**
- 4 W.S.

■ **8 BIT DMA WAIT STATES**

The available options are listed below.

- 1 W.S. (default)
- 2 W.S.
- 3 W.S.
- 4 W.S.

4.6 Using the Change Password Setup

To change the password, choose the "CHANGE PASSWORD" option from the Setup main menu and press <Enter> .

1. If the CMOS **is** bad or if this option has never been used, the user is asked to enter new password. The screen will display the following message:

Enter NEW Password:

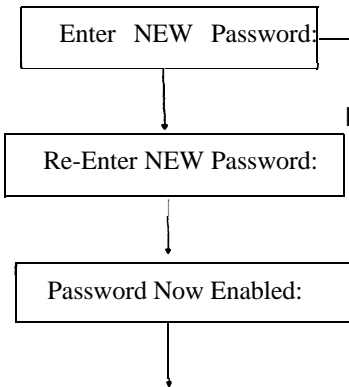
If you want to disable the password function, you can press <Enter> key to return to the Main Setup menu.

2. If the CMOS is good or if this option has been used to enter the password, the user is asked for the password stored in the CMOS. The screen will display the following message:

Enter Current Password:

Enter the correct password and continue to change the password.

3. After pressing the current password , you can change the password stored in the CMOS. The password can be at most 6 characters long. To change the password, please follow the steps below:



Note: If you want to disable the password function, you can press <Enter> key in this option. The password prompt will not appear when the system is powered on.

Press <Enter> and return to main menu.

4.7 BIOS Errors and Messages

After entering setup choices, the system will reboot. The setup summary **and** system information will appear on screen along with messages. These may include ERROR messages concerning the system or setup.

AM1 BIOS performs various diagnostic tests at the time the system is turned on. Whenever an error is encountered during these tests, there will be either a few short beeps or an error displayed on the monitor. If the error occurs before the display device is initialized, the system reports the error with several short beeps.

If the error is FATAL, the system halts after reporting the FATAL error. **If the** error is NON-FATAL, the process continues after reporting the error.

4.7.1 Fatal Errors Through Beeps

These errors are conveyed through a number of beeps.

Beep Count	Meaning
1	DRAM Refresh Failure
2	Base 64 KB RAM Failure
4	System Timer Failure
5	Processor Failure
6	Keyboard Controller-GATE A20 Error
7	Virtual Mode Exception Error
9	ROM-BIOS Checksum Failure

4.7.2 Non- Fatal Errors Through Beeps

These errors are conveyed as one long beep followed by several short beeps.

Beep Count	Meaning
3	Conventional and Extended Memory Test Failure
8	Display Test and Vertical and Horizontal Retrace Test Failure

4.7.3 Fatal Errors Shown in Display

When these errors are displayed, the screen is cleared, and the error message display is followed by a line saying **SYSTEM HALTED**.

1. **CMOS INOPERATIONAL:** indicates **failure** of CMOS shutdown register test.
2. **8042 GATE-A20 ERROR:** error in getting into protected mode.
3. **INVALID SWITCH MEMORY FAILURE**
4. **DMA ERROR:** DMA controller page register test failed.
5. **DMA #1 ERROR:** DMA Unit 1 register test failed.
6. **DMA #2 ERROR:** DMA Unit 2 register test failed.

4.7.4 Non- Fatal Errors In Display

There are two types of errors in this category:

1. One that requires you to press the **F1** key and give you the option of running SETUP.
2. One that requires you to press the **FI** key and don't give you the SETUP option.

4.7.5 Errors With Setup Option

1. **CMOS battery state low** indicates **failure** of CMOS battery or a failure in the set and checksum tests.
2. **CMOS system options not set** indicates failure of CMOS battery or a failure in the set and checksum tests.
3. **CMOS checksum failure** indicates CMOS battery low or a failure in the set and checksum tests.
4. **CMOS display type mismatch** indicates failure of display verification.
5. **CMOS memory size mismatch** indicates system configuration and setup failure.
6. **CMOS time & date not set** indicates system configuration verification error and setup error (in timer).

4.7.6 Errors Without Setup Option

1. **CH-2 timer error** indicates channel 2,1,0 timer test failure.

4.7 BIOS Errors and Messages

After entering setup choices, the system will reboot. The setup summary and system information will appear on screen along with messages. These may include ERROR messages concerning the system or setup.

AMI BIOS performs various diagnostic tests at the time the system is turned on. Whenever an error is encountered during these tests, there will be either a few short beeps or an error displayed on the monitor. If the error occurs before the display device is initialized, the system reports the error with several short beeps.

If the error is FATAL, the system halts after **reporting** the FATAL error. **If** the error is NON-FATAL, the process continues after reporting the error.

4.7.1 Fatal Errors Through Beeps

These errors are conveyed through a number of beeps.

Beep Count	Meaning
1	DRAM Refresh Failure
2	Base 64 KB RAM Failure
4	System Timer Failure
5	Processor Failure
6	Keyboard Controller-GATE A20 Error
7	Virtual Mode Exception Error
9	ROM-BIOS Checksum Failure

4.7.2 Non- Fatal Errors Through Beeps

These **errors** are conveyed as one long beep **followed** by several short beeps.

Beep Count	Meaning
3	Conventional and Extended Memory Test Failure
8	Display Test and Vertical and Horizontal Retrace Test Failure

4.7.3 Fatal Errors Shown in Display

When these errors are displayed, the screen is cleared, and the error message display is followed by a line saying **SYSTEM HALTED**.

1. CMOS INOPERATIONAL: indicates **failure** of CMOS shutdown register test.
2. **8042 GATE-A20** ERROR: error in getting into protected mode.
3. INVALID **SWITCH MEMORY** FAILURE
4. DMA ERROR: DMA controller page register test **failed**.
5. DMA **#1** ERROR: DMA Unit 1 register test **failed**.
6. DMA **#2** ERROR: DMA Unit 2 register test failed.

4.7.4 Non- Fatal Errors In Display

There are two types of errors in this category:

1. One that requires you to press the **F1** key and give you the option of running SETUP.
2. One that requires you to press the **FI** key and don't give you the SETUP option.

4.7.5 Errors With Setup Option

1. CMOS **battery state low** indicates **failure** of CMOS battery or a **failure** in the set and checksum tests.
2. CMOS **system options not set** indicates **failure** of CMOS battery or a failure in the set and checksum tests.
3. CMOS **checksum failure** indicates CMOS battery low or a failure in the set and checksum tests.
4. CMOS **display type mismatch** indicates **failure** of display verification.
5. CMOS **memory size mismatch** indicates system configuration and setup failure.
6. CMOS **time & date not set** indicates system configuration verification error and setup error (in timer).

4.7.6 Errors Without Setup Option

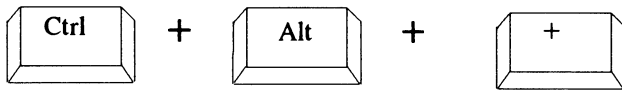
1. **CH-2 timer error** indicates channel 2,1,0 timer test failure.

2. **keyboard error** indicates keyboard test **failure**.
3. **KB/Interface error** indicates keyboard test failure.
4. **Display switch setting not proper** indicates display type verification error.
5. **Keyboard is locked....Unlock it.**
6. **FDD controller error** indicates system configuration verification **error** in diskette setup.
7. **HDD controller Failure** indicates system **configura** tion verification error in hard disk setup.
8. **C:Drive error** indicates hard disk setup error.
9. **D:Drive error** indicates hard disk setup error.
10. **D:Drive failure** indicates hard disk **failure**.

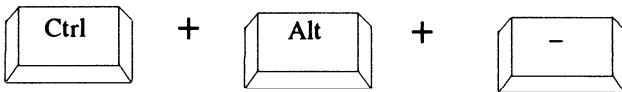
Appendix A

Setting the System Speed

There are two methods to select the system processing speed. You can change the speed during operation while you are working with your application program.



High Speed



(Ctrl) + (Alt) +(+)

Low speed

(Ctrl) + (Alt) +(-)

* “+” means one must press the keys simultaneously.