PT-5IVL

SYSTEM BOARD

(VER. 1.x)

OPERATION MANUAL

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TRADEMARKS

All trademarks used in this manual are the property of their respective owners.

NOTE

The "LOAD SETUP DEFAULTS" function loads the default settings directly from BIOS default table, these default settings are the best-case values that should optimize system performance and increase system stability . This function will be necessary when you accept this system board, or the system CMOS data is corrupted.
By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. (Please refer to the Chapter 5 AWARD BIOS SETUP procedures in this maulal.)

NOTICE

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

1. INTRODUCTION

1.1 SYSTEM OVERVIEW

The **PT-5IVL** Pentium PCI Local Bus system board is designed based on the Intel 82430VX PCIset system chipset and Winbond I/O chipset, which built-in two channel Enhanced PIO and Bus Master PCI IDE ports, one Floppy Disk Control port, two high speed Serial ports (UARTs) and one multimode Parallel port and also supports IR port. It is designed to fit a high performance, Pentium 75 MHz to 200 MHz (ideally) based solution for high-end and true GREEN-PC computer systems.

This system board supports the Peripheral Component Interconnect (PCI) Local Bus standard (PCI Spec. Rev. 2.1 compliant). It not only breaks through the I/O bottlenecks of the traditional ISA main board, but also provides the performance needs for networking and multi-user environments.

1.2 FEATURES

The PT-5IVL system board contains the following features:

- ▫ Pentium P54C/P54CS/P54CTB/P55C, Cyrix 6x86 & AMD 5k86 based, PC/AT compatible system board with ISA Bus and PCI Local Bus.

- ▫ Supports the most part of "586" level CPUs designed by Intel, Cyrix and AMD.

- ▫ Built-in 2 set voltage regulator circuits to support multi-spec. CPU I/O voltage (includes Standard, VR and VRE specification) and CPU CORE voltage (+2.5V DC and +2.8V DC).

- ▫ DRAM Memory : Supports fast page mode (FPM), Extended Data Out (EDO) memory.

- ▫ Cache Memory : Supports pipelined burst SRAMs. Cache memory size up to 512KB.

- ▫ BIOS : Supports Normal and Plug & Play BIOS.

- ▫ IDE ports : Supports two channel Enhanced PIO and Bus Master PCI IDE ports, up to Mode 4 timing, and up to 22 MBytes/s transfer rates.

- ▫ I/O ports : Supports two high speed serial ports (UARTs), One multimode parallel port for standard (SPP), enhanced (EPP) and high speed (ECP) modes. One Floppy Disk Control port.

- ▫ IR Port (option) : Supports IR (Infrared Rays) functions. Both HPSIR and ASKIR are supported.

- ▫ Software compatibility : MS-DOS, WindowsNT, OS2, XENIX, UNIX, NOVELL, CAD/CAM, Windows, Windows 95....etc.

2.   SPECIFICATIONS

□   **CPU**
   Intel : Pentium processor and OverDrive processor (P54C/P54CS/P54CTB/P55C)
            75/ 90/ 100/ 120/ 133/ 150/ 166 MHz and 180/ 200 MHz (ideally).
   Cyrix : 6x86-P120+(100MHz)/ P133+(110MHz)/ P150+(120MHz)/ P166+(133MHz),
            M2 series.
   AMD : 5k86-P75(SSA/5-66)/ P75(SSA/5-75)/ P90(SSA/5-83)/ P90(SSA/5-90)/
            P100(SSA/5-100)

□   **CPU VCC**
   (1). CPU I/O Voltage   : Standard (+3.3V DC), VR (+3.4V DC), and VRE (+3.5V DC).
   (2). CPU CORE Voltage : Egual to CPU I/O Voltage, +2.5V DC, and +2.8V DC.

□   **WORD SIZE**
   Data Path : 8-bit, 16-bit, 32-bit, 64-bit

□   **PC System Chipset**
   Intel 82430VX PCIset (82437VX, 82438VX, 82371SB)

□   **I/O Chipset**
   Winbond W83877F.

□   **System Clock**
   50/55/60/66.6 MHz adjustable.

□   **Memory**
   DRAM : Two banks, each bank could be single or double sided, 8MB up to 128 MB main
           memory. Supports both fast page mode (FPM) and Extended Data Out (EDO)
           memory. (Using 72-pin SIMM module x 4).
   SRAM : One COAST SRAM Module slot, supports 256KB or 512KB Direct-Mapped wirte
           back cache memory, using pipelined burst SRAM.

□   **BIOS**
    AWARD system BIOS. 128KB x 8 EPROM (for normal BIOS) or Flash ROM (for Plug &
    Play BIOS).

□   **Expansion Slots**
   PCI Slots : 32-bit x 3 (All Master/Slave, PCI Spec. Rev. 2.1 Compliant)
   ISA Slots : 16-bit x 3

□   **IDE Ports**
   Two channel Enhanced PIO and Bus Master PCI IDE ports, maximum could be connected 4
   IDE Hard Disks and ATAPI CD-ROM devices.

□ **Super I/O Ports**
1. Two high speed NS16C550 compatible serial ports (UARTs).
2. One parallel port, supports SPP/EPP/ECP mode.
3. One Floppy Disk Control port.

□ **IR Port** (option)
One HPSIR and ASKIR compatible IR transmission connector (5-pin).

□ **Mouse and Keyboard**
Supports PS/2 mouse connector, PS/2 keyboard connector (option) and AT keyboard connector.

□ **DIMENSION**

Width & Length	: 220 mm x 220 mm.
Height	: 3/4 inches with components mounted, but without expansion boards and cables.
PCB Thickness	: 4 layers, 0.05 inches normal.
Weight	: 17.5 ounces.

□ **ENVIRONMENT**

|	
Operating Temperature	: 10*C to 40*C. (50*F to 104*F)
Required Airflow	: 50 linear feet per minute across CPU.
Storage Temperature	: - 40*C to 70*C. (- 40*F to 158*F)
Humidity	: 0 to 90% noncondensing.
Altitude	: 0 to 10,000 feet.

3. SYSTEM BOARD LAYOUT

3.1 PT-5IVL VER. 1.2

Explanation : All connectors, jumpers and components which marks by a black point on the corner
means the pin-1 side of the connector, jumper and component.
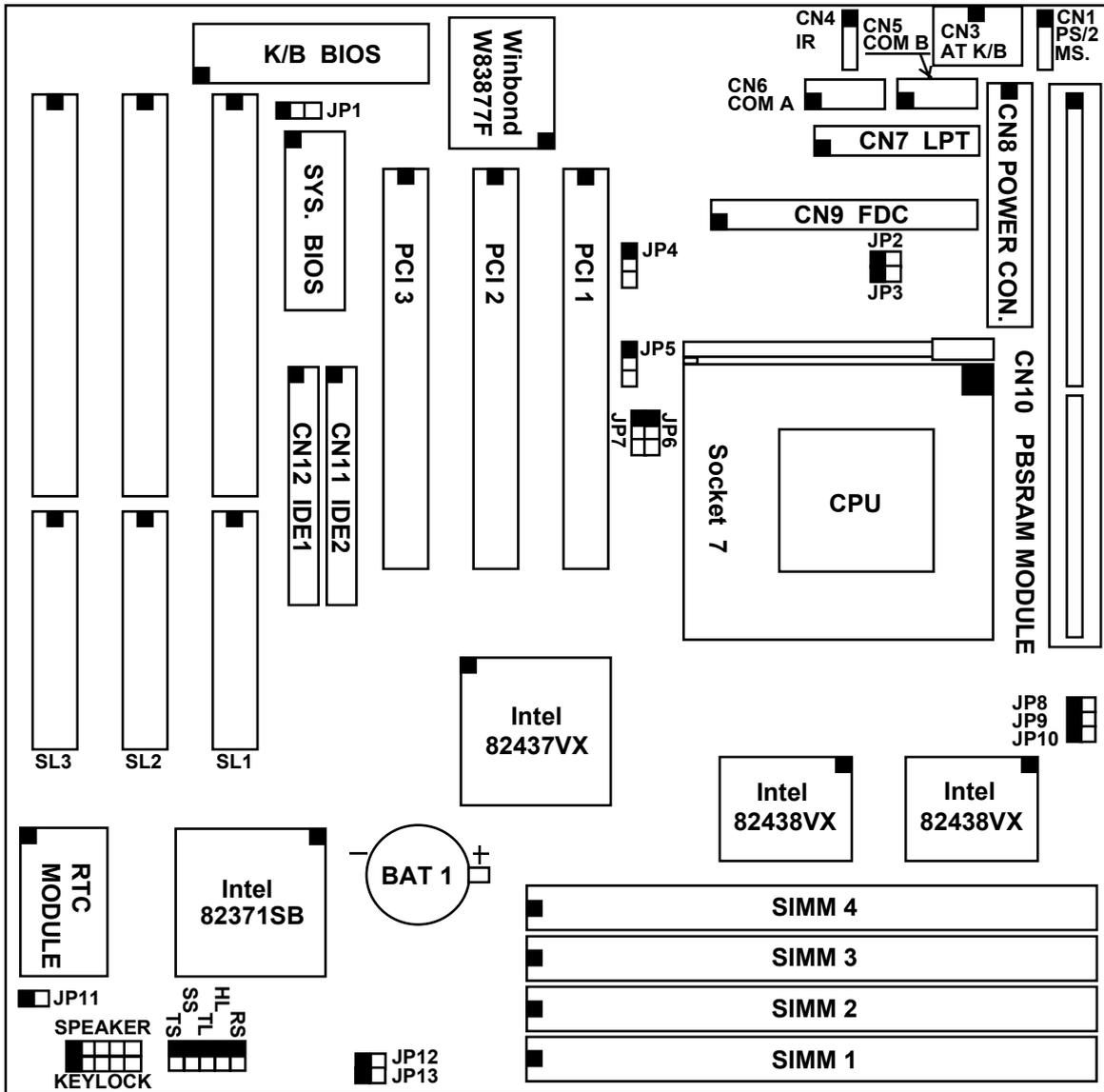
4.   HARDWARE SETUP

4.1   UNPACKING

The system board package should contain the following parts :

    The PT-5IVL system board.
    OPERATION MANUAL.
    Cable set for IDE and I/O device.

4.2   HARDWARE CONFIGURATION

Before the system board is ready to operate, the hardware must be configured to allow for various functions within the system. To configure the PT-5IVL system board is a simple task, only a few jumpers, connectors, cables and sockets needs to be selected and installed. (For the detailed locations of each component please refer to the "system board layout figure" which appears in page 3-1.)

4.2.1   DRAM INSTALLATION

The PT-5IVL system board will support two banks main memory (bank 0 and bank 1) on board (using four 72-Pin SIMM socket, SIMM 1-4), each bank could be single-sided or double-sided, 8MB up to 128 MB of local memory can be attained. Supports both standard fast page mode (FPM) and Extended Data Out (EDO) memory. (*Note that this system board doesn't support 3.3V SDRAM*) The speed of FPM DRAMs must be used 70ns or faster than 70ns, the speed of EDO DRAMs must be used 60ns or faster than 60ns.

The usable SIMM modules are :   *(Note : S = Single-sided , D = Double-sided)*

1MBx32(36)-S **(4MB)**   ,   1MBx32(36)-D **(8MB)**,
2MBx32(36)-S **(8MB)**   ,   2MBx32(36)-D **(16MB)**,
4MBx32(36)-S **(16MB)**   ,   4MBx32(36)-D **(32MB)**.

The following table provides the possible combinations for DRAM memory installation.

Bank 0 SIMM1 and SIMM2	Bank 1 SIMM3 and SIMM4	Bank 0 SIMM1 and SIMM2	Bank 1 SIMM3 and SIMM4
Single-sided	Single-sided	Double-sided	Single-sided
Single-sided	Double-sided	Double-sided	Double-sided

Bank can be populated in any order (bank 0 does not have to be populated before bank 1). Within any given bank, the SIMMs must be the same size. Among the two banks, SIMM densities can be mixed in any order. EDO and FPM can be mixed between SIMMs, a given SIMM must contain only one type of DRAM. When DRAM types are mixed each SIMM runs optimized for that particular type of DRAM.

4.2.2 L2 CACHE MEMORY INSTALLATION

The PT-5IVL system board will support one bank direct-mapped second level cache, and provides either 256KB or 512KB cache memory, using synchronous pipeline-burst SRAMs. (*Note that this system board does not support asynchronous or burst SRAMs for the L2 cache memory*) Both Write Back and Write Through cache update policy are supported.

The second level cache is supported via a COAST (Cache-On-A-STick) module, there is no jumper needed for end-user while using L2 cache memory, just insert the COAST module into the SRAM module slot (CN10), then the cache memory size will be detected by system BIOS automatically.

Note : The COAST modules design must comply with Intel COAST (Cache-On-A-STick) module specification revision 2.0 or later.

4.2.3 CONNECTORS

A connector is two or more pins that are used make connections to the system standard accessories (such as power, mouse, printer,...etc.) The following is a list of connectors on board, as well as descriptions of each individual connector.

(A) BAT1 Non-Rechargeable battery (Using 3 Vlots Lithium battery : CR2032)

Pin #	Assignment
	Battery Positive
	Ground

(B) CN1 PS/2 Mouse converted connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Mouse Data	3	Ground	5	Mouse Clock
2	No Connection	4	+5V DC		

(C) CN2 PS/2 Keyboard connector (option)

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Keyboard Data	3	Ground	5	Keyboard Clock
2	No Connection	4	+5V DC	6	No Connection

(D) CN3 AT Keyboard connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Keyboard Clock	3	No Connection	5	+5V DC
2	Keyboard Data	4	Ground		

(E) CN4 IR (Infrared Rays) transmission connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	+5V DC	3	IR Receive	5	IR Transmit
2	No Connection	4	Ground		

(F) CN5   COM B (Serial Port 2) connector
             COM1/2/3/4, selected by BIOS setup, using IRQ3 or 4

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	2	RD (Received Data)
3	TD (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC (No Connection)

(G) CN6   COM A (Serial Port 1) connector
             COM1/2/3/4, selected by BIOS setup, using IRQ4 or 3

Pin #	Assignment	Pin #	Assignment
1	DCD (Data Carrier Detect)	2	RD (Received Data)
3	TD (Transmit Data)	4	DTR (Data Terminal Ready)
5	Ground	6	DSR (Data Set Ready)
7	RTS (Request To Send)	8	CTS (Clear To Send)
9	RI (Ring Indicator)	10	NC (No Connection)

(H) CN7   Parallel Port connector
             (Supports SPP/EPP/ECP mode, selected by BIOS setup,using IRQ7 or IRQ5,
             ECP using DMA channel 3 or 1)

Pin #	Assignment	Pin #	Assignment
1	STROBE-	14	AUTO FEED-
2	Data Bit 0	15	ERROR-
3	Data Bit 1	16	INIT-
4	Data Bit 2	17	SLCT IN-
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Ground
9	Data Bit 7	22	Ground
10	ACK-	23	Ground
11	BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	N.C. (No Connection)

(I) CN8   Power connector

Pin #	Assignment	Pin #	Assignment	Pin #	Assignment
1	Power Good	5	Ground	9	-5V DC
2	+5V DC	6	Ground	10	+5V DC
3	+12V DC	7	Ground	11	+5V DC
4	-12V DC	8	Ground	12	+5V DC

(J) CN9   Floppy Disk Control Port connector (Using IRQ6, DMA channel 2)

(K) CN10   Pipeline-burst SRAM (COAST) module slot

(L) CN11   IDE 2 connector (Secondary IDE Port, using MIRQ0)

(M) CN12   IDE 1 connector (Primary IDE Port, using IRQ14)

(N) RS   Reset Button connector

Pin #	Assignment	Pin1&2	Function
1	Ground	Open	No action
2	Reset Control	Short	System Reset

(O) HL   IDE HDD LED connector

Pin #	Assignment
1	Pullup (+5V DC)
2	Signal Pin

(P) TL   Turbo LED connector

Pin #	Assignment
1	Pullup (+5V DC)
2	Signal Pin

(Q) SS   External SMI button connector

Pin #	Assignment	Pin1&2	Function
1	SMI Control	Open	For normal operation
2	Ground	Short	To get into Suspend mode

(R) TS   Turbo Switch connector (This function is reserved)

Pin #	Assignment	Pin1&2	Function
1	Turbo Control	Open	Turbo
2	Ground	Short	Normal

(S) SPEAKER   Speaker connector

Pin #	Assignment	Pin #	Assignmen
1	+5V DC	4	Speaker Data Signal
2	No Connection	5	No Connection
3	No Connection		

(T) KEY LOCK   Front Panal Power LED & Key-Lock connector

Pin #	Assignment
1	Pullup (+5V DC for Power LED)
2	No Connection
3	Ground
4	Keyboard Lock
5	Ground

4.2.4 JUMPERS

A jumper is two, three or more pins which may or may not be covered by a plastic connector plug (mini-jumper). A jumper is used to select different system options. *Please make sure all jumpers at correct position before this system board used.*

(A)　　JP2, JP3, JP12, JP13　　CPU type selection

  (1) INTEL Pentium / Pentium-MMX CPUs

CPU Type	JP2	JP3	JP12	JP13	Remark
80502-75	open	open	short	short	
80502-90	open	open	open	short	
80502-100	open	open	short	open	
80502-120	short	open	open	short	
80502-133	short	open	short	open	
80502-150	short	short	open	short	
80502-166 / 80503-166	short	short	short	open	
80502-180	open	short	open	short	
80502-200 / 80503-200	open	short	short	open	
80503-233	open	open	short	open	

  (2) Cyrix 6x86 / 6x86L CPUs

CPU Type	JP2	JP3	JP12	JP13	Remark
6x86 / 6x86L -P120+	short	open	short	short	
6x86 / 6x86L -P133+	short	open	open	open	
6x86 / 6x86L -P150+	short	open	open	short	
6x86 / 6x86L -P166+	short	open	short	open	

  (3) AMD K5 CPUs

CPU Type	JP2	JP3	JP12	JP13	Remark
AMD-K5-PR75	open	open	short	short	
AMD-K5-PR90	open	open	open	short	
AMD-K5-PR100	open	open	short	open	
AMD-K5-PR120	open	open	open	short	
AMD-K5-PR133	open	open	short	open	
AMD-K5-PR150	short	short	open	short	
AMD-K5-PR166	short	short	short	open	

(B) JP4-JP10   CPU operating voltage selection

CPU VCC		JP4	JP5	JP6	JP7	JP8	JP9	JP10	Remark
I/O voltage	CORE voltage								
+ 3.3 V	+ 3.3 V	x	2-3	2-3	2-3	open	open	short	
+ 3.4 V	+ 3.4 V	x	2-3	2-3	2-3	open	short	open	*
+ 3.5 V	+ 3.5 V	x	2-3	2-3	2-3	short	open	open	
+ 3.3 V	+ 2.5 V	1-2	1-2	1-2	1-2	open	open	short	
+ 3.4 V	+ 2.5 V	1-2	1-2	1-2	1-2	open	short	open	**
+ 3.5 V	+ 2.5 V	1-2	1-2	1-2	1-2	short	open	open	
+ 3.3 V	+ 2.8 V	2-3	1-2	1-2	1-2	open	open	short	
+ 3.4 V	+ 2.8 V	2-3	1-2	1-2	1-2	open	short	open	***
+ 3.5 V	+ 2.8 V	2-3	1-2	1-2	1-2	short	open	open	

Remark : x   : Don't care
          *   : For the single-VCC required CPUs (e.g. Intel P54C, AMD-SSA/5-xxAB?,
                   AMD-SSA/5-xxAC?, AMD-SSA/5-xxAF?, Cyrix 6x86 ... etc.)
          **   : For a part of the dual-VCC required CPUs (e.g. Intel P55C-166, Cyrix M2,
                   AMD-SSA/5-xxAK? ... etc.)
          ***   : For a part of the dual-VCC required CPUs (e.g. Intel P55C-200, Cyrix M2,
                   AMD-SSA/5-xxAH?, AMD-SSA/5-xxAJ? ... etc.)
Note : For the detailed CPU-VCC requirement, please inquire of your CPU supplier.

(C) JP11   Clear CMOS button
             <u>Pin #</u>   <u>Function</u>
             open   Normal operation
             short   Clear CMOS (*Note : Don't forget to open this jumper after 3 seconds.*)

Note : Depends on different brand of RTC Module (U20 or U21), there are two ways to clear
         CMOS, (1) while power-on, (2) while power-off, the following is a list for reference :
         (1) while power-on : BENCHMARQ / bq3287AMT, SGS / M48T86,
         (2) while power-off : VIA / VT82885N, ODIN / OEC12C885 / OEC12C887A,
                             DALLAS / DS12887A.

(D) JP1   ROM BIOS Selection
                <u>Pin #</u>   <u>Function</u>
                1-2   For +5V   FLASH ROM, EPROM
                2-3   For +12V FLASH ROM

Explanation :

open ⇨ [○ ○] [○ ○ ○]   ,   short ⇨ [● ●]
           1   1   1

1-2 ⇨ [● ● ○]   ,   2-3 ⇨ [○ ● ●]
          1   1
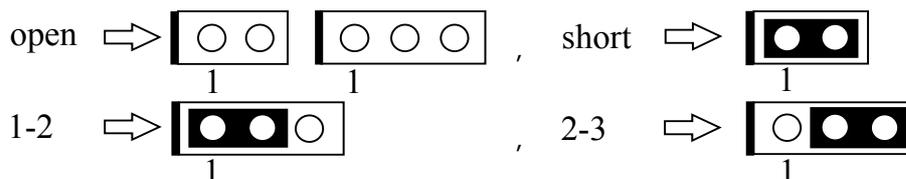
5.   AWARD BIOS SETUP

5.1 GETTING STARTED

When the system is first powered on or reset, the BIOS will enter the Power-On Self Test routines (POST : Display a copyright message on the screen followed by a diagnostics and initialization procedure.) (If an EGA or VGA card is installed, the copyright message of the video card maybe displayed on the screen first.) The BIOS will indicate any error or malfunction by a series of beeps or display the error message on screen.

Normally, the simulate figure 5-1 will display on the screen when the system is powered on.
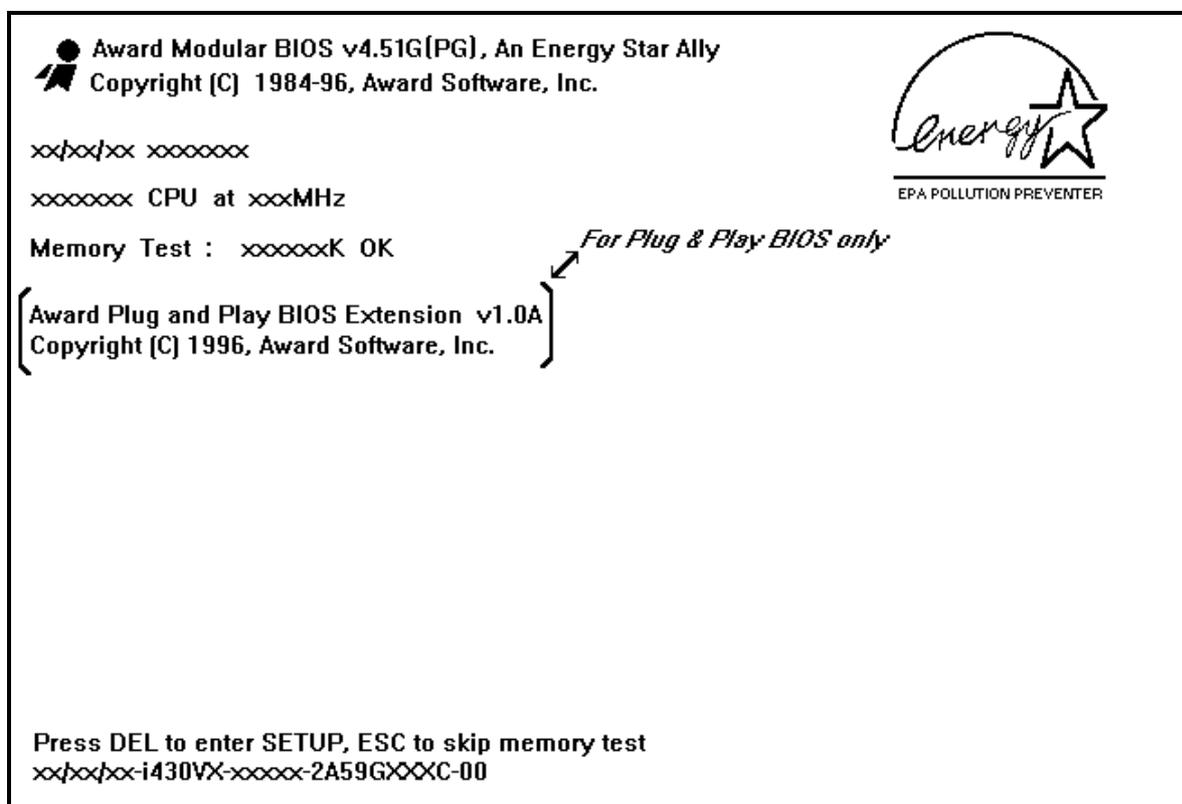
Fig. 5-1 Initial Power-On screen.

After the POST routines are completed, the following message appears :

                    " Press **DEL** to enter SETUP "

To execute the Award BIOS Setup program, press **DEL** key. The simulate screen in figure 5-2 MAIN MENU will be displayed at this time.

5.2 MAIN MENU

```
                    ROM PCI / ISA BIOS (2A59GXXX)
                        CMOS SETUP UTILITY
                      AWARD SOFTWARE, INC.
┌─────────────────────────────────────┬──────────────────────────────────────┐
│  STANDARD CMOS SETUP                 │   SUPERVISOR PASSWORD                 │
│                                      │                                      │
│  BIOS FEATURES SETUP                 │   USER PASSWORD                       │
│                                      │                                      │
│  CHIPSET FEATURES SETUP              │   IDE HDD AUTO DETECTION              │
│                                      │                                      │
│  POWER MANAGEMENT SETUP              │   HDD LOW LEVEL FORMAT                │
│                                      │                                      │
│  PNP/PCI CONFIGURATION               │   SAVE & EXIT SETUP                   │
│                                      │                                      │
│  INTEGRATED PERIPHERALS              │   EXIT WITHOUT SAVING                 │
│                                      │                                      │
│  LOAD SETUP DEFAULTS                 │                                      │
├─────────────────────────────────────┴──────────────────────────────────────┤
│  ESC : Quit                              ↑↓→← : Select Item                  │
│  F10 : Save & Exit Setup                 (Shift)F2 : Change Color            │
├─────────────────────────────────────────────────────────────────────────────┤
│                   Time, Date, Hard Disk Type ...                            │
└─────────────────────────────────────────────────────────────────────────────┘
```

Fig. 5-2 CMOS SETUP MAIN MENU screen.

5.3 CONTROL KEYS

Listed below is an explanation of the keys displayed at the bottom of the screens accessed through the BIOS SETUP program :

Arrow Keys **:** Use the arrow keys to move the cursor to the desired item.
Enter **:** To Select the desired item.
F1 **:** Display the help screen for the selected feature.
(Shift)F2 **:** To change the screen color, total 16 colors.
ESC **:** Exit to the previous screen.
PgUp(-)/PgDn(+) **:** To modify the default value of the options for the highlighted feature.
F5 **:** Retrieves the previous CMOS values from CMOS, only for the current option page setup menu.
F6 **:** Loads the BIOS default values from BIOS default table, only for the current option page setup menu.
F7 **:** Loads the SETUP default values from BIOS default table, only for the current option page setup menu.
F10 **:** Save all changes made to CMOS RAM, only for the MAIN MENU.

The following pages will show the simulate screens of CMOS SETUP, each figure contains the setup items and the default settings of them. Below each figure may be or may not be contained a lists of function description for commonly used settings. For the other settings' function description you needed, please feel free to contact with your supplier.

5.4 STANDARD CMOS SETUP

ROM PCI / ISA BIOS (2A59GXXX)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

```
 Date  (mm : dd : yy)  :  Fri,  Jul  12 1996
  Time  (hh : mm : ss)  :   14 : 27 : 23


 HARD  DISKS          TYPE     SIZE    CYLS    HEAD   PRECOMP  LANDZ   SECTOR    MODE
 Primary  Master       Auto      0       0       0        0       0        0      Auto
 Primary  Slave        Auto      0       0       0        0       0        0      Auto
 Secondary  Master     Auto      0       0       0        0       0        0      Auto
 Secondary  Slave      Auto      0       0       0        0       0        0      Auto


  Drive  A  :  1.44M,   3.5  in.
  Drive  B  :  None                                Base  Memory :     640 K
                                              Extended  Memory :  xxxxxx K
  Video    :  EGA/VGA                            Other  Memory :  xxxxxx K
  Halt  On :  All  Errors                          Total  Memory :  xxxxxx K


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

Fig. 5-3 STANDARD CMOS SETUP screen.

MODE :
For IDE hard disks, this BIOS provides three modes to support both normal size IDE hard disks and also disks size larger than 528MB:

   NORMAL   : For IDE hard disks size smaller than 528MB.

   LBA   : For IDE hard disks size larger than 528MB and up to 8.4GB (Giga Bytes) that use
                  Logic Block Addressing (LBA) mode.

   Large   : For IDE hard disks size larger than 528MB that do not use LBA mode. Large mode
                  is a new specifition which may not be fully supported by all operation systems.
                  Now it can only be used with the MS-DOS and is uncommon.

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

5.5   BIOS FEATURES SETUP

```
                    ROM  PCI / ISA  BIOS (2A59GXXX)
                         BIOS  FEATURES  SETUP
                         AWARD  SOFTWARE, INC.
┌────────────────────────────────────────────────────────────────────────┐
│ Virus  Warning               : Disabled   Video   BIOS  Shadow      : Enabled  │
│ CPU  Internal  Cache         : Enabled    C8000-CBFFF  Shadow       : Disabled │
│ External  Cache              : Enabled    CC000-CFFFF  Shadow       : Disabled │
│ Quick  Power  On  Self  Test : Enabled    D0000-D3FFF  Shadow       : Disabled │
│ Boot  Sequence               : A, C       D4000-D7FFF  Shadow       : Disabled │
│ Swap  Floppy  Drive          : Disabled   D8000-DBFFF  Shadow       : Disabled │
│ Boot  Up  Floppy  Seek       : Enabled    DC000-DFFFF  Shadow       : Disabled │
│ Boot  Up  NumLock  Status    : On                                             │
│ Boot  Up  System  Speed      : High                                           │
│ Gate  A20  Option            : Fast                                           │
│                                                                               │
│ Typematic  Rate  Setting     : Disabled                                       │
│ Typematic  Rate  (Chars/Sec) : 6                                              │
│ Typematic  Delay  (Msec)     : 250                                            │
│                                         ──────────────────────────────────── │
│                                         ESC : Quit        ↑↓→← : Select Item  │
│ Security  Option             : Setup    F1  : Help       PU/PD/+/- : Modify   │
│ PCI/VGA Palette Snoop        : Disabled F5  : Old  Values  (Shift)F2 : Color  │
│ OS  Select  For  DRAM > 64MB : Non-OS2  F6  : Load  BIOS  Default             │
│                                         F7  : Load  Setup  Default            │
└────────────────────────────────────────────────────────────────────────┘
```

Fig. 5-4 BIOS FEATURES SETUP screen.

Virus Warning :
This feature 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 an error message will appear, in the mean time, you can run anti-virus program to locate the problem. Default values is "Disabled"
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 :
This option enables CPU's internal (L1) cache memory. If you want to use the internal (L1) cache memory and external (L2) cache memory, this option must be enabled.

External Cache :
This option enables L2 (secondary) external cache memory. If none external cache memory on board you must set this option to "disabled", otherwise, you can select enabled or disabled.

5.6 CHIPSET FEATURES SETUP

```
                    ROM  PCI / ISA  BIOS (2A59GXXX)
                       CHIPSET  FEATURES  SETUP
                        AWARD  SOFTWARE,  INC.
┌────────────────────────────────────────┬────────────────────────────────┐
│ Auto  Configuration        : Enabled    │                                │
│ DRAM  Timing               : 70  ns     │                                │
│                                          │                                │
│ DRAM RAS# Precharge Time : 4            │                                │
│ DRAM  R/W  Leadoff  Timing  : 6         │                                │
│ Fast  RAS  To  CAS  Delay   : 3         │                                │
│ DRAM Read Burst (EDO/FP)  : x333/x444   │                                │
│ DRAM  Write  Burst  Timing  : x333      │                                │
│ Fast  NA  to  RAS#  Delay CLK : 1       │                                │
│ Fast  EDO  Path  Select     : Disabled  │                                │
│ Refresh  RAS#  Assertion    : 5 CLKs    │                                │
│ ISA  Clock                 : PCICLK/4   │                                │
│                                          │                                │
│ System  BIOS  Cacheable    : Disabled   │                                │
│ Video   BIOS  Cacheable    : Disabled   ├────────────────────────────────┤
│ 8 Bit I/O  Recovery  Time   : 1         │ ESC : Quit        ↑↓→← : Select Item │
│ 16 Bit I/O  Recovery  Time  : 1         │ F1  : Help     PU/PD/+/- : Modify │
│ Memory  Hole  At 15M-16M   : Disabled   │ F5  : Old Values  (Shift)F2 : Color │
│ Peer  Concurrency          : Enabled    │ F6  : Load BIOS Default        │
│                                          │ F7  : Load  Setup  Default     │
└────────────────────────────────────────┴────────────────────────────────┘
```

Fig. 5-5 CHIPSET FEATURES SETUP screen.

WARNING :   *The CHIPSET FEATURES SETUP in this screen are provided so that technical*
             professionals can modify the Chipset to suit their requirement. If you are not a
             technical engineer, do not use this program !

Auto Configuration :
When "Enabled", this parameter automatically enters and locks some of the optimum values for the chipset and CPU. Otherwise, this parameter allows the values of these parameters could be changed.

DRAM Timing :
When "Auto Configuration" is "Enabled", this parameter provides two suit of the optimum values for the chipset and CPU, depends on the DRAMs' speed, you can select "70 ns" or "60 ns", but the first value maybe caused your system more stable.

5.7 POWER MANAGEMENT SETUP

```
                    ROM  PCI / ISA  BIOS  (2A59GXXX)
                        POWER  MANAGEMENT  SETUP
                        AWARD  SOFTWARE,  INC.

 Power  Management      : User Define      ** Power Down & Resume Events **
 PM Control by APM      : Yes         IRQ 3   (COM 2)          : ON
 Video Off Method       : Blank Screen   IRQ 4   (COM 1)          : ON
 MODEM Use IRQ          : 3           IRQ 5   (LPT 2)          : ON
                                      IRQ 6   (Floppy Disk)    : ON
 Doze Mode              : 20 Min      IRQ 7   (LPT 1)          : ON
 Standby Mode           : 20 Min      IRQ 8   (RTC Alarm)      : OFF
 Suspend Mode           : 20 Min      IRQ 9   (IRQ2 Redir)     : ON
 HDD Power Down         : Disable     IRQ 10  (Reserved)       : ON
                                      IRQ 11  (Reserved)       : ON
 ** Wake Up Events In Doze & Standby **  IRQ 12  (PS/2 Mouse)     : ON
 IRQ3   (Wake-Up Event) : ON          IRQ 13  (Coprocessor)    : ON
 IRQ4   (Wake-Up Event) : ON          IRQ 14  (Hard Disk)      : ON
 IRQ8   (Wake-Up Event) : OFF         IRQ 15  (Reserved)       : OFF
 IRQ12 (Wake-Up Event) : ON
                                      ESC : Quit        ↑↓→← : Select Item
                                      F1  : Help        PU/PD/+/- :  Modify
                                      F5  : Old Values   (Shift)F2 : Color
                                      F6  : Load BIOS Default
                                      F7  : Load Setup Default
```

Fig. 5-6 POWER MANAGEMENT SETUP screen.

WARNING :   *The POWER MANAGEMENT SETUP in this screen are provided so that*
              technical professionals can modify the Chipset to suit their requirement. If you
              are not a technical engineer, do not use this program !

Power Management :
This setting controls the Power Management functions. "User Define" allows the values of all parameters could be modified. "Min Saving" and "Max Saving" fixed the values of four parameters, including "Doze Mode", "Standby Mode", "Suspend Mode" and "HDD Power Down".
"Disable" disabled all Power Management functions. Default is "User Define".

5.8 PNP/PCI CONFIGURATION (For Normal BIOS)

```
                        ROM  PCI / ISA  BIOS (2A59GXXX)
                            PNP/PCI  CONFIGURATION
                            AWARD  SOFTWARE,  INC.
 ┌─────────────────────────────────────────┬──────────────────────────────────────┐
 │ 1st  Available  IRQ       : 10           │                                      │
 │ 2nd  Available  IRQ       : 11           │                                      │
 │ 3rd  Available  IRQ       : 9            │                                      │
 │ 4th  Available  IRQ       : 12           │                                      │
 │ PCI  IRQ  Actived  By     : Level        │                                      │
 │ PCI  IDE  IRQ  Map  To    : PCI-AUTO     │                                      │
 │  Primary    IDE  INT#     : A            │                                      │
 │  Secondary  IDE  INT#     : B            │                                      │
 │                                          │                                      │
 │                                          │                                      │
 │                                          │                                      │
 │                                          │                                      │
 │                                          ├──────────────────────────────────────┤
 │                                          │ ESC  :  Quit      ↑↓→← : Select Item  │
 │                                          │ F1   :  Help      PU/PD/+/- : Modify  │
 │                                          │ F5   :  Old Values  (Shift)F2 : Color │
 │                                          │ F6   :  Load  BIOS  Default           │
 │                                          │ F7   :  Load  Setup  Default          │
 └─────────────────────────────────────────┴──────────────────────────────────────┘
```

Fig. 5-7 PNP/PCI CONFIGURATION setup screen. (For Normal BIOS)

WARNING : *The PNP/PCI CONFIGURATION in this screen are provided so that technical*
professionals can modify the Resources Configuration to suit their requirement.
If you are not a technical engineer, do not use this program !

1st Available IRQ through **4th Available IRQ :**
The System BIOS will assign these 4 avaiable IRQs to the found PCI devices. The settings are IRQ 3, 4, 5, 7, 9, 10, 11, 12, 14 and 15, include "NA".

PCI IRQ Actived By :
This option tells the system board chipset the IRQ signals input is Level or Edge trigger.

PCI IDE IRQ Map To : (for off-board PCI ICE cards)
PCI-AUTO : The BIOS will scan for PCI IDE devices and determine the location of the PCI IDE
device, then assign IRQ 14 for primary IDE INT#, and assign IRQ 15 for secondary
IDE INT#.

PCI-SLOT1 : For the specified slot, the BIOS will assign IRQ 14 for primary IDE INT#, and assign
to   IRQ 15 for secondary IDE INT#.
PCI-SLOT4

ISA   : The BIOS will not assign any IRQs even if PCI IDE card is found. Because some IDE cards connect the IRQ 14 and 15 directly from ISA slot thru a card. (This card is called Legacy Header)

5.9 PNP/PCI CONFIGURATION (For Plug & Play BIOS)

ROM PCI / ISA BIOS (2A59GXXX)
PNP/PCI CONFIGURATION
AWARD SOFTWARE, INC.

Resources Controlled By	: Auto	PCI IRQ Actived By	: Level
Reset Configuration Data	: Disabled	PCI IDE IRQ Map To	: PCI-AUTO
		Primary IDE INT#	: A
IRQ-3 assigned to	: *Legacy ISA*	Secondary IDE INT#	: B
IRQ-4 assigned to	: *Legacy ISA*		
IRQ-5 assigned to	: *PCI/ISA PnP*		
IRQ-7 assigned to	: *PCI/ISA PnP*		
IRQ-9 assigned to	: *PCI/ISA PnP*		
IRQ-10 assigned to	: *PCI/ISA PnP*		
IRQ-11 assigned to	: *PCI/ISA PnP*		
IRQ-12 assigned to	: *PCI/ISA PnP*		
IRQ-14 assigned to	: *PCI/ISA PnP*		
IRQ-15 assigned to	: *PCI/ISA PnP*		
DMA-0 assigned to	: *PCI/ISA PnP*		
DMA-1 assigned to	: *PCI/ISA PnP*		
DMA-3 assigned to	: *PCI/ISA PnP*	ESC : Quit ↑↓→← : Select Item
DMA-5 assigned to	: *PCI/ISA PnP*	F1 : Help PU/PD/+/- : Modify
DMA-6 assigned to	: *PCI/ISA PnP*	F5 : Old Values (Shift)F2 : Color
DMA-7 assigned to	: *PCI/ISA PnP*	F6 : Load BIOS Default
		F7 : Load Setup Default

Fig. 5-8 PNP/PCI CONFIGURATION setup screen. (For Plug & Play BIOS)

WARNING : *The PNP/PCI CONFIGURATION in this screen are provided so that technical professionals can modify the Resources Configuration to suit their requirement. If you are not a technical engineer, do not use this program !*

Resources Controlled by :
Manual   : The system BIOS will not reference the ESCD for IRQ & DMA informations. Instead, it will reference the items in this setup menu for assigning IRQ & DMA, but for I/O and Memory space the system BIOS still refer to the ESCD.

Atuo   : The system BIOS will reference the ESCD all legacy informations.

Reset Configuration Data :

Disabled : The system BIOS will do nothing.

Enabled : The system BIOS will clear/reset the ESCD during "POST". After clearing the ESCD, the system BIOS will then change this item's value back to "Disable", otherwise, the ESCD will become useless.

IRQ# / DMA# assigned to :

Legacy : The system BIOS will skip never assign this specified IRQ/DMA resource to PCI or ISA   ISA PnP devices.

PCI/ISA : All items set to this value will make the specified IRQ/DMA have a chance to be PnP   assigned to PCI or ISA PnP devices.

Note : No matter the item "Resources Controlled By" is set to "Manual" or "Auto", the system BIOS assign IRQs to PCI devices from high to low. For ISA PnP devices, the sequence is from low to high. IRQ 12 is always the last one available for PCI/PnP due to IRQ 12 is always reserves for the PS/2 mouse.

Explanation for proper nouns :

PnP device :
    Device that has Plug & Play compatibility. That means it can request for DMA, IRQ, I/O and Memory from the PnP BIOS and all these requests can be relocatable. In other words, these devices does not utilized any fixed resources.
    All PCI devices and all ISA PnP devices are PnP devices.

Legacy device :
    A legacy device is a device that all its resources are fixed by hardware (or selected by jumpers).
    All ISA Non-PnP devices are legacy device.

Extended System Configuration Data (ESCD) :
    A media between the user and the system BIOS for passing the legacy devices informations.
    These informations are stored in the onboard NVRAM (flash ROM).

5.10 INTEGRATED PERIPHERALS

```
                    ROM  PCI / ISA  BIOS  (2A59GXXX)
                        INTEGRATED  PERIPHERALS
                        AWARD  SOFTWARE,  INC.
┌────────────────────────────────────────────┬──────────────────────────────┐
│ IDE  HDD  Block  Mode      : Enabled        │                              │
│ IDE  Primary  Master  PIO  : Auto           │                              │
│ IDE  Primary  Slave   PIO  : Auto           │                              │
│ IDE  Secondary  Master PIO : Auto           │                              │
│ IDE  Secondary  Slave  PIO : Auto           │                              │
│ On-Chip Primary   PCI IDE  : Enabled        │                              │
│ On-Chip Secondary PCI IDE  : Enabled        │                              │
│ PCI Slot IDE 2nd Channel   : Enabled        │                              │
│                                             │                              │
│ Onboard  FDD Controller    : Enabled        │                              │
│ Onboard  Serial  Port 1    : 3F8/IRQ4       │                              │
│ Onboard  Serial  Port 2    : 2F8/IRQ3       │                              │
│ UART  2  Mode              : Standard       │                              │
│ Onboard  Parallel  Port    : 378H/IRQ7      │                              │
│ Onboard  Parallel  Mode    : SPP            │                              │
│                                             ├──────────────────────────────┤
│                                             │ ESC : Quit      ↑↓→← : Select Item │
│                                             │ F1  : Help      PU/PD/+/- : Modify │
│                                             │ F5  : Old Values  (Shift)F2 : Color │
│                                             │ F6  : Load BIOS Default      │
│                                             │ F7  : Load Setup Default     │
└────────────────────────────────────────────┴──────────────────────────────┘
```

Fig. 5-9 INTEGRATED PERIPHERALS setup screen.

WARNING : *The INTEGRATED PERIPHERALS in this screen are provided so that technical professionals can modify the Chipset to suit their requirement. If you are   not a technical engineer, do not use this program !*

IDE HDD Block Mode :
This feature enhances hard disk performance, making multi-sector transfers instead of one sector per transfer. Most IDE drives, except the very early designs can use this feature. Default is "Enabled".

UART 2 Mode :
This setting determines the IR port (CN 4) function mode. Supports both HPSIR and ASKIR.

Onboard Parallel Mode :
This setting determines the onboard parallel prot (CN 7) transmission mode. Supports either SPP, EPP, ECP or ECP+EPP.

5.11 LOAD SETUP DEFAULTS

This option loads the SETUP default values from BIOS default table. By pressing "Enter" key, while "LOAD SETUP DEFAULTS" is highlighted, then presses "Y" and "Enter" key. the SETUP default values will be loaded. The SETUP default settings are the best-case values that should optimize system performance and increase system stability. If CMOS RAM is corrupted, the SETUP DEFAULTS settings are loaded automatically.

5.12 SUPERVISOR PASSWORD / USER PASSWORD

Type the Password and press "Enter",then repeat. Enters up to eight alphanumeric characters.
By pressing "Enter" key twice, without any alphanumeric character enters, the PASSWORD will be disabled.

5.13 IDE HDD AUTO DETECTION

By pressing "Enter" key, while "IDE HDD AUTO DETECTION" is highlighted causes the system to attempt to detect the type of hard disk. If successful, then presses "Y" (or 1, 2, ...) and "Enter" key, it fills in the remaining fields on this menu and the correlated fields in the STANDARD CMOS SETUP menu.

5.14 HDD LOW LEVEL FORMAT

This option provides an utility program for IDE HDD Low Level Format. Performing the Hard Disk Format will destory any data on the Hard Disk. Back up the Hard Disk(s) before actually performing of these routines.
*Note : These routines are not valid for a **SCSI** Disk Drive.*

5.15 SAVE & EXIT SETUP

This option saves all setup values to CMOS RAM & EXIT SETUP routine, by moving the cursor to "SAVE & EXIT SETUP" and pressing "Enter" key, then types "Y" and "Enter" key, the values will be saved, the setup program will be terminated and the system will be reboot.

5.16 EXIT WITHOUT SAVING

This option exites setup routine without saving any changed values to CMOS RAM, by moving the cursor to "EXIT WITHOUT SAVING" and pressing "Enter" key, then types "Y" and "Enter" key, the setup program will be terminated and the system will be reboot.