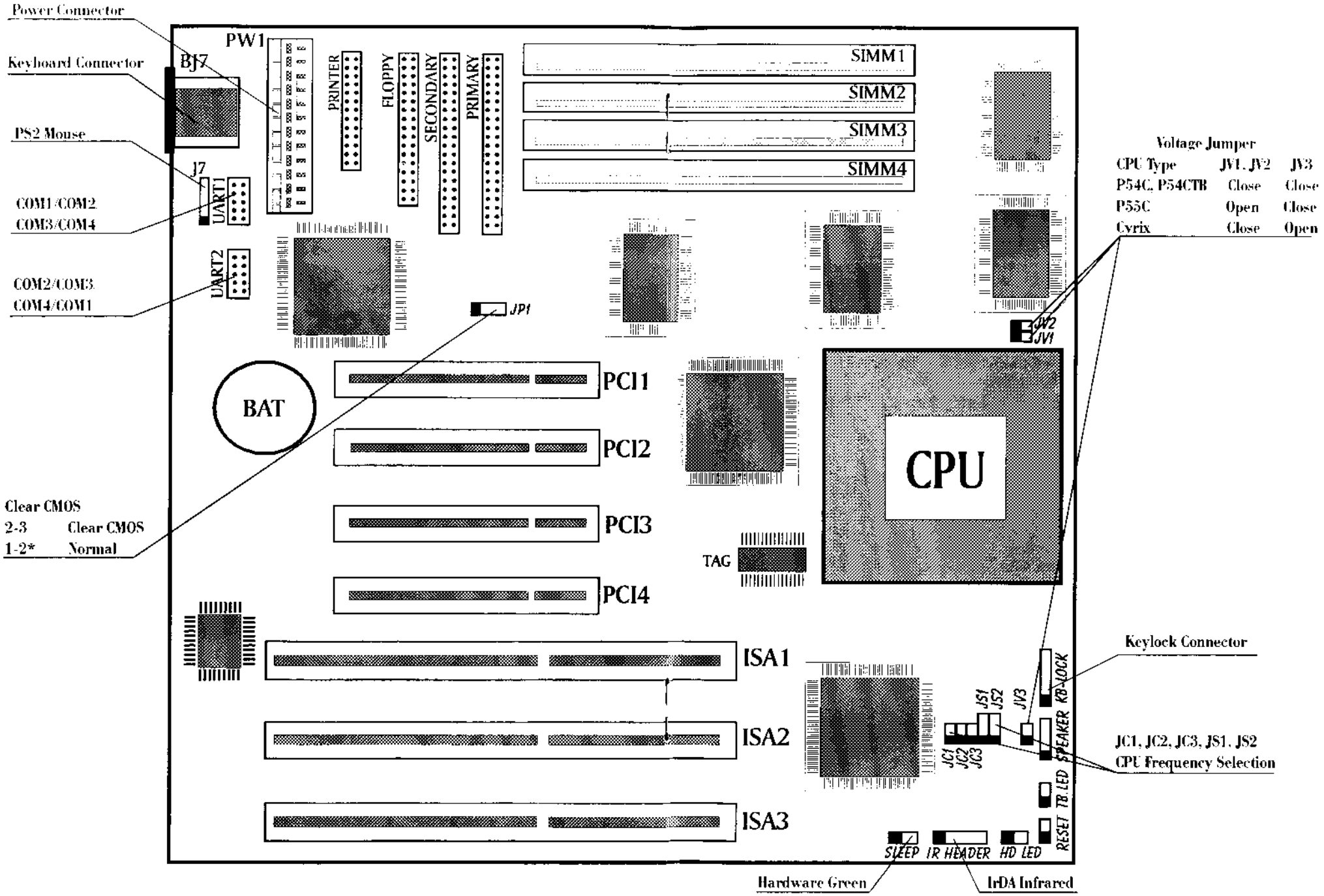
PENTIUM

P5I437/250A

User Manual

PC Main Board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Chapter 1
Introduction

Overview

P5I437/250A Green main board provides a highly integrated solution for fully compatible, high performance PC/AT platforms, and supports Intel Pentium, Cyrix 6_X86 and AMD 5_K86^{TM} microprocessor. It features Write-Back Secondary Cache memory for 256KB in size. Flexible main memory size can be installed from 8MB up to 128MB DRAMs, so as to give full play to the advantages of the Pentium, AMD 5_K86^{TM} and Cyrix 6_X86 CPU. The main board offers a wide range of interface to support integrated on-board IDE and on-board I/O function.

The current Green function is divided into two phases : Standby and Suspend.

Key Features

CPU	–	Supports Intel Pentium 75, 90, 100, 120, 133, 150, 166, 180, 200 MHz CPUs
	–	Supports P55C and P54CTB and AMD 5_K86^{TM} in specification
	–	Supports Cyrix 6_X86 100, 110, 120, 133MHz CPU
	–	2.5V circuit on board, ready for future P55C support
Chipset	–	Intel's 82430 FX chipset
Main memory	–	Supports 4x72pin SIMM modules
	–	64-bit data path for flexible memory size expanded from 8MB up to 128M DRAMs on board
	–	Supports EDO and Hyper Page mode DRAM (High speed) and also supports Standard Page mode DRAM
Cache memory	–	Supports Write-Back Cache policy for 256KB L2 Pipelined Burst Cache
On-board IDE	–	Supports PIO and Bus Master IDE
	–	Supports up to Mode 4 Timings
	–	Supports transfer rates up to 22 MBytes/s
	–	Supports 2 Fast IDE interfaces for up to 4 IDE devices including IDE hard disks and CD ROMs
Green function	–	Supports 2 Green modes: Standby and Suspend
On-board I/O	–	3 x ISA Slots and 4 x PCI Slots

	– Use NS Plug & Play I/O chip PC87306
	– Supports up to two 3.5" or 5.25" floppy drives 360K/720K/1.2M/1.44M/2.88M format
	– All I/O ports can be enabled or disabled
	– Two high speed 16550 compatible UARTs (COM1/COM2/COM3/COM4 selectable) with 16-byte send/receive FIFOs and support MIDI mode
	– One parallel port at I/O address 378H/278H/3BCH with additional bi-direction I/O capability and multi-mode selection (SPP/EPP/ECP) (IEEE1284 compliant)
	– Provides protection circuit to prevent damage to the parallel port when a connected printer is powered up or operated at a higher voltage
	– Real-time clock and keyboard controller built-in I/O chip
	– Supports PS/2 mouse
	– Supports IrDA Infrared
BIOS	– Licensed advanced AWARD BIOS. Supports Flash ROM BIOS, Plug and Play ready. Built-in NCR810 and Adaptec 7850 SCSI drivers
Board size	– 220mm x 250mm

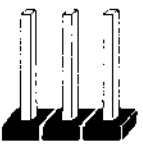
Hardware Settings

There are a number of hardware settings on the board. They specify configuration options for various features. The settings are made using something called a 'jumper'. Jumpers on the system board provide information to your operation about installed options and system settings. A jumper is a set of two or more metal pins in a plastic base attached to the mainboard. A plastic jumper 'cap' with a metal plate inside fits over two pins to create an electrical contact between them. The contact establishes a hardware settings such as installing the CPU, selecting cache size.

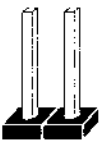
Note: When you open a jumper, leave the plastic jumper cap attached to one of the pins so you don't lose it.

Jumpers and Caps

Jumper cap



3-pin jumper



2-pin jumper

Chapter 2
Jumper Configuration

CPU Frequency Selection

The main board offers a set of jumper settings to facilitate clock frequency adjustment. The tables are shown below to list selected frequency.

Table (1) for System Clock (SC) setting:

SYSTEM CLOCK	JC1	JC2	JC3
50MHz	Close	Close	1-2
55MHz	Open	Open	2-3
60MHz	Close	Open	
66MHz	Open	Close	

Table (2) for Pentium CPU clock multiple setting:

CPU CLOCK	JS1	JS2
1.5 x SC	2-3	2-3
2 x SC	2-3	1-2
2.5 x SC	1-2	1-2
3 x SC	1-2	2-3

Note: SC -- System Clock

Table (3) for 75--200MHz Pentium CPU, the corresponding jumper settings are shown as follows:

CPU CLOCK	JS1	JS2	JC1	JC2	JC3
75 = 1.5 x 50MHz	2-3	2-3	Close	Close	1-2
90 = 1.5 x 60MHz			Close	Open	2-3
100 = 1.5x 66MHz			Open	Close	
120 = 2 x 60MHz	2-3	1-2	Close	Open	
133 = 2 x 66MHz			Open	Close	
150 = 2.5 x 60MHz	1-2	1-2	Close	Open	
166 = 2.5 x 66MHz			Open	Close	
180 = 3 x 60MHz	1-2	2-3	Close	Open	
200 = 3 x 66MHz			Open	Close	

Note: JC3 for AT bus clock : set 1-2 for PCICLK/3, set 2-3 for PCICLK/4.

Table (4) for Cyrix 6_X86 CPU clock multiple setting:

CPU Clock	JS1	JS2
2 x SC	2-3	1-2
3 x SC	2-3	2-3

Table (5) for Cyrix 6_X86 CPU, the corresponding jumper settings are shown as follows:

CPU CLOCK	JS1	JS2	JC1	JC2	JC3
100 = 2 x 50MHz	2-3	1-2	Close	Close	1-2
110 = 2 x 55MHz			Open	Open	2-3
120 = 2 x 60MHz			Close	Open	
133 = 2 x 66MHz			Open	Close	

AMD 5_K86™ is announced to be compatible with Pentium. Table (6) below is recommended by AMD for their future products.

Product Part Number	System Clock	CPU Clock	JS1	JS2	JC1	JC2	JC3
AMD5_K86-P75 (SSA/5-75)	50MHz	1.5 x SC	2-3	2-3	Close	Close	1-2
AMD5_K86-P90 (SSA/5-83)	55MHz				Open	Open	2-3
AMD5_K86-P90 (SSA/5-90)	60MHz				Close	Open	
AMD5_K86-P100(SSA/5-100)	66MHz				Open	Close	

Voltage Jumper

CPU Type	JV1, JV2
P54C, P54CTB	Close
AMD 5_K86™, Cyrix 6_X86	
P55C	Open

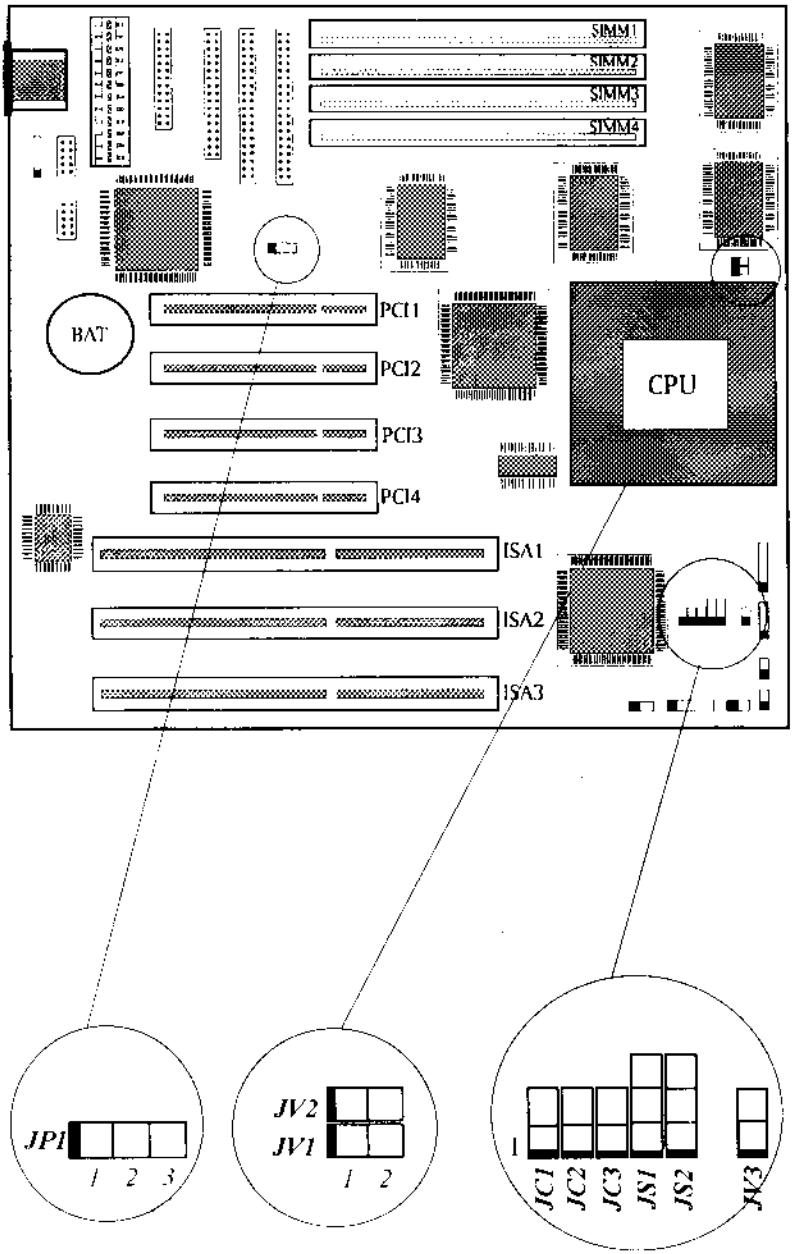
In addition, please pay attention to set JV3 jumper which indicate two kinds of CPU's VCC3 listed in below table:

VCC3	3.3V	3.5V
JV3 Setting	Open	Close*

Clear CMOS

JUMPER	SETTING	FUNCTION
JP1	2-3	Clear CMOS
	1-2 *	Normal

"": Represent for default jumper settings.*


SIMM1
SIMM2
SIMM3
SIMM4
BAT
PCI1
PCI2
PCI3
PCI4
CPU
ISA1
ISA2
ISA3
JP1
1 2 3
JV2
JV1
1 2
1
JC1
JC2
JC3
JS1
JS2
JV3

Memory Configuration

The P5I437/250A main board supports single-bank 72Pin SIMMs or double-bank 72Pin SIMMs providing a flexible size from 8MB up to 128MB main memory. The DRAM SIMMs can be installed into either/both SIMM1 & 2 or/and SIMM3 & 4. Please do not plug in two different brands of SIMMs on a bank simultaneously.

RAM SIZE	72-pin SIMM #1	72-pin SIMM #2	72-pin SIMM #3	72-pin SIMM #4
8 MB	4 MB x 1	4MB x 1	---	---
16 MB	4 MB x 1	4 MB x 1	4 MB x 1	4 MB x 1
16 MB	8 MB x 1	8 MB x 1	---	---
24 MB	8 MB x 1	8 MB x 1	4 MB x 1	4 MB x 1
32 MB	8 MB x 1	8 MB x 1	8 MB x 1	8 MB x 1
32 MB	16 MB x 1	16 MB x 1	---	---
40 MB	16 MB x 1	16 MB x 1	4 MB x 1	4 MB x 1
48 MB	16 MB x 1	16 MB x 1	8 MB x 1	8 MB x 1
64 MB	16 MB x 1	16 MB x 1	16 MB x 1	16MB x 1
64 MB	32 MB x 1	32 MB x 1	---	---
72 MB	32 MB x 1	32 MB x 1	4 MB x 1	4 MB x 1
80 MB	32 MB x 1	32 MB x 1	8 MB x 1	8 MB x 1
96 MB	32 MB x 1	32 MB x 1	16 MB x 1	16 MB x 1
128 MB	32 MB x 1	32 MB x 1	32 MB x 1	32 MB x 1
128 MB	64 MB x 1	64 MB x 1	---	---

Note: Bank 0: SIMM 1, SIMM 2
Bank 1: SIMM 3, SIMM 4

Chapter 3
Connector Configuration

This section lists all connector pin assignments and port descriptions on the main board. The situations of the connectors and ports are illustrated in the following figures. Before inserting these connectors, please pay attention to their directions.

Power Connector (PW1)

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

Keyboard Connector (BJ7)

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

Hard Disk LED (HD LED)

PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

Keylock Connector (KB-LOCK)

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

Speaker Connector (SPEAKER)

PIN NUMBER	FUNCTION
1	SPKDATA
2	GND
3	GND
4	VCC

Turbo LED (LED)

PIN NUMBER	FUNCTION
1	LED ANODE
2	LED CATHODE

IrDA Infrared (IR HEADER)

PIN NUMBER	FUNCTION
1	IRRX
2	GND
3	IRTX
4	VCC

PS2 Mouse (J7)

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

Reset Switch (RESET)

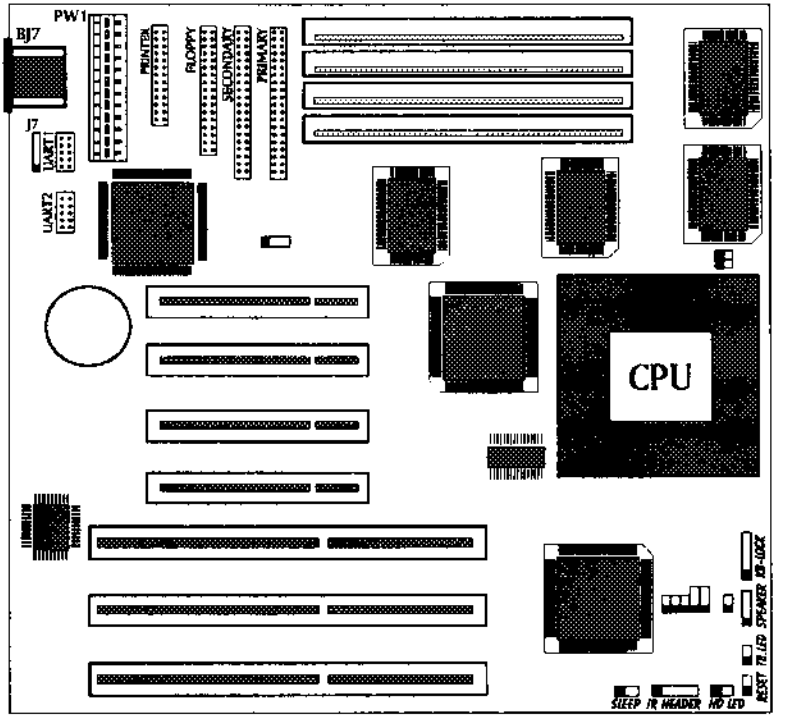
SETTING	FUNCTION
CLOSE ONCE	RESET THE SYSTEM
OPEN	NORMAL

Hardware Green (SLEEP)

SETTING	FUNCTION
CLOSE	HARDWARE GREEN (STOP CLOCK)
OPEN	NORMAL

IO Port Description

CONNECTOR	FUNCTION
PRIMARY	Primary IDE Port
SECONDARY	Secondary IDE Port
FLOPPY	Floppy Drive Port
PRINT	Parallel Port
UART 1	COM1/COM2/COM3/COM4
UART 2	COM2/COM3/COM4/COM1


PW1
BJ7
J7
UART1
UART2
PRINTER
FLOPPY
SECONDARY
PRIMARY
CPU
KB-LOCK
SPEAKER
RESET
TB LED
SLEEP
IR HEADER
HD LED

Chapter 4
AWARD BIOS Description

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, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl> + <Alt> + <Esc> keys.

Press <DEL> to enter SETUP

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will be appeared 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.

ROM PCI/ISA BIOS (2A59CQ1A)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	PASSWORD SETTING
BIOS FEATURES SETUP	IDE HDD AUTO DETECTION
CHIPSET FEATURES SETUP	HDD LOW LEVEL FORMAT
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PCI CONFIGURATION SETUP	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
LOAD SETUP DEFAULTS	

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

Time, Date, Hard Disk Type...

Figure 1 Main Menu

Standard CMOS Setup

Use the arrow keys to highlight the item, then use the <PgUp> or <PgDn> keys to select the value you want in each item.

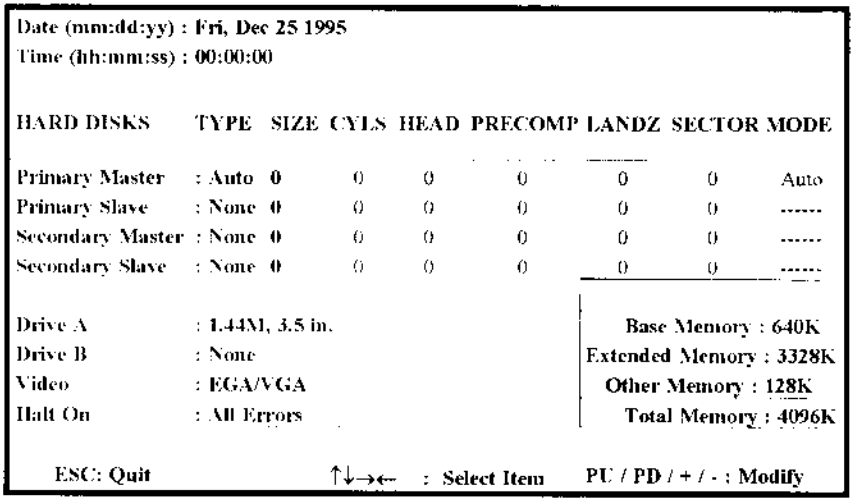


Figure 2 Standard CMOS Setup Menu

Hard Disk
Primary Master/Primary Slave/Secondary Master/Secondary Slave

The categories identify the types of 2 channels that have been installed in the computer. There are 45 predefined types and 4 user definable types are used for Enhanced IDE BIOS. Type 1 to Type 45 are predefined. Type "User" is user-definable. If your hard disk drive type is not matched with drive table or listed in it, you can use Type 'User" to define your own drive type manually.

If you select Type "Auto", that means the system can autodetect your hard disk when boot up. 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>:

If the controller of HDD interface is ESDI, the type shall be set to "1".
If the controller of HDD interface is SCSI, the type shall be set to "None".
If the controller of HDD interface is CD-ROM, the type shall be set to "None".

CYLS	number of cylinders	HEAD	number of heads
PRECOMP	write precom	LANDZ	landing zone
SECTOR	number of sectors	MODE	HDD access mode

Video

You have two ways to boot up the system:
1. When VGA used as primary and monochrome used as secondary, the selection of the video type is "VGA Mode".
2. When monochrome used as primary and VGA used as secondary, the selection of the video type is "Monochrome Mode".

EGA/VGA	Enhanced Graphics Adapter/Video Graphic Array. For EGA, VGA, SEGA, or PGA monitor adapters.
CGA 40	Color Graphic Adapter, power up in 40 column mode.
CGA 80	Color Graphic 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	The system boot will not be stopped for any error that may be detected.
All errors	Whenever the BIOS detects a non-fatal error, the system will be stopped and you will be prompted.
All, But Keyboard	The system boot will not stop for a keyboard error, but it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; but it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a keyboard or disk error; but it will stop for all other error.

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.
Extended Memory	The BIOS determines how much extended memory is presented during the POST.
Other Memory	This is memory that can be used for different applications. Most use for this area is Shadow RAM.
Total Memory	The system total memory is the sum of above memory.

BIOS Features Setup

ROM PCI/ISA BIOS (2A59Q1A)
BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning	: Disabled	Video BIOS Shadow	: Enabled
CPU Internal Cache	: Enabled	C8000~CBFF Shadow	: Disabled
External Cache	: Enabled	CC000~CFFFF Shadow	: Disabled
Quick Power On Self Test	: Enabled	D0000~D3FFF Shadow	: Disabled
Boot Sequence	: C,A	D4000~D7FFF Shadow	: Disabled
Swap Floppy Drive	: Disabled	D8000~DBFFF Shadow	: Disabled
Boot Up Floppy Seek	: Disabled	DC000~DFFFF Shadow	: Disabled
Boot Up System Speed	: High		
Gate A20 Option	: Fast		
Security Option	: Setup		
OS Select For DRAM>64MB	: Non-OS2	ESC: Quit	↑↓→← : Select Item
PS/2 Mouse Function Control	: Enabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift) F2 : Color
		F6 : Load BIOS Default	
		F7 : Load Setup Default	

Figure 3 BIOS Features Setup

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

Item	Option	Description
Virus Warning	Enabled	Activates 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.
		Note: This function is available only for DOS and other OSes that do not trap INT13.
CPU Internal Cache	Enabled	Enable CPU internal cache.
	Disabled	Disable CPU internal cache.
External Cache	Enabled	Enable external cache.
	Disabled	Disable external cache.
Quick Power On Self Test	Enabled	Enable quick POST. BIOS will shorten or skip some check items during POST to speed up POST after you power on the computer.
	Disabled	Normal POST.

Boot Sequence	C,A	The system will firstly search for hard disk drive then floppy disk drive.
	A,C	The system will firstly search for floppy disk drive then hard disk drive.
Swap Floppy Drive	Enabled	It will exchange the assignment of A & B floppy drives.
	Disabled	The assignment of A & B floppy drives are normal.
Boot Up Floppy Seek	Enabled	BIOS searches for floppy disk drive to determine if drive is ready for diskette read/write during booting.
	Disabled	skip drive seeking to speed up system booting.
Boot Up System Speed	High	Set the system speed to high at immediately after power up.
	Low	Set the system speed to low.
Gate A20 Option	Normal	The A20 signal is controlled by keyboard controller or chipset hardware.
	Fast	It is default. The A20 signal is controlled by Port 92 or chipset specific method.
Security Option	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 security. Once the security is disabled, the system will boot and you can enter Setup freely.
OS Select For DRAM>64MB	Non-OS2	If your operating system is not OS/2, please select this item.
	OS2	If system DRAM is more than 64MB and operating system is OS/2, please select this item.
PS/2 Mouse Function Control	Enabled	Assign IRQ12 to PS/2 mouse port.
	Disabled	Disabled PS/2 mouse port. IRQ12 is reserved to system.
Video BIOS Shadow	Enabled	Video BIOS will be copied to RAM. Video Shadow will increase the video speed.
	Disabled	Video shadow is disabled.
C8000--CBFFF Shadow /	Enabled	Option shadow is enabled. Optional ROM will be copied to RAM by 16K byte per unit.

DC000--DFFFF Shadow	Disabled	The shadow function is disabled.

Chipset Features Setup

ROM PCI/ISA BIOS (2A59CQ1A) POWER MANAGEMENT SETUP AWARD SOFTWARE, INC.			
DRAM Timing	: 70ns	PCI Concurrence	: Enabled
		PCI Streaming	: Enabled
System BIOS Cacheable	: Disabled	PCI Bursting	: Disabled
Video BIOS Cacheable	: Enabled		
8 Bit I/O Recovery Time	: 6	Onboard FDC Controllers	: Enabled
16 Bit I/O Recovery Time	: 3	Onboard Serial Port1	: COM1/3F8
Memory Hole At 15M-16M	: Disabled	Onboard Serial Port2	: COM2/2F8
IDE HDD Block Mode	: Enabled	Onboard Parallel Port	: 378H/IRQ7
IDE Primary Master PIO	: Auto	Parallel Port Mode	: Compatible
IDE Primary Slave PIO	: Auto		
IDE Secondary Master PIO	: Auto		
IDE Secondary Slave PIO	: Auto	Infrared Duplex Type	: Disabled
On-chip Primary PCI IDE	: Enabled		
On-chip Secondary PCI IDE	: Enabled	ESC: Quit	↑↓→← : Select Item
PCI Slot IDE 2nd Channel	: Enabled	F1 : Help	PU/PD/+/- : Modify
		F5 : Old Values	(Shift)F2 : Color
		F6 : Load BIOS Default	
		F7 : Load Setup Default	

The following pages tell you the option of each item and describe the meanings of each option.

Item	Setting	Description
DRAM Timing	60ns 70ns	This item is of selected DRAM read/write timing. If select the smaller value, the system performance is higher than other selections, but the system stability will be come down.
System BIOS Cacheable	Enabled	Besides conventional memory, the system BIOS area is also cacheable.
	Disabled	The system BIOS area is not cacheable.
Video BIOS Cacheable	Enabled	Besides conventional memory, video BIOS area is also cacheable.
	Disabled	Video BIOS area is not cacheable.

8/16 Bit I/O Recovery Time	1--8/4	It is the ISA Bus I/O operating recovery time.
	NA	I/O recovery time is not exist.
Memory Hole at 15M--16M	Enabled	Memory Hole at 15--16M is reserved for expanded PCI card.
	Disabled	Do not set this memory hole.
IDE HDD Block Mode	Enabled	Allow IDE HDD read/write several sectors one time.
	Disabled	IDE HDD only reads/writes a sector one time.
IDE Primary/Secondary Master/Slave PIO	Mode0 -- Mode4	Define the IDE primary/secondary master /slave PIO mode.
	Auto	The IDE PIO mode is defined according to auto-detect.
On-chip Primary/ Secondary PCI IDE	Enabled	On-chip primary/secondary PCI IDE port is enabled.
	Disabled	On-chip primary/secondary PCI IDE port is disabled.
PCI Slot IDE 2nd Channel	Enabled	The second IDE channel on PCI slot is enabled.
	Disable	The second IDE channel on PCI slot is disabled.
PCI Concurrence/ *PCI Streaming/* *PCI Bursting*	Enabled, Disabled	These three items enabled will accelerate operation speed of PCI bus, thus benefit to the system performance. But perhaps don't support some expanded cards.
Onboard FDC Controller	Enabled	Onboard floppy disk is enabled.
	Disabled	Onboard floppy disk is disabled.
Onboard Serial Port 1/2	COM1/3F8, COM2/2F8, COM3/3E8, COM4/2E8	Define onboard serial port address.
	Disabled	Onboard serial port is disabled.
Onboard Parallel Port	378/IRQ5, 278/IRQ5, 3BC/IRQ7, 378/IRQ7	Define onboard parallel port address and IRQ channel.
	Disabled	Onboard parallel port is disabled.
Parallel Port Mode	Compatible, Extended,	Define the parallel port mode is Standard. Parallel Port (SPP), Enhanced Parallel Port.

	EPP,	(EPP), or Extended Capabilities Port (ECP).
	ECP	Both Compatible mode and Extended mode are SPP mode, except that the later has a latchable buffer between I/O data pins and CPU.
InfraRed Duplex	Disabled, Half, Full	Define InfraRed communication mode: disabled, half-duplex, or full-duplex.

Power Management Setup

ROM PCI/ISA BIOS (2A59CQ1A)
POWER MANAGEMENT SETUP
AWARD SOFTWARE, INC.

Power Management	: Disable	IRQ6 (Floppy Disk)	: ON
PM Control by APM	: Yes	IRQ7 (LPT1)	: ON
Video Off Method	: V/H SYNC + Blank	IRQ8 (RTC Alarm)	: OFF
		IRQ9 (IRQ2 Redir)	: OFF
Video Off Option	: Suspend -> Off	IRQ10 (Reserved)	: OFF
		IRQ11 (Reserved)	: OFF
Doze Mode	: Disabled	IRQ12 (PS/2 Mouse)	: ON
Standby Mode	: Disabled	IRQ13 (Coprocessor)	: OFF
Suspend Mode	: Disabled	IRQ14 (Hard Disk)	: ON
HDD Power Down	: Disabled	IRQ15 (Reserved)	: ON
IRQ3 (Wake-Up Event)	: ON		
IRQ4 (Wake-Up Event)	: ON		
IRQ8 (Wake-Up Event)	: ON		
IRQ12 (Wake-Up Event)	: ON		
PM Activities Monitor		ESC: Quit	↑↓→← : Select Item
IRQ3 (COM2)	: ON	F1 : Help	PU/PD/+/- : Modify
IRQ4 (COM1)	: ON	F5 : Old Values	(Shift)F2 : Color
IRQ5 (LPT2)	: ON	F6 : Load BIOS Default	
		F7 : Load Setup Default	

Figure 4 Power Management Setup

The following pages tell you the option of each item and describe the meanings of each option.

Item	Option	Descriptions
Power	Disabled	Global Power Management will be disabled.
Management	User Define	Users can configure their own Power Management Timer (PM Timer).
	Min Saving	Pre-defined timer values are used such that all timers are in their MAX value.
	Max Saving	Pre-defined timer values are used such that all timers are in their MIN value.
PM Control by APM	No	System BIOS will ignore APM when power managing the system.
	Yes	System BIOS will wait for APM's prompt before it enter any PM mode e.g. STANDBY or SUSPEND.
		Note: If APM is installed, and if there is a task running, even the timer is time out, the APM will not prompt the BIOS to put the system into any power saving mode. But if APM is not installed, this option has no effect.
Video Off Method	Blank Screen	The system BIOS will only blank off the screen when disabling video.
	V/H SYN C+Blank	In addition to Blank Screen, BIOS will also turn off the V-SYNC & H-SYNC signals from VGA cards to monitor.
	DPMS	This function is enabled for only the VGA card supporting DPM.
		Note: Green monitors detect the V/H -SYNC signals to turn off its electron gun.
Video Off Option	Always On	System BIOS will never turn off the screen.
	Suspend -> Off	Screen off when system is in SUSPEND mode.
	Susp, Stby -> Off	Screen off when system is in STANDBY or SUSPEND mode.
	All Modes -> Off	Screen off when system is in STANDBY or SUSPEND mode.
HDD Power	Disabled	HDD's motor will not off.
Down	1Min ~ 15Min	Defines the continuous HDD idle time before the HDD entering power saving mode (motor off).

		Note: When HDD is in power saving mode, any access to the HDD will wake up the HDD.
Doze Mode	Disabled	The system will never enter DOZE mode.
	1 Min ~ 1 Hr	*Note: Doze mode is no longer used in this system. It is just a reserved interface without any function.*
Standby Mode	Disabled	The system will never enter STANDBY mode.
	1 Min ~ 1 Hr	Defines the continuous idle time before the system entering STANDBY mode. If any item defined in *PM Activities Monitor* is enabled and activated, STANDBY timer will be reloaded.
Suspend Mode	Disabled	The system will never enter SUSPEND mode.
	1 Min ~1 Hr	Defines the continuous idle time before the system entering SUSPEND mode. If any item defined in *PM Activities Monitor* is enabled and activated, SUSPEND timer will be reloaded.
IRQ3(Wake-Up Event) ~ IRQ12(Wake-Up Event)	OFF	The specified event's activity will not make the system wake up from STANDBY mode.
	ON	The specified event's activity will make the system wake up from STANDBY mode, but cannot affect the PM Timer.
PM Activities Monitor	OFF	The specified event's activity will not affect the PM Timers.
IRQ3 ~ IRQ15	ON	The specified event's activity will cause the PM Timers to be reloaded, and make the system wake up from SUSPEND mode.

PCI Configuration Setup

ROM PCI/ISA BIOS (2A59CQEA)
PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PnP BIOS Auto-Config	: Disabled		
Slot 1 Using INT#	: AUTO		
Slot 2 Using INT#	: AUTO		
Slot 3 Using INT#	: AUTO		
Slot 4 Using INT#	: AUTO		
1st Available IRQ	: 10		
2nd Available IRQ	: 11		
3nd Available IRQ	: 9		
4th Available IRQ	: 5		
PCI IRQ Actived By	: Level	ESC: Quit	↑↓→← : Select Item
PCI IDE IRQ Map To	: PCI-AUTO	F1 : Help	PU/PD/+/- : Modify
Primary IDE INT#	: A	F5 : Old Values	(Shift)F2 : Color
Secondary IDE INT#	: B	F6 : Load BIOS Default	
Assign IRQ For VGA	: Disabled	F7 : Load Setup Default	

Figure 5 PCI Configuration Setup

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

Item	Options	Descriptions
PnP BIOS Auto-Config	Disabled	Four available PCI IRQs are manually pre-defined.
	Enabled	Available PCI IRQs are automatically selected by BIOS.
Slot 1 Using INT# *Slot 2 Using INT#* *Slot 3 Using INT#* *Slot 4 Using INT#*	AUTO	AUTO : BIOS will - Ask the PCI device which INT (A-D) it wants to use for interruption - Check out which IRQ is available from the above. - Tell the device which IRQ has been assigned to it.
	A, B, C, D	A,B,C,D : These options are reserved for "Dirty" cards from which the system BIOS cannot tell slot which INT it uses.

		Note: Choose "AUTO" for all devices unless you know exactly which card is a dirty device and which INT that card uses.
1st Available IRQ	3 ~ 15	The system BIOS will assign these 4 available IRQs to the found PCI devices.
2nd Available IRQ	NA	The system BIOS will not assign these 4 available IRQs.
3nd Available IRQ		
4th Available IRQ		
PCI IRQ Activated by	Edge, Level	To tell the chipset that the IRQ signals input is level or edge trigger.
PCI IDE IRQ Map To	PCI-AUTO	The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE device.
	PCI-SLOT1, PCI-SLOT2, PCI-SLOT3, PCI-SLOT4	The BIOS will assign IRQ 14 for primary IDE INT# and IRQ 15 for secondary IDE INT# for the specified slot.
	ISA	The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ 14 & 15 directly from ISA slot through a cord. (This cord is called Legacy Header)
Primary IDE INT#	A	To tell which INT# the PCI IDE card is using for its interrupts.
Secondary IDE INT#	B	
Assign IRQ For VGA	Enabled	Assign IRQ10 to PCI VGA card.
	Disabled	Do not assign IRQ10 to PCI VGA card.

Load BIOS Defaults

The BIOS Defaults is conventional and safe setting.

Load Setup Defaults

The Setup Defaults is common and efficient setting.

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. Once the password is disabled, the system will boot and you can enter Setup freely.

PASSWORD DISABLED

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.

IDE HDD Auto Detection

The Enhance IDE features was included in all Award BIOS. Below is a brief description of this features.

ROM PCI/ISA BIOS (2A59CQ1A)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

HARD DISKS TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR MODE
Primary Master:

Select Primary Master Option (N = Skip) : N

OPTIONS	SIZE	CYLS	HEADS	PRECOMP	LANDZONE	SECTORS	MODE
1(Y)	516	1120	16	65535	1119	59	NORMAL
2	516	524	32	0	1119	63	LBA
3	516	560	32	65536	1119	59	LARGE

Note: Some OSes (like SCO UNIX) must use "NORMAL" for installation

Figure 6 IDE HDD Auto Detection

1. Setup Changes

With auto-detection

- BIOS setup will display all possible modes that is supported by the HDD including NORMAL, LBA & LARGE.
- If HDD does not support LBA modes, no "LBA" option will be shown.
- If number of cylinders is less than or equal to 1024, no "LARGE" option will be shown.
- Users can select a mode which is appropriate for them.

With Standard CMOS Setup

		CYLS	HEADS	PRECOMP	LANDZONE	SECTOR	MODE
Drive C	: User(516MB)	1120	16	65535	1119	59	NORMAL
Drive D	: None(203MB)	684	16	65535	685	38	----------

When HDD type is in "user" type, the "MODE" option will be opened for user to select their own HDD mode.

2. HDD Modes

The Award BIOS supports 3 HDD modes NORMAL, LBA & LARGE and Auto detect.

NORMAL

Generic access mode in which neither the BIOS nor the IDE controller will make any transformation during accessing. The maximum number of cylinder, head and sectors for NORMAL mode are 1024, 16 and 63.

If user set his HDD to NORMAL mode, the maximum accessible HDD size will be 528 Megabytes even though its physical size may be greater than that.

LBA (Logical Block Addressing) mode

A new HDD accessing method to overcome the 528 Megabyte bottleneck. The number of cylinders, head and sectors shown in setup may not be the number physically contained in the HDD.

During HDD accessing, the IDE controller will transform the logical address described by sector, head and cylinder number into its own physical address inside the HDD. The maximum HDD size supported by LBA mode is 8.4 Gegabytes.

LARGE mode

Some IDE HDDs contain more than 1024 cylinder without LBA support (in some cases, user do not wait LBA). The Award BIOS provides another alternative to support these kinds of HDD.

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is multiplied by 2. A reverse transformation process will be made inside INT13h in order to access the right HDD address.

Auto detect

If using Auto detect, the BIOS will auto detect IDE hard disk mode and set it to one kind of HDD modes.

3. Remark

To support LBA or LARGE mode of HDDs, there must be some software involved. All these software are located in the Award HDD Service Routine (INT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

Hard Disk Low Level Format Utility

This Award Low-Level-Format Utility is designed as a tool to save your time formatting your disk. The Utility automatically looks for the necessary information of the drive you selected. Utility also searches for bad tracks and list them for your reference.

Shown below is the Main Menu after you enter into the Award Low-Level-Format Utility.

```
Hard Disk Low-Level-Format Utility          NO. CYLS HEAD
        SELECT DRIVE
        BAD TRACK LIST
        PREFORMAT

      Current select drive is : C

DRIVE : C  CYLINDER : 0  HEAD : 0

                SIZE  CYL  HEAD PRECOMP LANDZ SECTORS  MODE

Primary Master  : 40MB  977   5    300    977    17    NORMAL
Primary Slave   : None  0     0    0      0      0     AUTO
Secondary Master: None  0     0    0      0      0     AUTO
Secondary Slave : None  0     0    0      0      0     AUTO

    Up/Down - Select item      Enter - Accept      ESC - Exit/Abort
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```

Figure 7 Hard Disk Low Level Format Utility

SELECT DRIVE

Select from installed hard disk drive C or D. List at the bottom of the screen is the drive automatically detected by the utility.

BAD TRACK LIST

Auto scan bad track

The utility will automatically scan bad tracks and list the bad tracks in the window at the right side of the screen.

Add bad track

Directly type in the information of the known bad tracks in the window at the right side of the screen.

Modify bad track

Modify the information of the added bad tracks in the window at the right side of the screen.

Delete bad track
Delete the added bad tracks in the window at the right side of the screen.

Clear bad track table
Clear the whole bad track list in the window at the right side of the screen.

PREFORMAT

Interleave
Select the interleave number of the hard disk drive you wish to perform low level format. You must select from 1 to 8. Check the documentation that came with the drive for the correct interleave number, or select 0 for utility automatic detection.

Auto scan bad track
This allows the utility to scan bad track or not.

Start
Press <Y> to start low level format.

Power-On Boot

After you have made all the changes to CMOS values and the system cannot 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 by simultaneously press <Ctrl>, <Alt>, and <Delete> keys.

Appendix
BIOS Upgrade Diskette

You can use this diskette to update your BIOS.

For the most update and additional information about BIOS upgrade, please refer to "README" in the "BIOS Upgrade Diskette".

Warning: Before you update your BIOS, you should look over the "README" file to avoid making mistake.

P/N 430-01008-502
Manual P5I437/250A Ver 2.0