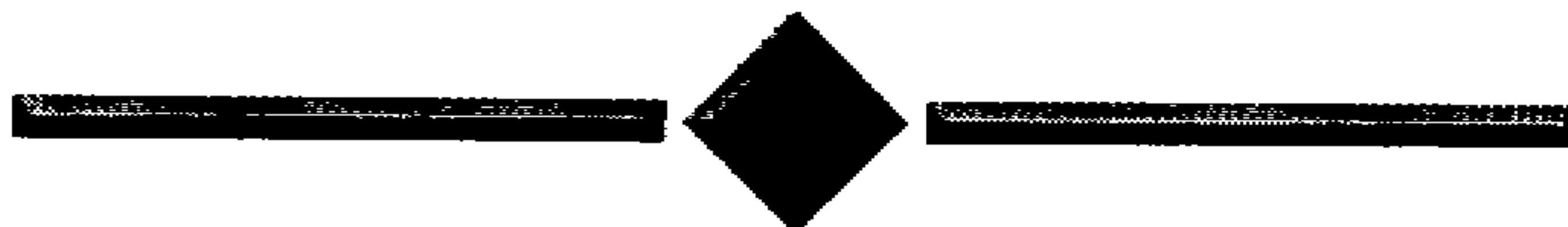


SIS486 P3 GREEN PC
Main Board



User's Manual

CONTENTS

Quick setup guide

1. Introduction	1-1
1.1. Feature	1-1
1.2. Summary of Benchmark	1-1
2. Jumper Settings and Connector Pin Assignment	2-1
2.1. CPU selection (J13, JP8, JP12, JP13, JP18, JP19, JP24, JP25, JP28, JP29, JP33, JP37, JP40)	2-1
2.2. Turbo switch connector (S1)	2-1
2.3. Turbo LED connector (J4)	2-1
2.4. Keyboard connector (CN2)	2-1
2.5. Reset switch connector (J5)	2-1
2.6. Keylock connector (J1)	2-2
2.7. Power LED connector (LED1)	2-2
2.8. Speaker connector (J2)	2-2
2.9. Power connector (J3)	2-2
2.10. Cache memory configuration (JP30, JP31, JP32, JP34, JP35, JP36)	2-2
2.11. Jumper introduction	2-3
2.12. Default jumper setting	2-3
2.13. 3.45V CPU support (JP80)	2-3
3. Reconfiguring AMI WINBIOS System	3-1
3.1. Enter AMI WINBIOS configuration program	3-1
3.2. Standard Setup	3-2
3.3. ADVANCED Setup	3-3
3.4. Chipset Setup	3-4

CONTENTS

3.5. Power Management Setup	3-5
3.6. Utility	3-6
3.7. Password Setup	3-6
3.8. Anti-Virus.....	3-8
3.9. Default	3-9
4. Power Saving Mode	4-1
4.1. Standby mode.....	4-1
4.2. Suspend mode	4-1
5. UMB Function (JP44)	5-1
5.1. Jumper JP44	5-1
6. FLASH ROM Function (JP73)	6-1
6.1. Jumper JP73	6-1
7. Appendix	7-1
7.1. Drive table	7-1
7.2. Board layout.....	7-3

Quick Setup Guide

(A) Most important configuration

SiS471 MB supports 72-pin and 30-pin SIMM RAM

(i) Use 72-pin SIMM RAM only. JP45(1-2) JP46(OPEN)

OPTION	X SIMM 1	X SIMM 2	TOTAL MEMORY
1	1MB-S	1MB-S	2MB
2	2MB-D	2MB-D	4MB
3	4MB-S	4MB-S	8MB
4	4MB-S	8MB-D	12MB
5	8MB-D	8MB-D	16MB
6	8MB-D	16MB-S	24MB
7	16MB-S	16MB-S	32MB
8	4MB-S	32MB-D	36MB
9	16MB-S	32MB-D	48MB
10	32MB-D	32MB-D	64MB

“S” stands for single memory bank only.

“D” stands for double memory bank only.

If use only one 72-pin SIMM RAM, the position is X SIMM1

(ii) Use 30-pin SIMM RAM only JP45(1-2) JP46(OPEN)

OPTION	SIMM1 to SIMM4	TOTAL MEMORY
1	256KB	1MB
2	1MB	4MB
3	4MB	16MB
4	16MB	64MB

(iii) Use one 72-pin and 30pin SIMM RAM JP45(1-2) JP46(OPEN)

OPTION	X SIMM 2	SIMM 1 to 4	TOTAL MEMORY
1	4MB	1MB	8MB
2	16MB	1MB	20MB
3	16MB	4MB	32MB

(iv) Use two 72-pin and 30pin SIMM RAM JP45(OPEN) JP46(CLOSE)

OPTION	SIMM 1 to 4	X SIMM 1 to 2	TOTAL MEMORY
1	1MB	1MB-S	6MB
2	1MB	2MB-D	8MB
3	1MB	4MB-S	12MB
4	4MB	4MB-S	24MB
5	4MB	16MB-S	48MB

(B) CPU frequency configuration (JP5, JP6, JP7)

CPU	20MHz	25MHz	33MHz	40MHz	50MHz
JP5	CLOSE	CLOSE	OPEN	CLOSE	OPEN
JP6	OPEN	CLOSE	CLOSE	OPEN	OPEN
JP7	CLOSE	OPEN	CLOSE	OPEN	CLOSE

(C) CPU type configuration (JP12, JP13, JP18, JP19, JP24, JP25, JP28, JP29, JP33, JP37, JP40)

CPU type	486SX	486DX	SL-486 SX	SL-486 DX	SL-486 DX2	486DX4 -100	AMD486 DX-40	Cyrix 486 DX
JP12	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	2-3
JP13	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	OPEN	2-3
JP18	1-2	1-2	1-2	1-2	1-2	1-2	1-2	2-3
JP19	2-3	2-3	2-3	2-3	2-3	2-3	2-3	1-2
JP24	OPEN	OPEN	4-5	4-5	4-5	4-5	OPEN	2-3
JP25	OPEN	OPEN	2-3	2-3	2-3	2-3	OPEN	1-2, 3-4
JP28	OPEN	OPEN	1-2	1-2	1-2	1-2	OPEN	OPEN
JP29	OPEN	OPEN	3-4	3-4	3-4	3-4	OPEN	2-3
JP33	2-3	1-2 3-4	2-3	1-2 3-4	1-2 3-4	1-2 3-4	1-2 3-4	1-2 3-4
JP37	OPEN	3-4	OPEN	3-4	3-4	3-4	3-4	3-4
JP40	2-3	2-3	2-3	2-3	2-3	2-3	1-2	2-3
J13	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE	CLOSE	OPEN

Note: AMD486 DX-40 Version D CPU JP40 short (2-3)

(D) VESA options (JP3, JP4)

JUMPER	SETTING	FUNCTION
JP4	1-2	0 Wait
	2-3	1 Wait
JP3	1-2	<= 33MHz
	2-3	> 33MHz

This manual has two purposes. Firstly, to help the users to get familiar with the system board. Secondly, to serve as a guide of procedures and specifications for future system upgrade.

1. Introduction

SIS85C471 MB is high performance, 100% PC/AT compatible, support Intel's 80486DX4/DX2/DX/SX/SL Enhanced CPU and normal CPU.

1.1. Features

- Supports power management mode
- Supports the SMM and SMI
- CPU stop clock function for SL-CPU and Cyrix 486DX
- Four power saving states (normal/stand by/suspend/off)
- Long and short system timer
- Power saving on non-SMI CPU also
- On board with auto detect UMB function
- Supports two kinds of SIMM RAM : 72 pin SIMM RAM and 30 pin SIMM RAM
- Supports shadow RAM for system adaptor and video BIOS
- Support 32KB, 64KB, 128KB, 256KB cache memory
- Support two VL-bus master
- CPU operating frequency 8-100MHz
- Six 16-bit AT bus slots and one 8-bit XT bus
- Standard reset, keylock, speaker & turbo LED connectors
- Support DOS, UNIX, XENIX & OS/2
- Two-third of the baby AT size board (220mm x 250mm)
- Support two kinds of FLASH ROM : standard FLASH ROM and boot block FLASH ROM

1.2. SUMMARY OF BENCHMARKS

Test Software \ CPU	486DX40	486DX50	486DX2-66	486DX4-100
Power meter VL81 (MIPs)	12.2	15.1	20.6	25.6
Norton Utility CPU Speed	85.5	106.3	139.9	188.7
Norton Utility Overall performance Index	61.5	75.2	97.6	127.0
Landmark V2.0 CPU MHz	133.83	167.64	222.71	357.57
Landmark V2.0 FPU MHz	326.04	408.89	543.40	875.23

Jumper Settings and Connectors Pin Assignment

2. Jumper Settings and Connectors Pin Assignment

The settings of various jumper are shown as follows:

2.1. CPU selection (J13, JP8, JP12, JP13, JP18, JP19, JP24, JP25, JP28, JP29, JP33, JP37, JP40)

CPU	JP8	JP12	JP13	JP18	JP19	JP24	JP25	JP28	JP29	JP33	JP37	JP40	J13
486SX	2-3	OPEN	OPEN	1-2	2-3	OPEN	OPEN	OPEN	OPEN	2-3	OPEN	2-3	CLOSE
486DX	2-3	OPEN	OPEN	1-2	2-3	OPEN	OPEN	OPEN	OPEN	1-2 3-4	3-4	2-3	CLOSE
AMD40	2-3	OPEN	OPEN	1-2	2-3	OPEN	OPEN	OPEN	OPEN	1-2 3-4	3-4	1-2	CLOSE
SL - 486SX	2-3	OPEN	OPEN	1-2	2-3	4-5	2-3	1-2	3-4	2-3	OPEN	2-3	CLOSE
SL - 486DX	2-3	OPEN	OPEN	1-2	2-3	4-5	2-3	1-2	3-4	1-2 3-4	3-4	2-3	CLOSE
SL - 486DX2	2-3	OPEN	OPEN	1-2	2-3	4-5	2-3	1-2	3-4	1-2 3-4	3-4	2-3	CLOSE
486DX - 100	2-3	OPEN	OPEN	1-2	2-3	4-5	2-3	1-2	3-4	1-2 3-4	3-4	2-3	CLOSE
Cyrix 486DX	2-3	2-3	2-3	2-3	1-2	2-3	1-2 3-4	OPEN	2-3	1-2 3-4	3-4	2-3	OPEN

Note: AMD486DX-40 Version D CPU JP40 short (2-3)

2.2. Turbo switch connector (S1)

TURBO SWITCH	SPEED	TURBO LED
OPEN	HIGH	ON
CLOSE	LOW	OFF

2.3. Turbo LED connector (J4)

PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

2.4. Keyboard connector (CN2)

PIN NUMBER	FUNCTION
1	CLOCK
2	DATA
3	NC
4	GND
5	+5V

2.5. Reset switch connector (J5)

J5	FUNCTION
CLOSE ONCE	RESET THE SYSTEM
OPEN	NORMAL

Jumpers Settings and Connectors Pin Assignment

2.6. Keylock connector (J1)

PIN NUMBER	FUNCTION
1	+5V
2	NC
3	GND
4	KEYLOCK
5	GND

2.7. Power LED connector (LED1)

PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

2.8. Speaker connector (J2)

PIN NUMBER	FUNCTION
1	SPKDATA
2	GND
3	GND
4	VCC

2.9. Power connector (J3)

PIN NUMBER	FUNCTION
1	Power good
2	+5V
3	+12V
4	-12V
5	GND
6	GND
7	GND
8	GND
9	-5V
10	+5V
11	+5V
12	+5V

2.10. Cache memory configuration (JP30, JP31, JP32, JP34, JP35, JP36)

CACHE SIZE	CACHE RAM	TAG RAM	JP30	JP31	JP32	JP34	JP35	JP36
32K	8Kx8 U(31-34)	8Kx8 U26	1-2	1-2	1-2	OPEN	1-2	1-2
64K	8Kx8 U(27-34)	8Kx8 U26	2-3	1-2	1-2	1-2	2-3	1-2
128K	32Kx8 U(31-34)	8Kx8 U26	2-3	2-3	1-2	2-3 4-5	1-2	2-3
256K	32Kx8 U(27-34)	32Kx8 U26	2-3	2-3	2-3	1-2 3-4	2-3	2-3
256K	64Kx8 U(31-34)	32Kx8 U26	2-3	2-3	2-3	2-3 4-5	1-2	2-3

Jumper Settings and Connectors Pin Assignment

2.11. Jumper Introduction

JUMPER	SETTING	FUNCTION
JP39	1-2	Normal
	2-3	CMOS Discharge
JP38	MONITOR TYPE	
	SHORT	For CGA
	OPEN	For Mono, VGA/EGA
JP27	SHORT	For CX486S2 only
JP40	1-2	CLK IN and CPU CLK same phase
	2-3	CLK IN Delay for CPU CLK
TBSW	1-2	De - Turbo
	2-3	Turbo
	4-5	Use Deturbo pin for break switch
JP10	1-2	CLK down by SM1 control
	2-3	CLK down by STPCLK control

2.12. Default jumper setting

JUMPER	NORMAL SETTING
J9	CLOSE
J11	OPEN
J12	OPEN
J13	CLOSE
JP8	2-3
JP10	1-2
JP12	OPEN
JP45	1-2
JP46	OPEN
JP43	2-3
JP17	1-2
JP18	1-2
JP19	2-3
JP78	1-2
JP79	2-3
JP20	1-2

2.13. 3.45V CPU support (JP80)

We have three kinds of SiS 471 MB to support 3.45V CPU.

First : UMB on board and voltage autodetect.

Second : UMB on board and can't voltage autodetect.

JP80	3.45V CPU	5V CPU
Setting	Open	Close

Third : without UMB on board, no support 3.45V CPU (DX-100) JP80 (Close).

3. Reconfigure AMI WINBIOS System

3.1. Enter AMI WINBIOS configuration program

During power-on memory test, pressing the key will bring the SETUP main menu to the screen. You can use the <Tab> Key to switch the next window field and use the <Enter> key to make selection in the current field. Pressing <Alt><H> will help you to setup.

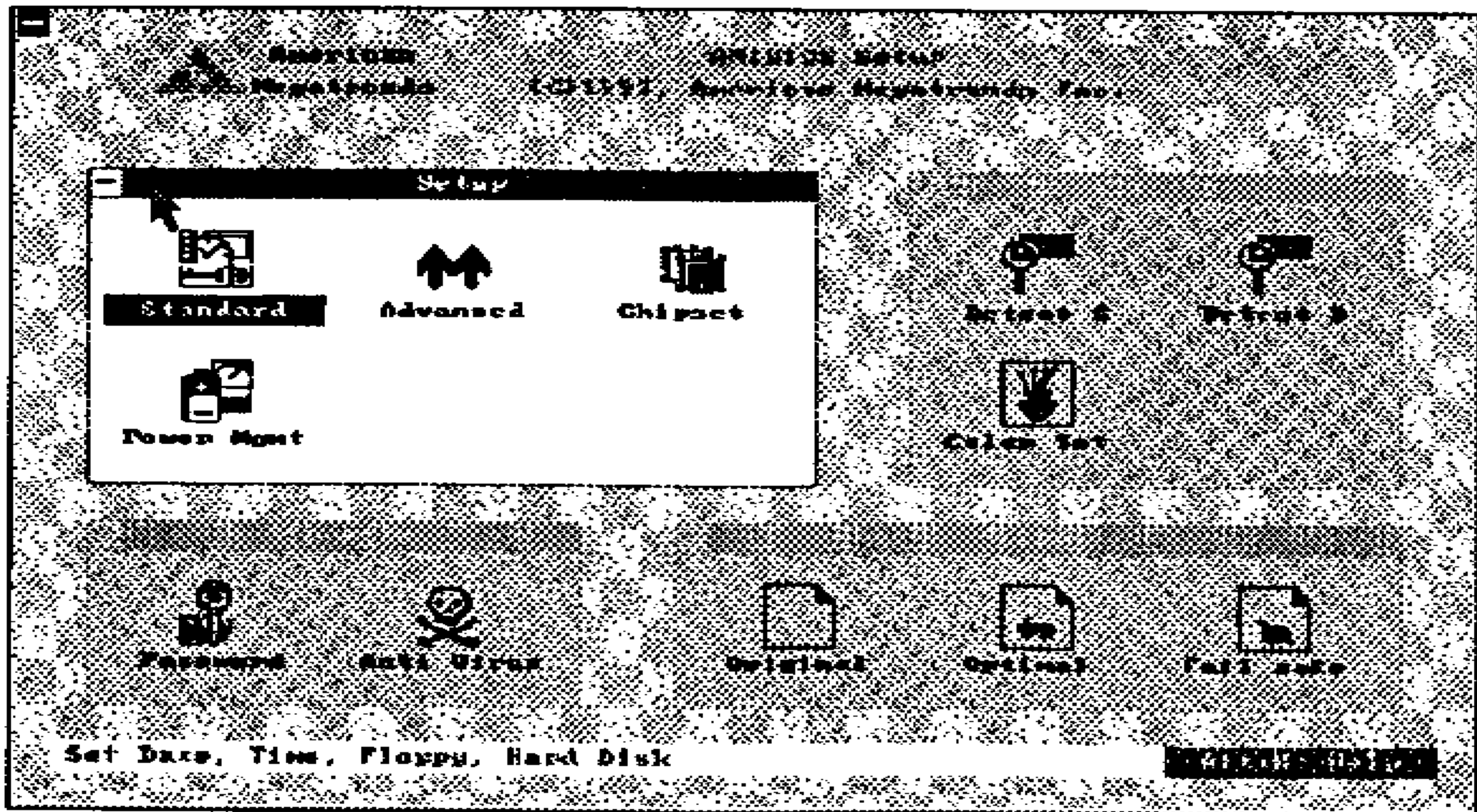


Figure 3-1 The screen of WINBIOS SETUP PROGRAM

NOTE : Use mouse to select a desired option. After highlighting an option, press the <Enter> key to enter its menu.

Reconfigure AMI WINBIOS System

3.2. Standard Setup

You can move the cursor to select the "Date/Time", "Floppy A", "Floppy B", "HardDisk C" and "HardDisk D" icons, then press the <Enter> key to setup them.

The WinBIOS setup options described in this section are selected by choosing the appropriate high-level icon from the WinBIOS Setup main menu selection screen. The selected windows is as follows.

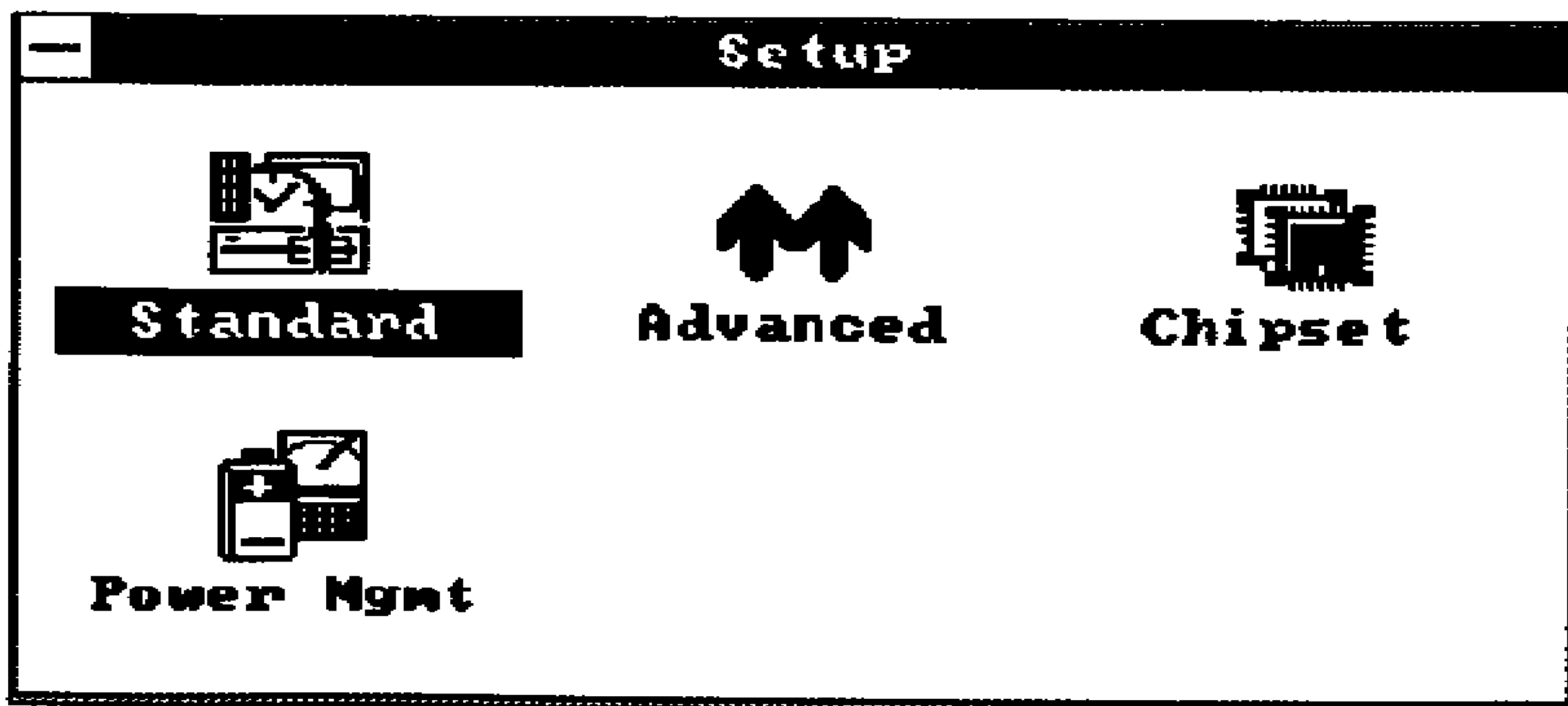


Figure 3-2 The screen of STANDARD SETUP

The STANDARD Setup screen is as follows.

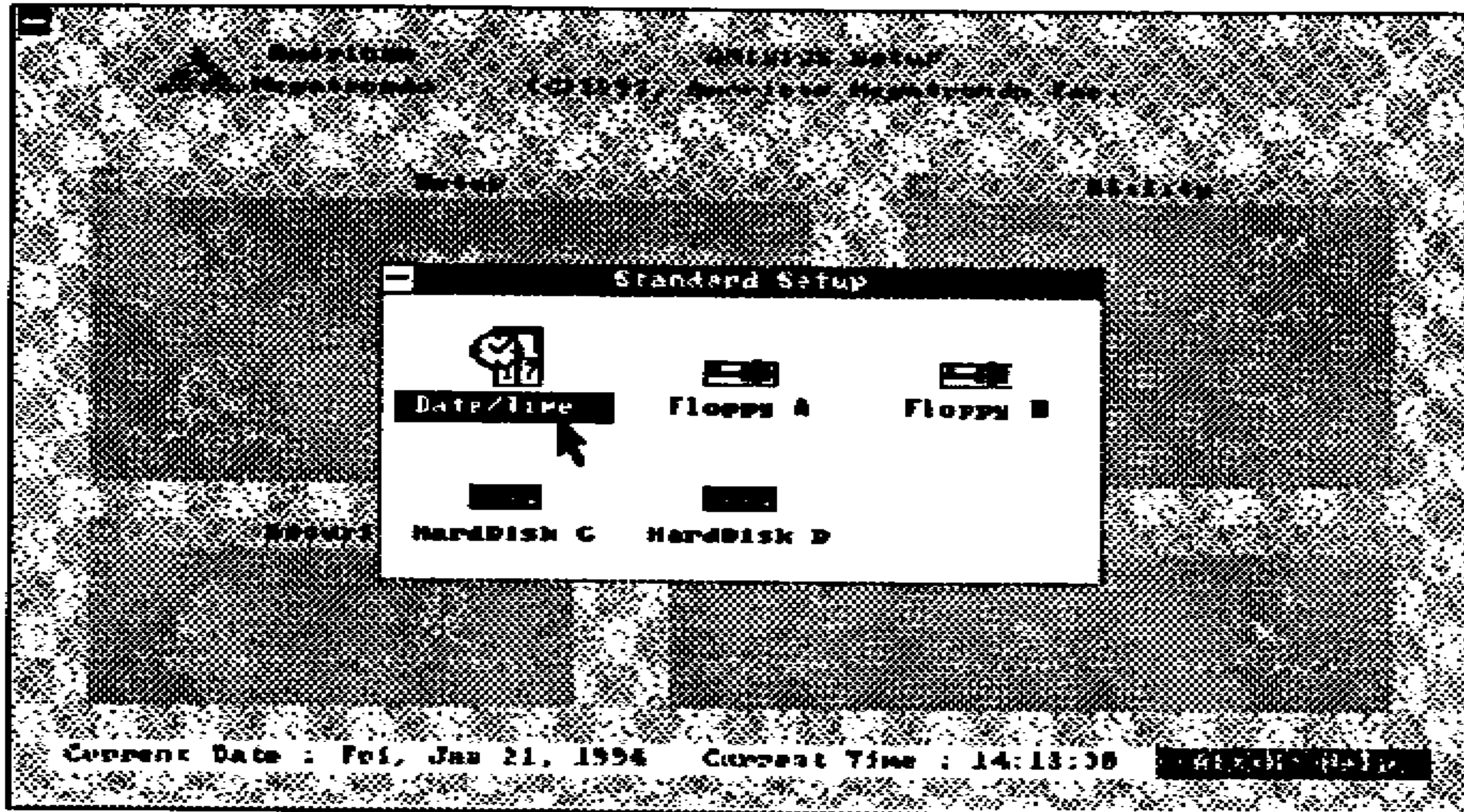


Figure 3-3 The screen of STANDARD SETUP

3.3. Advanced Setup

ADVANCED SETUP	
Typematic Rate (Chars / sec)	: 30
Primary Display	: VGA/EGA
Above 1MB Memory Test	: Disabled
Memory Test Tick Sound	: Enabled
Hit "Del" message display	: Enabled
Extended BIOS RAM Area	: 0 : 300
Wait For "F1" If Any Error	: Enabled
System Boot Up Num Lock	: On
Weitek Processor	: Absent
Floppy Drive Seek At Boot	: Disabled
System Boot Up Sequence	: A:, C:
System Boot Up CPU Speed	: High
External Cache	: Enabled
Internal Cache	: Enabled
Password Checking	: Setup
Video Shadow C000, 32K	: Enabled
Shadow C800, 32K	: Disabled
Shadow D000, 32K	: Disabled
Shadow D800, 32K	: Disabled
Shadow E000, 32K	: Disabled
IDE Block Mode	: Disabled
IDE 32-Bit Transfer	: Disabled
Video Shadow Before Video Init	: Enabled

3.4. Chipset Setup

CHIPSET SETUP	
Auto Config Function	: Enabled
Hidden Refresh	: Enabled
Non-Cacheable Area1	: DRAM
Non-Cacheable Size1	: Disabled
Local BUS Ready	: SYNC
Memory Intir Driving Capty	: 24 MA

3.5. Power Management Setup

POWER MANAGEMENT SETUP	
IDE Standby Power Down Mode	: Disabled
BIOS Power Management Mode	: Enabled
APM Interface	: Enabled
Standby Timer	: 10 Sec
Suspend Timer	: 10 Sec
EVENT	:
Keyboard Activity	: Enabled
Video Activity	: Disabled
HDD/FDD Activity	: Enabled
VESA Master Activity	: Disabled
DMA Activity	: Enabled
IRQ 3 (COM2/LAN) Activity	: Enabled
IRQ 4 (COM1) Activity	: Enabled
IRQ 5 (LPT2) Activity	: Enabled
IRQ 7 (LPT1) Activity	: Enabled
IRQ 9 Activity	: Enabled
IRQ 10 Activity	: Enabled
IRQ 11 Activity	: Enabled
IRQ 12 Activity	: Enabled
IRQ 15 Activity	: Enabled
Display Adapter Type/method	: Sync. off
Display Off When ? Timeout	: Disabled
Smout value on Stby	: XXXXXXX00
Smout Value on Spnd	: XXXXXXX00

Reconfigure AMI WINBIOS System

3.6. Utility

ICON	FUNCTION
Detect C:	Automatically detect & configure Drive C:
Detect D:	Automatically detect & configure Drive D:
Color Set	Set the color of WinBIOS Setup screen

3.7. Password Setup

WinBIOS Setup has an optional password feature. The system can be configured so that all users must enter a password every time the system boots or when you select the password icon.

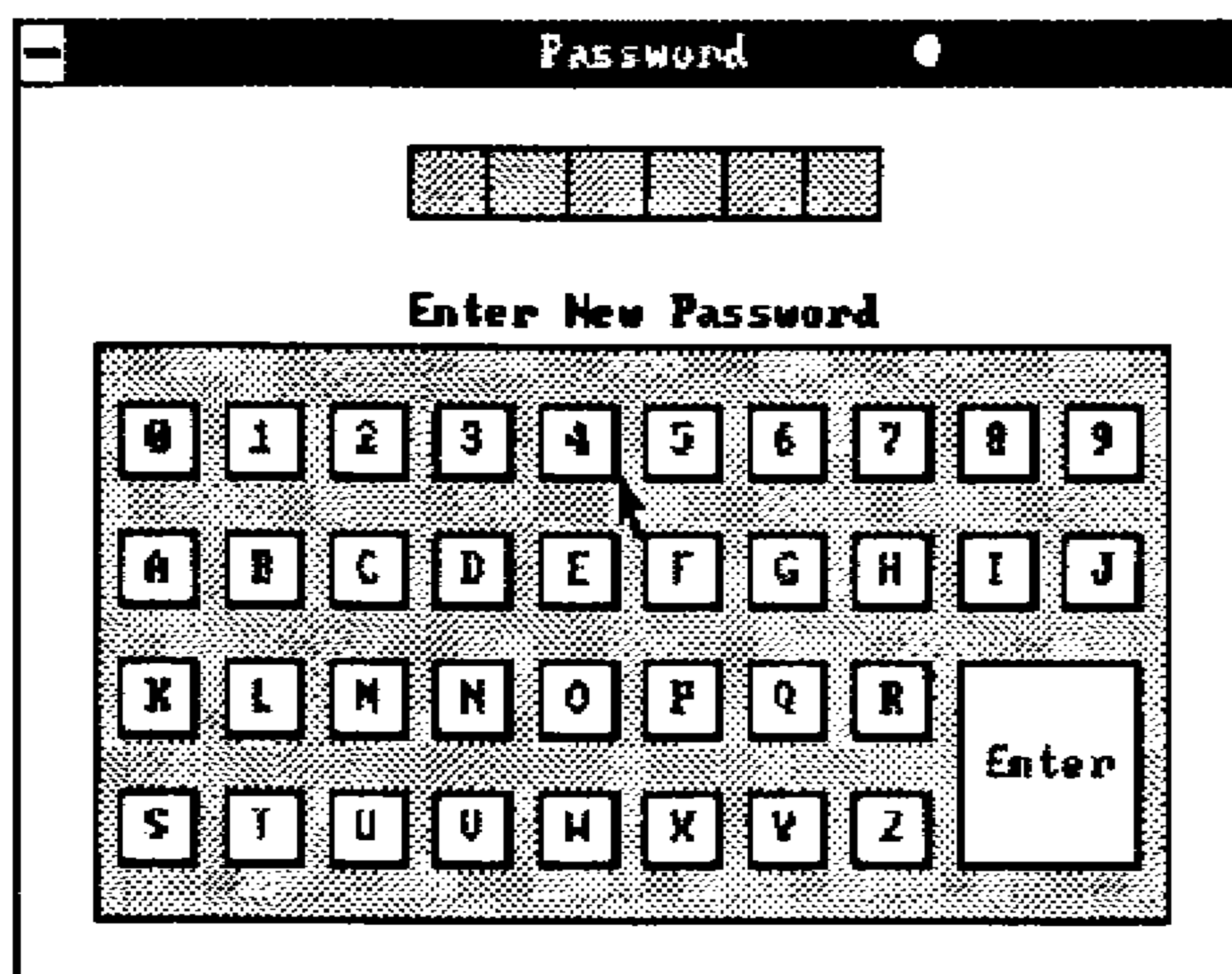


Figure 3-4 The screen of PASSWORD SETUP

You can enter a password by :

- Typing the password on the keyboard.
- Selecting each letter via the mouse, or
- Selecting each letter via the pen stylus.

Pen access must be customized for each specific hardware platform.

The password check option is enabled in Advanced Setup figure 3-4 by choosing either always (the password prompt appears every time the system is powered on) or setup (the password prompt appears only when WinBIOS setup is run). The password is stored in CMOS RAM.

Reconfigure AMI WINBIOS System

Enter a 1-6 character password. The password does not appear on the screen when typed. WinBIOS will ask you to retype the password. WinBIOS will then display the following :

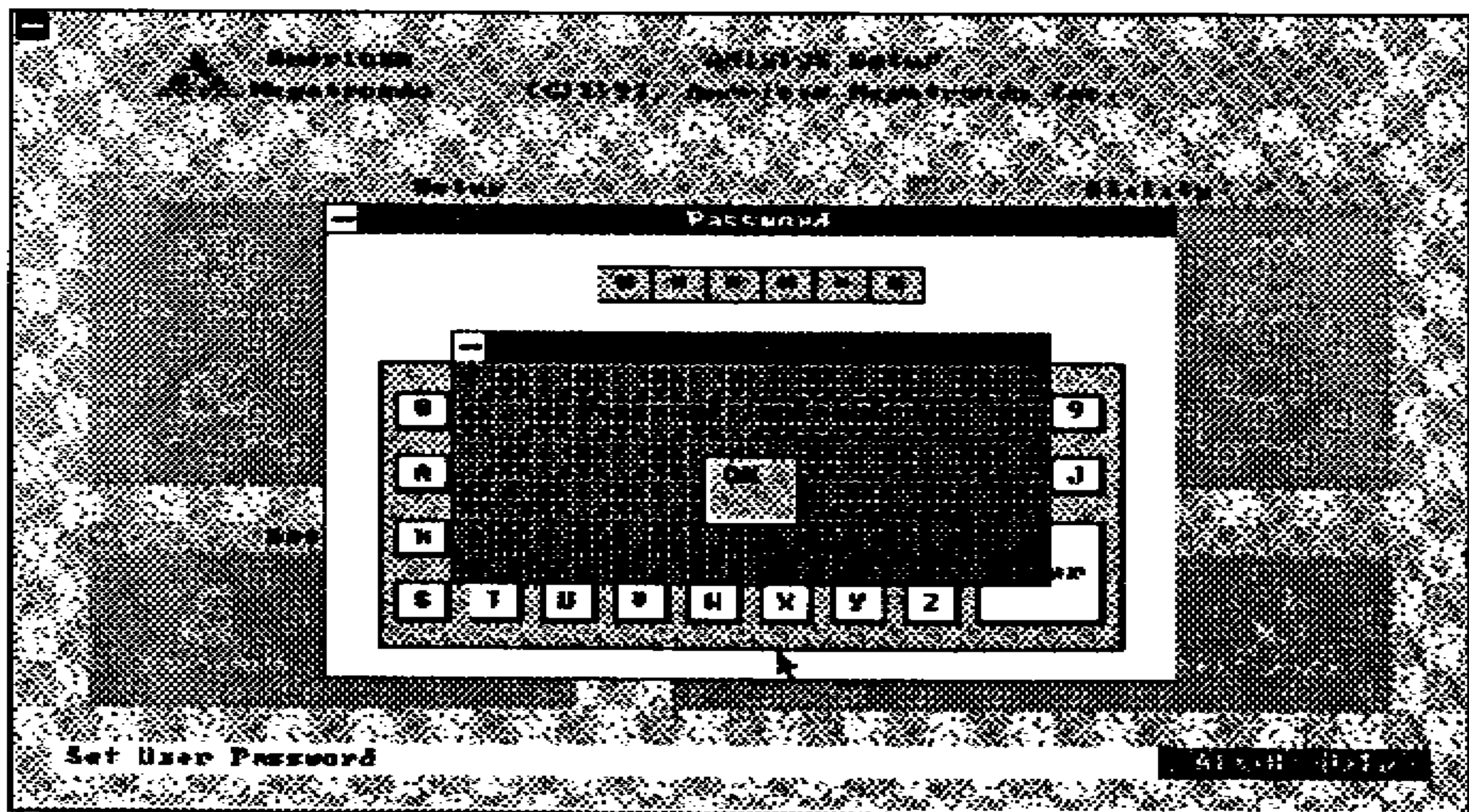


Figure 3-5 The screen of PASSWORD SETUP

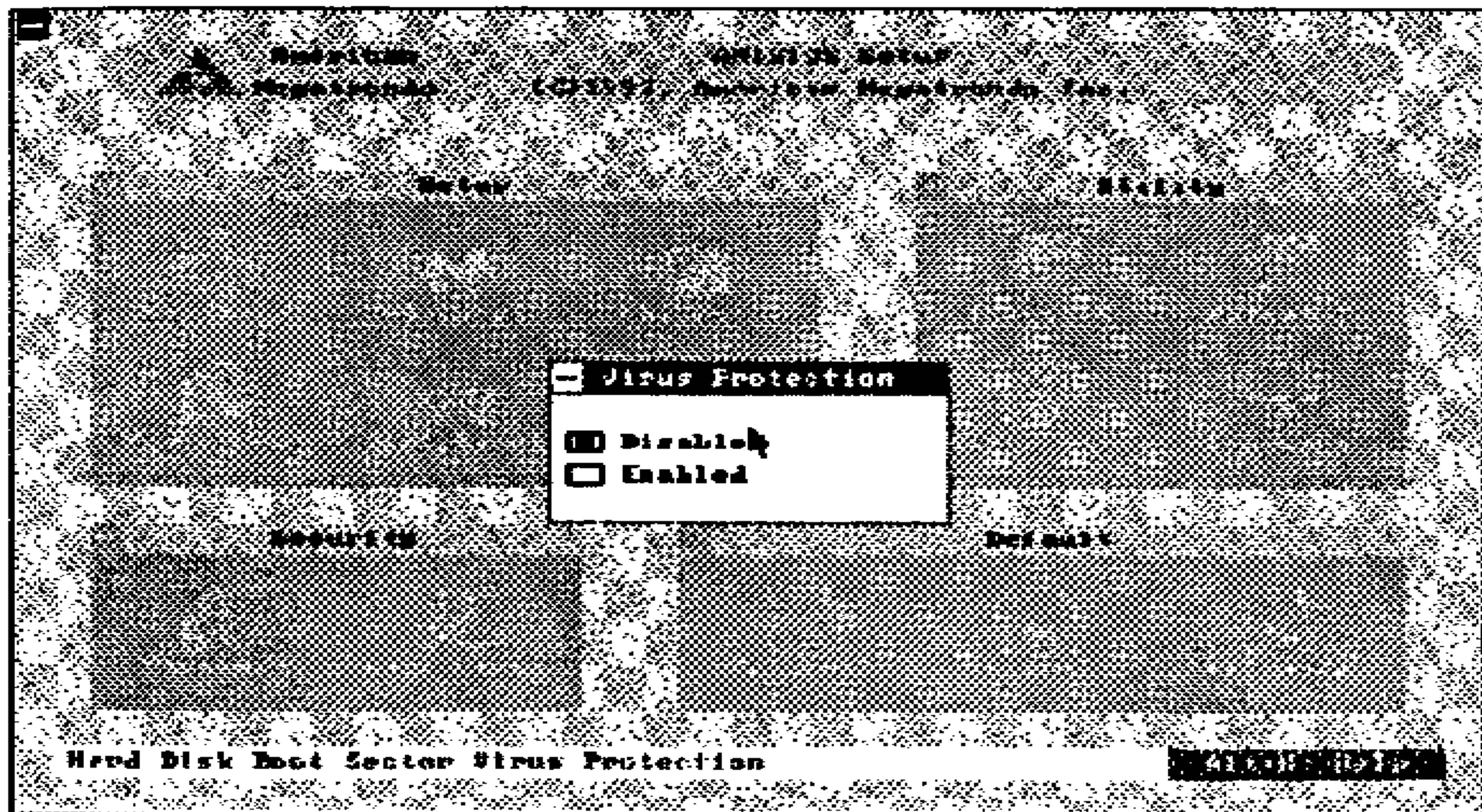
Select the Password icon from the security section of the WinBIOS Setup main menu, Enter the password and press <Enter>. The screen does not display the characters entered, After the current password is entered, enter the new password as prompted and press <Enter>.

If the password confirmation is incorrect, an error message appears. If the new password is correctly entered, press <Esc> to return to the WinBIOS Setup main menu, the password is stored in CMOS RAM after WinBIOS Setup completes. The next time the system boots, you are prompted for the password if the password function is present and is enabled.

Reconfigure AMI WINBIOS System

3.8. Anti-Virus

When this icon is selected from the Security section of the WinBIOS Setup main menu, WinBIOS gives a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The following screen appears when you select the Anti-Virus icon :



There are two settings Enabled or Disabled. If enabled, the following appears when a write is attempted to the boot sector. You may have to type N several times to prevent the boot sector write.

```
Boot Sector Write !!!  
Possible VIRUS : Continue (Y/N)? _
```

The following is displayed after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT13 Hard Disk Drive Service :

```
Format !!!  
Possible VIRUS : Continue (Y/N)? _
```

You should disable anti-virus protection when you try to format a hard disk drive.

If the anti-virus feature is enabled, a virus warning message will be displayed when you attempt to format the hard disk drive.

If you select continue, formatting proceeds as normal.

If you do not want to continue formatting, you may have to press N several times (depending on how many retries are performed by the upper-level software). DOS, for example, does at least five retries before the format utility is actually aborted.

3.9. Default

The icons in this section allow you to select a group of settings for all WinBIOS Setup options. Not only can you use these icons to quickly set system configuration parameters, you can choose a group of settings that have a better chance of working when the system is having configuration-related problem.

Original

Choose the Original icon to return to the system configuration values present in WinBIOS Setup session.

Optimal

You can load the optimal default settings for the WinBIOS Setup options by selecting the Optimal icon. The Optimal default settings are best-case values that should optimize system performance. If CMOS RAM is corrupted, the Optimal settings are loaded automatically.

Fail-Safe

You can load the Fail-Safe WinBIOS Setup option settings by selecting the Fail-Safe icon from the Default section of the WinBIOS Setup main menu.

The Fail-Safe settings provide far from optimal system performance, but are the most stable settings. Use this option as a diagnostic aid if the system is behaving erratically.

Power saving mode

4. Power saving mode

SiS 471 MB support two green modes : Standby mode and Suspend mode.

4.1. Standby mode

For this mode, All kinds of CPU could be used, you can enter the power Mgmt and set the BIOS Power management mode : Enabled. Enter the time for the standby timer, the system clock will down to 8 MHz if there is no system activity for a redefined time, and turn off the display monitor if you setup "Display Off Time When ? Time : Standby.

4.2. Suspend mode

For this mode the SiS471/MB must use SMI CPU (SL Enhanced CPU or Cyrix 486DX CPU).

You can enter the power Mgmt and setup "BIOS Power Management Mode : Enabled. Enter the time for suspend timer, and disabled standby timer. The system clock will down to 8 MHz, CPU internal clock down to 0 MHz if there is no system activity for a redefined time. In the same time, system will turn off the display monitor and stop the harddisk mechanism if you set " Display off when ? time out : suspend.

For two modes. When redefined time is reached, the jumper JP74.1 & JP75.1 will charge to low level which are used to control the green devices such as green add-in cards and CPU cooling fan.

Press any key, mouse movement or other system operation can resume the system to normal mode.

Note :

When use no-SMI CPU, work in OS/2. Windows NT. UNIX system, the No-SMI CPU PM must select chipset.

5. UMB Function (JP44)

SiS 471 MB is a Universal Mother Board (UMB), that will support 5V CPU and 3.45V CPU (e.g. Intel DX4, P24D etc.), by Auto detect.

5.1. Jumper JP44

JP44	CPU INTERNAL CLOCK OPTION
1-2	X2
OPEN	X3
2-3	X2.5

FLASH ROM Function

6. FLASH ROM Function (JP73)

SIS 471 MB support FLASH ROM for simplify BIOS update.

If system use EPROM (NO FLASH) that can only be erased by removing it from the system and Exposing it to ultraviolet light and reprogrammed by specific equipment.

SIS 471 system with FLASH ROM so update BIOS (erased and reprogrammed EEPROM) Only by run an user's program.

6.1 Jumper JP73

JP73	FUNCTION
1-2	Without FLASH ROM
2-3	With FLASH ROM

7. Appendix

7.1. Drive table

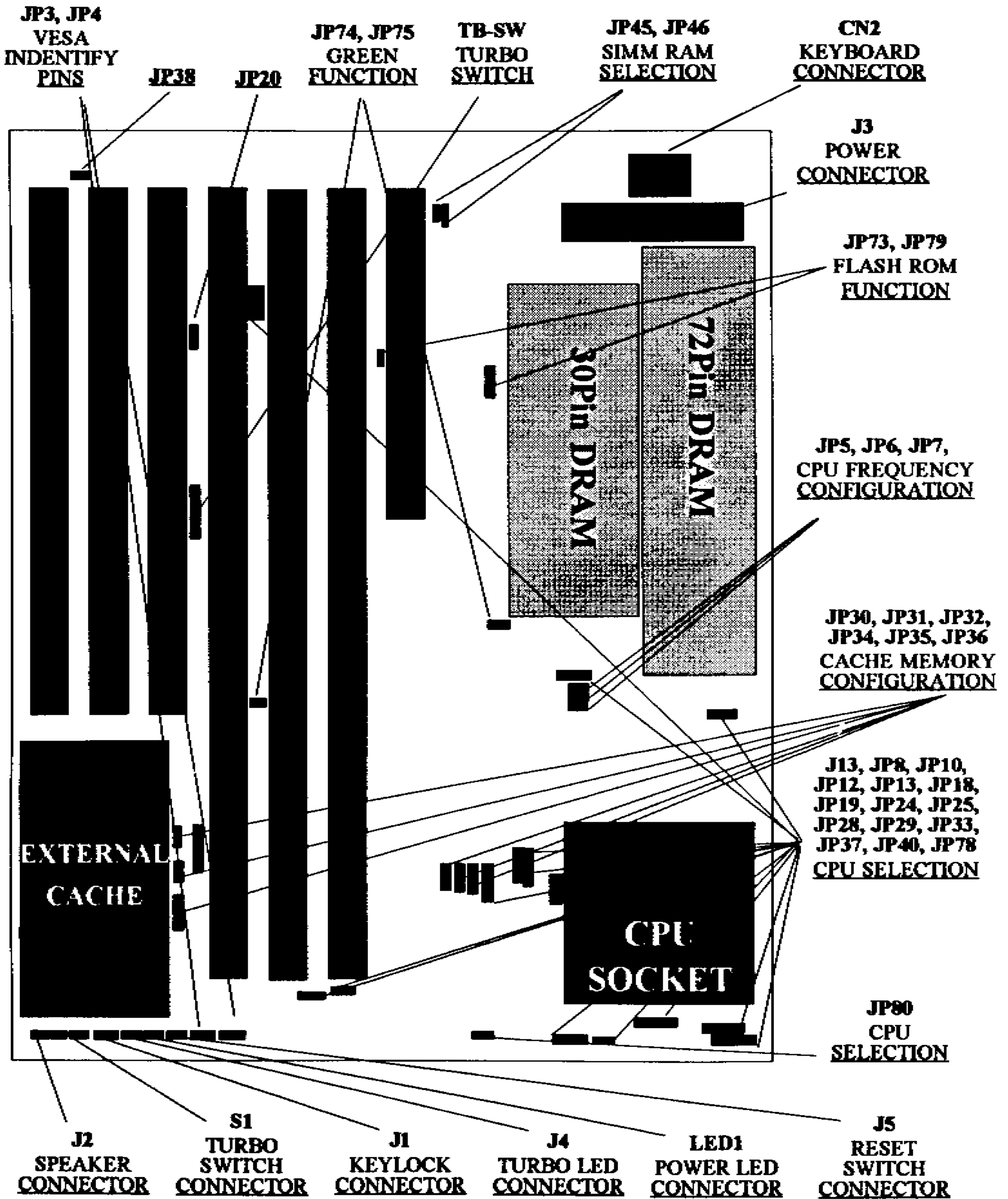
Type	Cylinders	Heads	Write Precomp	LZ	Sector	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	20MB
3	615	6	300	615	17	31MB
4	940	8	512	940	17	62MB
5	940	6	512	940	17	47MB
6	615	4	65535	615	17	20MB
7	462	8	256	511	17	31MB
8	733	5	65535	733	17	30MB
9	900	15	65535	901	17	112MB
10	820	3	65535	820	17	20MB
11	855	5	65535	855	17	35MB
12	855	7	65535	855	17	50MB
13	306	8	128	319	17	20MB
14	733	7	65535	733	17	43MB
15	---	---	---	---	--	---
16	612	4	0	663	17	20MB
17	977	5	300	977	17	41MB
18	977	7	65535	977	17	57MB
19	1024	7	512	1023	17	60MB
20	733	5	300	732	17	30MB
21	733	7	300	732	17	43MB
22	733	5	300	733	17	30MB
23	306	4	0	336	17	10MB
24	925	7	0	925	17	54MB
25	925	9	65535	925	17	69MB
26	754	7	754	754	17	44MB
27	754	11	65535	754	17	69MB
28	699	7	256	699	17	41MB
29	823	10	65535	823	17	68MB
30	918	7	918	918	17	53MB
31	1024	11	65535	1024	17	94MB
32	1024	15	65535	1024	17	128MB
33	1024	5	1024	1024	17	43MB
34	612	2	128	612	17	10MB
35	1024	9	65535	1024	17	77MB

Appendix

Drive Table continue.

Type	Cylinders	Heads	Write Precomp	LZ	Sector	Size
36	1024	8	512	1024	17	68MB
37	615	8	128	615	17	41MB
38	987	3	987	987	17	25MB
39	987	7	987	987	17	57MB
40	820	6	820	820	17	41MB
41	977	5	977	977	17	41MB
42	981	5	981	981	17	41MB
43	830	7	512	830	17	48MB
44	830	10	65535	830	17	69MB
45	917	15	65535	918	17	114MB
46	1224	15	65535	1223	17	152MB
47	---	---	---	---	---	---

7.2. Board layout



ML-V4S471/250/V3