Chapter 1

Introduction

The ATX TX3 mainbard is a high-performance personal computer mainboard. This mainboard supports Intel®Pentium® processor and Pentium®processor with MMX™ technology, Cyrix®6x86/6x86L/6x86MX processor, and AMD®K5/K6 processor. The mainboard also supports four 32-bit PCI (Peripheral Component Interconnect) Local Bus standard slots.

A cache subsystem is configured for 512K cache memory to improve overall throughput.

The mainboard uses the highly integrated Intel®83430TX chipset to support the PCI/ISA and Green standards, and to provide the Host/PCI bridge. The Intel®82430TX chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The Intel®82430TX chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfer data at the rate of 33MB/s.

The mainboard has an on-board Audio which uses Creative® Vibra 16X chipset. The Creative®Vibra 16X chipset provides Windows applications like Creative®Wavesynth and Sound Blaster 16 Utility that allows you to play high quality music for Windows multimedia applications and computer games.

The mainboard also supports the LM78 System Hardware Monitor Controller as optional function. The LM78 function includes: CPU chassis/ power fan control, CPU temperature detect and protect, and chassis intrusion detect.

1.1 Mainboard Features

CPU
- Socket 7 supports Intel® Pentium®processor -- Pentium® processor w/ MMX™ technology.
- The Cyrix®6x86/6x86L/6x86MX and AMD®K5/K6 processors are also supported.

Cache Memory
- Supports Directed Map Organization and Write-Back Cache Policy.
- Supports 512K pipelined burst cache memory.

VRM
- VRM(Voltage Regulator Module) is on board. It provides power for the processor.

Chip Set
- Intel®82430TX PCI chipset.

Main Memory
- Supports Six memory banks using Three 168-pin DIMM sockets.
- Up to 256 Mbytes main memory.
- Supports Fast Page (FP) Mode, Extended Data Output (EDO) Mode and SDRAM.
- Supports only unbuffered DIMM.

Slots
- Four 32-bit Master PCI Bus slots and Four 16-bit ISA bus slots. One shared slot that can be used as ISA or PCI.
- Supports 3.3V/5V PCI Bus Interface.

On-Board Peripherals
- On-Board Peripherals include:
    - 1 floppy port supports 2FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
    - 2 serial ports (COMA + COMB)
    - 1 parallel port supports SPP/EPP/ECP mode
    - 1 IrDA connector or Fast IrDA(reserved)
    - 1 Consumer IR(reserved)
- Supports ACPI

On-Board IDE
- An IDE controller on the Intel®82430TX PCI Chipset provides IDE HDD/CD-ROM with PIO Bus Master and Ultra DMA/33 operation modes.
- Can connect up to 4 IDE devices.

On-Board USB
- Supports dual port USB(Universal Serial Bus).

On-Board System Hardware Monitor(LM78)
    - System Voltage Detect
    - CPU and Chassis Fan Speed detect
    - Chassis Intrusion detect(reserved)
    - CPU temperature detect(reserved)

Creative®Vibra 16x CT2510
- Codec, Mixer, Processor, CQM, Joystick I/F
- Microsoft®PC97 compliant
- PnP
  Supports 2 Devices: SB & Joystick
  Resources (4 IRQ, 38-bit DMA)
- 16CL mixer with extra mixer channel (5 stereo, 2 mono)
- Creative®3D Stereo Enhancement
- Full Duplex 16-bit Record and Playback
- Supports Type-F and Demand Mode DMA
- APM 1.2

BIOS
- The system board BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The system board provides a Desktop Management Interface(DMI) function which records your system board specifications.

RTC
- Non-Volatile RTC.

Keyboard Connector
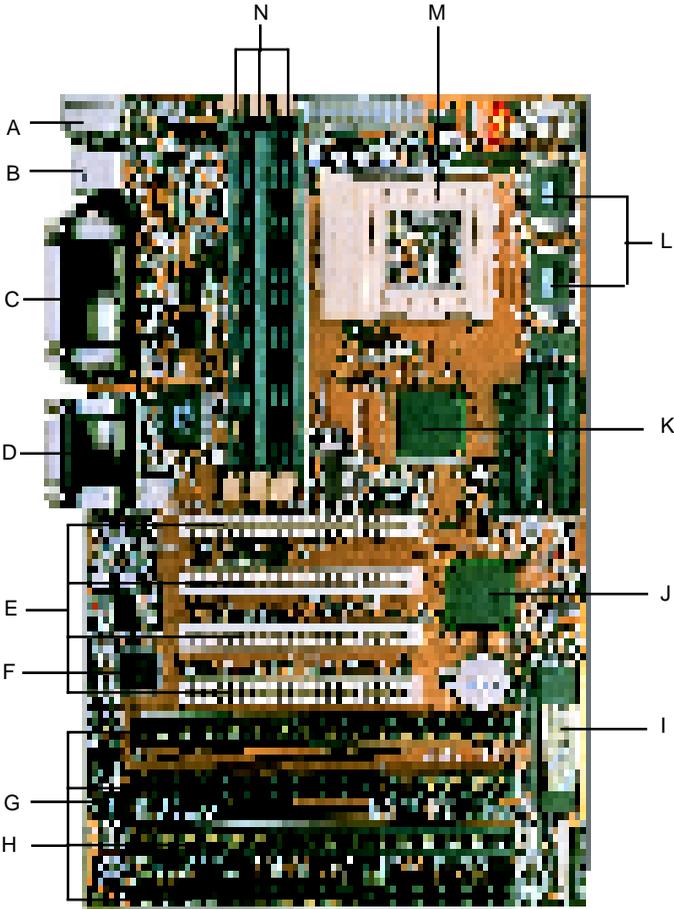- PS/2® keyboard interface and PS/2® mouse interface.

Dimension
- ATX Form Factor: 30.5cm(L) x 18.6cm(W) x 4 layer PCB.
- Double deck I/O connectors, compatible with Intel® Venus mainboard.

Mounting
- 6 mounting holes.

1.2 Parts of the Mainboard

|		
A	**PS/2 Ports**	**Top: Mouse**
		Bottom: Keyboard
B	**USB Ports**	**Top: Port 1**
		Bottom: Port 2
C	**COM Ports**	**Top: Parallel**
		Bottom: Serial
D	**Sound Ports**	**Top: Joystick/Midi**
		Bottom: Line-Out/Line-In/Mic
E	**Four 32-Bit PCI SLOTs**	
F	**Creative®Vibra 16X**	
G	**LM78**	
H	**Four 16-Bit ISA SLOTs**	
I	**Flash BIOS**	
J	**Intel®PCIset 82371AB**	
K	**Intel®PCIset 82430TX**	
L	**512KB Pipelined Burst L2 Cache**	
M	**CPU Socket 7**	
N	**Three 168-pin DIMM Sockets**	

1.3 Mainboard Layout

MS-5153

Chapter 2

## Hardware Installation

2.1   Central Processing Unit: CPU

The **ATX TX3** mainboard operates with **Intel®Pentium®processor-Pentium®processor with MMX™ technology**, **Cyrix®6x86/6x86L/6x86MX** and **AMD®K5/K6** processors**.** It could operates with 2.0V to 3.52V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation, a DIP switch (SW1) to set the proper speed for the CPU. The CPU should always have a cooling fan attached to prevent overheating.

2.1-1 CPU Installation Procedures

1. Pull the lever sideways away from the socket. Then, raise the lever up to a 90-degree angle.

Sliding Plate **Open Lever** **Pin 1**
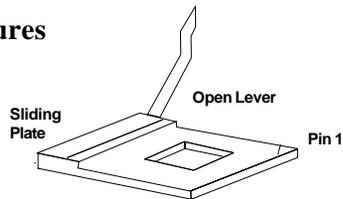
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.

CPU **White dot/ Cut edge**
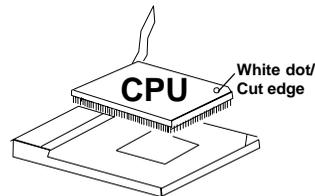
3. Press the lever down to complete the installation.

Close Lever **CPU**
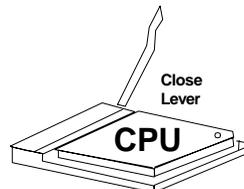
2.1-2 CPU Core Speed Derivation Procedures

1. The mainboard supports different clock frequencies adjusted by SW1 pin
   4, 5, and 6. See the following chart to set the different Host Clock
   Frequencies.

SW1			CPU
4	**5**	**6**	**Clock**
ON	ON	OFF	55MHz
ON	OFF	OFF	60MHz
OFF	OFF	OFF	66MHz
OFF	ON	OFF	75MHz
OFF	OFF	ON	68.5MHz

Special CPU Clock

SW1			CPU
4	**5**	**6**	**Clock**
OFF	OFF	OFF	50MHz
OFF	OFF	ON	69.5MHz
OFF	ON	ON	78MHz
ON	ON	OFF	83.3MHz
ON	OFF	ON	85.5MHz
ON	OFF	OFF	100MHz

Note: If you're going to use the special CPU
clock, then you must **short JRMS3**

2. The DIP Switch SW1 (1, 2, and 3) is used to set the Core/Bus (Fraction) ratio of the CPU. The actual core speed of the CPU is the Host Clock Frequency multiplied by the Core/Bus ratio. For example:

If	CPU Clock	=	66MHz
	Core/Bus ratio	=	3/2
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	66MHz x 3/2
		=	100MHz

SW1			CPU
1	**2**	**3**	**Core/Bus Ratio**
OFF	OFF	OFF	1.5 /3.5
ON	OFF	OFF	2
ON	ON	OFF	2.5/1.75
OFF	ON	OFF	3

3. The PCI Bus Clock is the CPU Clock Frequency divided by 2.

2.1-3 CPU Voltage

The mainboard voltage regulators can automatically detect and switch between Single and Dual voltage. It can detect single voltage ranging from 3.38 volts to 3.52 volts. And dual voltage ranging from 2.0 volts to 3.2 volts.

2.1-4 CPU Speed Setting: SW1

To adjust the speed of the CPU, you must know the specification of your CPU (*always ask the vendor for CPU specificaton*). Then, refer to **Table 2.1 (Intel®Pentium®processor/Pentium®processor with MMX™ technology), Table 2.2 (Cyrix®6x86/6x86L/6x86MX processor)** and **Table 2.3 (AMD® K5/K6 processor)** for proper settings.

Speed Setting
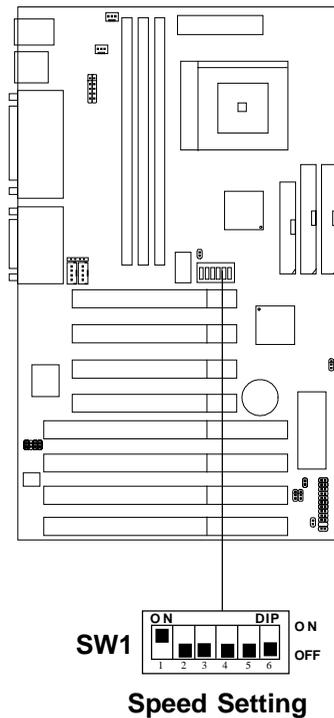
Table 2.1 Intel® Processor

Intel® Pentium® Processor

CPU Type	CPU Speed SW1
90 MHz	
100 MHz	
120 MHz	
133 MHz	
150 MHz	
166 MHz	
200 MHz	
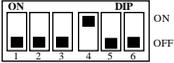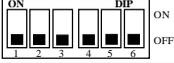
Intel® Pentium® Processor with MMX™ Technology

166 MHz	
200 MHz	
233 MHz	

Table 2.2 Cyrix® Processor

Cyrix® processor uses PR to rate the speed of their processors based on Intel® Pentium® processor core speed. For example, PR150 (120MHz) has 150MHz core speed of Intel® Pentium® processor but has 120MHz core speed in Cyrix® processor. Cyrix® processor should always uses a more powerful fan (ask vendor for proper cooling fan).

Cyrix® 6x86 Processor

CPU Type	CPU Speed SW1
PR133 (110MHz)	
PR150 (120MHz)	
PR166 (133MHz)	

Cyrix® 6x86L Processor

PR166	

Cyrix® 6x86MX Processor

CPU Type	CPU Speed SW1
PR166 (60x2.5)	
(66x2)	
PR200 (66x2.5)	
(75x2)	
PR233 (66x3)	
(75x2.5)	
PR266 (66x3.5)	
(75x3)	
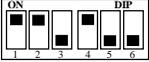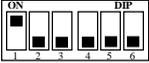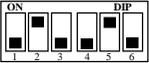
Table 2.3 AMD® Processor

AMD® processor uses PR to rate the speed of their processors based on Intel® Pentium® processor core speed. For example, PR133 (100MHz) has 133MHz core speed of Intel® Pentium® processor but has 100MHz core speed in AMD® processor.

AMD® K5 Processor

CPU Type	CPU Speed SW1
PR90 (90MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
PR100 (100MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
PR120 (90MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
PR133 (100MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
PR150 (105MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
PR166 (116.7MHz)	ON … DIP — ON/OFF — 1 2 3 4 5 6
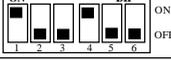
AMD® K6 Processor

CPU Speed	SW1
166MHz	ON … DIP — ON/OFF — 1 2 3 4 5 6
200MHZ	ON … DIP — ON/OFF — 1 2 3 4 5 6
233MHz	ON … DIP — ON/OFF — 1 2 3 4 5 6
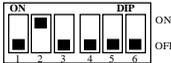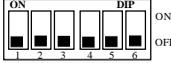
2.1-5 CPU Fan Power Connectors: JFAN1 / JFAN2

These connectors supports system cooling fan with +12V. It supports three pin head connector.   When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V, the black wire is Ground and should be connected to GND. If your mainboard has LM78 chipset on-board, you must use a specially designed fan with speed sensor to take advantage of LM78's CPU fan control.
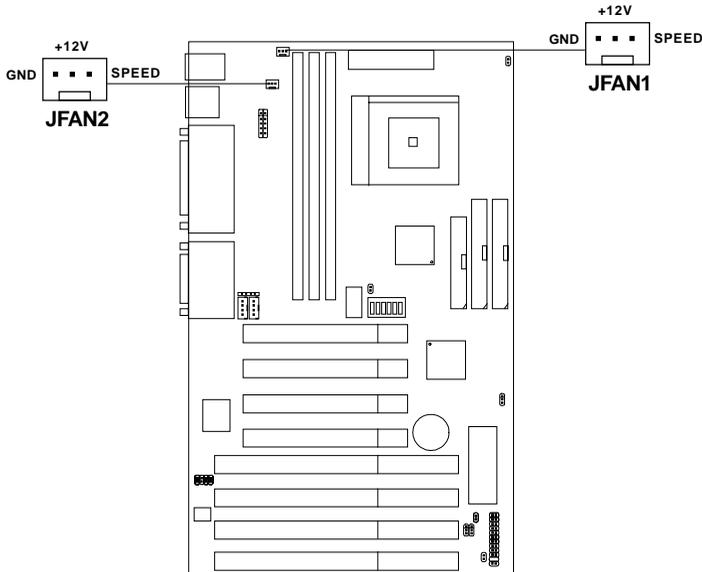
For fans with fan speed sensor, every rotation of the fan will send out 2 pulses. LM78 will count and report the fan rotation speed.

Note: **1. JFAN1** is the Chassis Cooling Fan Speed Connector (reserved for
         LM78 System Hardware Monitor Option.)
         2. Always consult vendor for proper CPU cooling fan.

2.2 Flash ROM Programming Voltage: JP2

This jumper is for setting the Voltage of the Flash ROM BIOS.

Voltage Setting

+5V
(default)

+12V
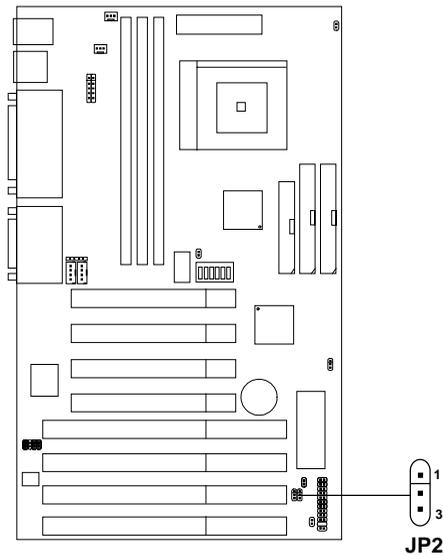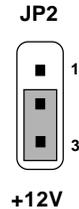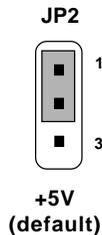
Note: a. If you use Winbond or SST Flash ROM, short 1-2 .
             b. If you use Intel or MXIC Flash ROM , short 1-2 pin.
             If you want to flash the ROM data, short 2-3, then put it back to 1-2.

2.3 Flash ROM Boot Block Programming: JP4

This jumper is for setting the boot block area of the Flash ROM BIOS to allow programming.

JP4

JP4   JP4

Disable   Enable
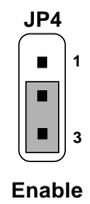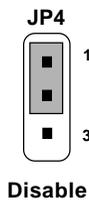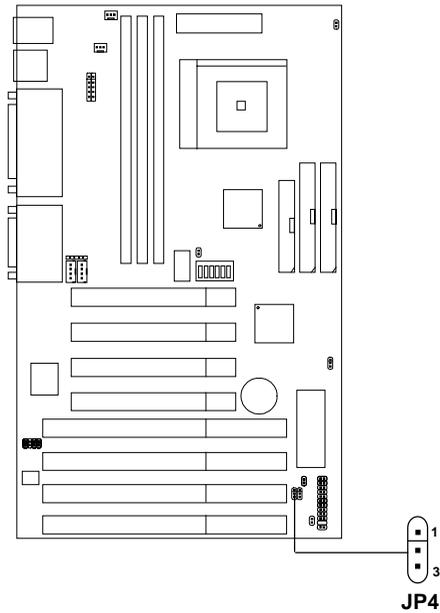
2.4 External Battery Connector: JBAT

A battery must be used to retain the system board configuration in CMOS
RAM.   If you use the on-board battery you must short pins of JBAT to keep
the CMOS data.

JBAT

Keep Data

Clear Data
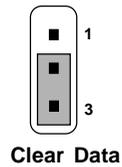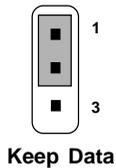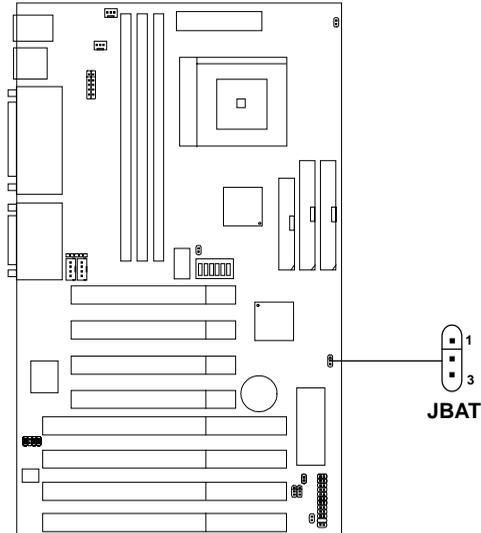
Note: You can clear CMOS by shorting 2-3 pin, while the system is off.
Then, return to 1-2 pin position. Avoid clearing the CMOS while
the system is on , it will damage the mainboard.

2.5 Power Saving LED Connector: JGL

Attach a power LED to JGL. This LED will lit to show that the system is in suspend mode.
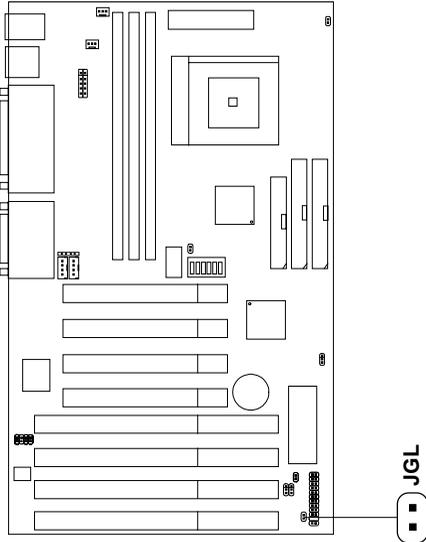
2.6 Creative® EMU8000 Wave Table Connector: J11

To connect your EMU8000 Wave Table card to the Vibra 16X chip on the mainboard, you must insert EMU800 card in the ISA slot and connect the cable to J11.

J11
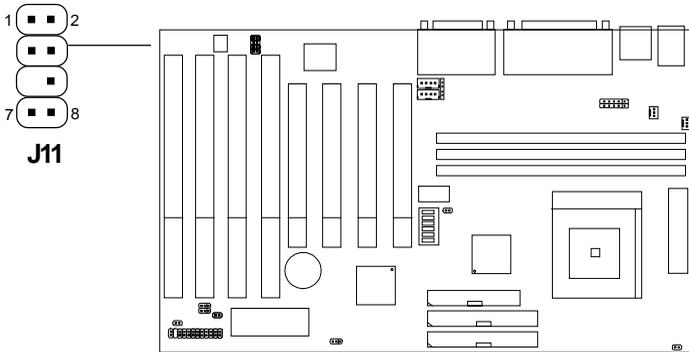
PIN   DEFINITION

Pin #	Signal
1	Right Channel
2	Ground
3	Left Channel
4	Ground
5	Key
6	Ground
7	Ground
8	Ground

2.7 Memory Installation

2.7-1 Memory Bank Configuration

The mainboard provides three 168-pin DIMM(Double In-Line Memory) sockets to support a maximum of 256MB of memory. You can use DIMM from 8MB, 16MB, 32MB, to 64MB. A Bank consist of one DIMM socket. It also consists of 2 RAS, with each RAS supporting up to 128MB of memory. This board supports 3 memory banks which is equivalent to 6 RAS.
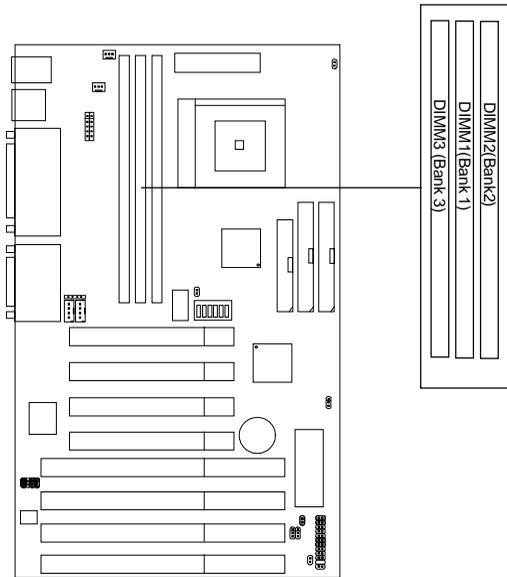
2.7-2 Memory Installation Procedures

A. How to install a DIMM Module
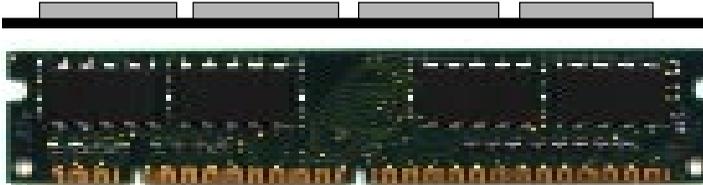
Single Sided DIMM
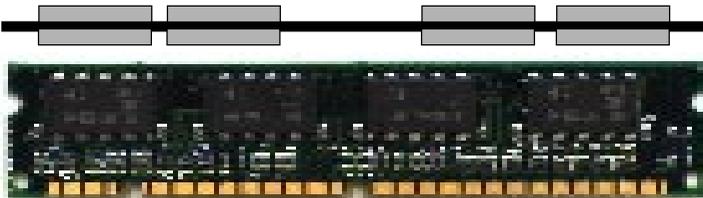
Double Sided DIMM

1. The DIMM slot has a two Notch Key "VOLT and DRAM", so the DIMM memory module can only fit in one direction.

2. Insert the DIMM memory module vertically into the DIMM slot. Then push it in.

DRAM   VOLT
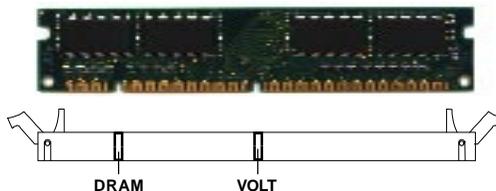
3. Close the plastic clip at the side of the DIMM slot.

Note: You can only use a 3.3 volt DIMM module (EDO, FP or SDRAM).

2.7-3   Memory Population Rules

1. You can use any kind of DIMM **except for BEDO(Burst EDO).**

2. You can only used an unbuffered DIMM.

3. To operate properly at least one 168-pin DIMM module must be installed.

4. This mainboard supports Table Free memory, so memory can be installed on DIMM1, DIMM2, or DIMM 3 in any order.

5. If you use a 64M DRAM on DIMM1 & DIMM2, then you cannot use DIMM3 anymore.

6. The DRAM addressing and the size supported by the system board is shown below.

Memory Mapping Options

DRAM Tech.	Memory Org.	Addressing	Address Size	MB/DIMM	
				Single Side	Double Side
4M	1M x 4	Symmetric	10 x 10	8MB	16MB
16M	1M x 16	Symmetric	10 x 10	8MB	16MB
	2M x 8	Asymmetric	11 x 10	16MB	32MB
	4M x 4	Symmetric	11 x 11	32MB	64MB
64M	4M x 16	Symmetric	11 x 11	32MB	64MB
	8M x 8	Asymmetric	12 x 11	64MB	128MB
	16M x 4	Symmetric	12 x 12	128MB	256MB

2.8 Case Connector: JFP

The Turbo LED, Hardware Reset, Key Lock, Power LED, Power Saving LED, Sleep Switch, Speaker and HDD LED are all connected to the JFP connector block.
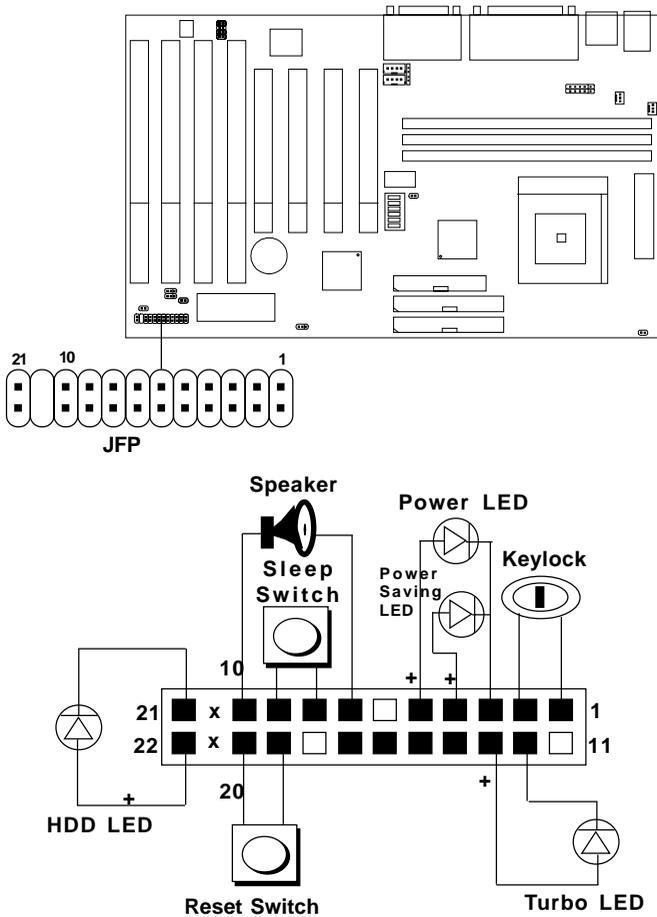
Figure 2.1

2.8-1 Turbo LED

The Turbo LED is always ON. You can connect the Turbo LED from the system case to this pin. (See Figure 2.1)

2.8-2 Hardware Reset

Reset switch is used to reboot the system rather than turning the power ON/OFF. Avoid rebooting while the HDD LED is lit. You can connect the Reset switch from the system case to this pin. (See Figure 2.1)

2.8-3 Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin. (See Figure 2.1)

2.8-4 Power LED

The Power LED is always lit while the system power is on. You can connect the Power LED from the system case to this pin. (See Figure 2.1)

2.8-5 Suspend Switch

The Suspend Switch can be set in the BIOS Power Management Setup. When used as a Suspend Switch, this allows the user to suspend the system when not in use. (See Figure 2.1)

2.8-6 Speaker

Speaker from the system case is connected to this pin. (See Figure 2.1)

2.8-7 HDD LED

HDD LED shows the activity of a hard disk drive. Avoid turning the power off while the HDD led is lit. You can connect the HDD LED from the system case to this pin. (See Figure 2.1).

2.9 Floppy Disk Connector: FDC

The mainboard also provides a standard floppy disk connector FDD that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. You can attach a floppy disk cable directly to this connector.
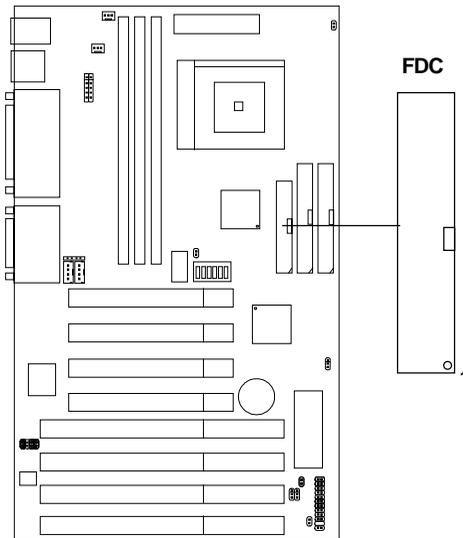
2.10 Hard Disk Connector: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provide PIO mode 4 and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2.
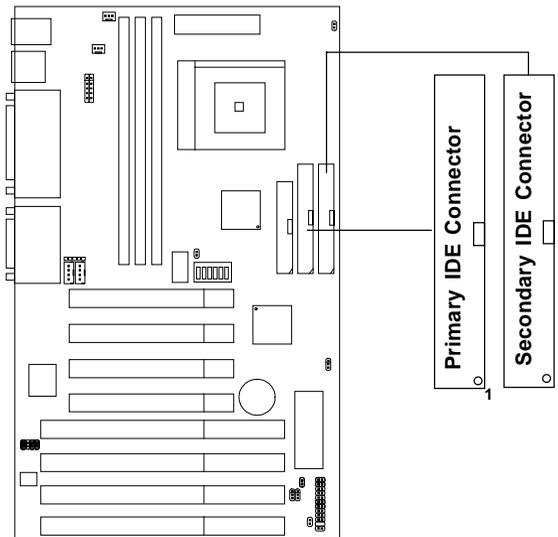
IDE1 (primary IDE connector)

The first hard disk should always be connected to IDE1. IDE1 can connect a Master and a Slave drive.

IDE2 (secondary IDE connector)

IDE2 can also connect a Master and a Slave drive.

2.11 Power Supply

2.11-1 ATX 20-pin Power Connector: JWR12

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard.

ATX Power Connector
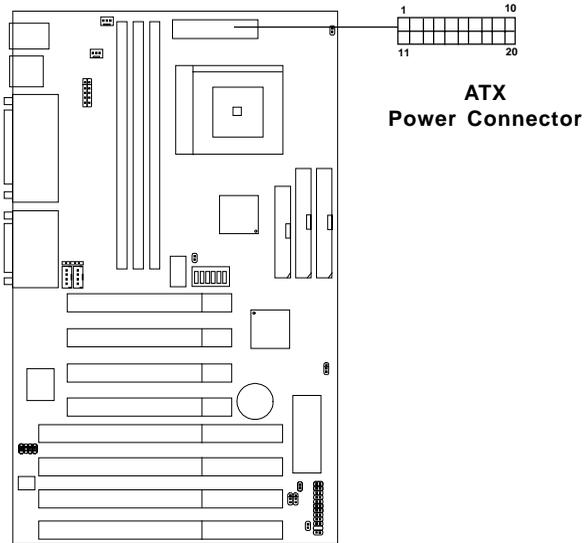
ATX Power Connector Pin Description

20	19	18	17	16	15	14	13	12	11
5V	5V	-5V	GND	GND	GND	PS_ON	GND	-12V	3.3V
12V	5V_SB	PW_OK	GND	5V	GND	5V	GND	3.3V	3.3V
10	9	8	7	6	5	4	3	2	1

2.11-2   Power On/Off Switch: JRMS1/JRMS2

Connect to a 2-pin push button switch. Every time the switch is shorted by pushing it once, the power supply will change its status from OFF to ON. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF**. If you want to change the setup, you could go to the BIOS Power Management Setup.
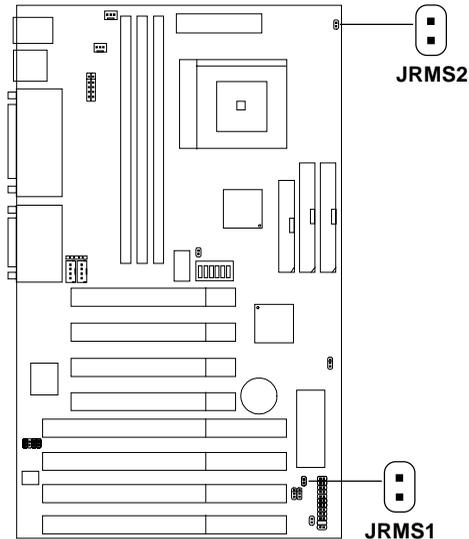
Note: The two switch as provided by the mainboard is just for your convenience, so you can use any of them. The two switches have the same feature.

2.12 IrDA Infrared Module Connector: JIR1

The mainboard provides two 5-pin infrared (IR) connectors for IR modules. These connectors are for optional wireless transmitting and receiving infrared module. You must configure the setting through the BIOS setup to use the IR function. FIR and Consumer IR are reserved functions.
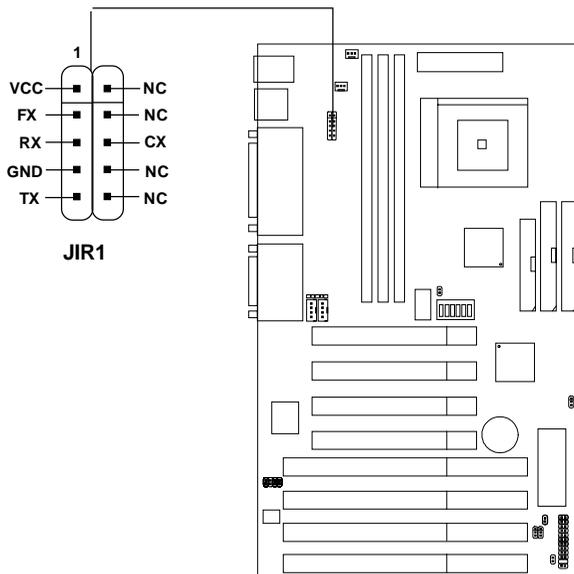
2.13   CD Line-In: J15/J16/J17

The mainboard provides three different kinds of CD Line-in connectors to let you connect three different kinds of cable provided by the CD-ROM.
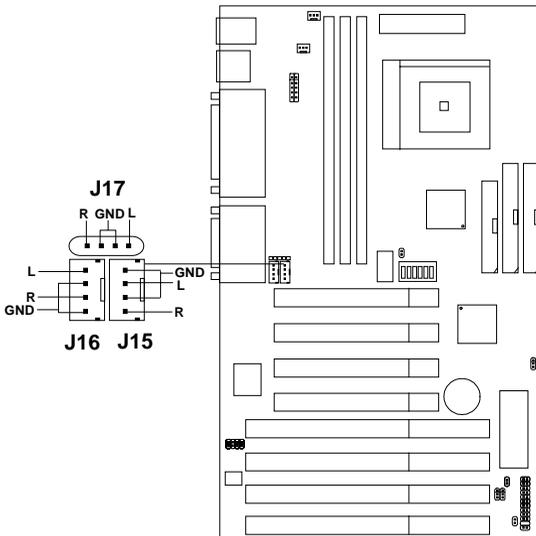
2.14 Serial Port Connectors: COM A & COM B

The mainboard has two serial ports COMA and COMB. These two ports are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem directly into these connectors.

COM A   COM B

Serial Ports (9-pin Male)
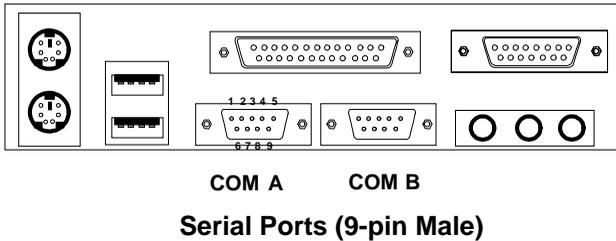
PIN   DEFINITION

Pin #	Definition
1	**DCD**(Data Carry Detect)
2	**SIN**(Serial In or Receive Data)
3	**SOUT**(Serial Out or Transmit Data)
4	**DTR**(Data Terminal Ready)
5	**GND**
6	**DSR**(Data Set Ready)
7	**RTS**(Request To Send)
8	**CTS**(Clear To Send)
9	**RI**(Ring Indicate)

2.15 Parallel Port Connector: LPT

The mainboard provides a connector for LPT. The parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP).

Parallel Port (25-pin Female)
LPT
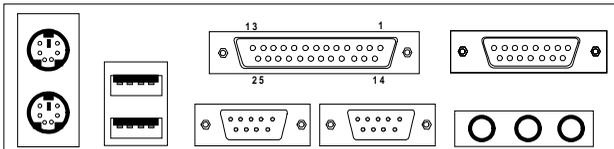
PIN   DEFINITION

PIN #	DEFINITION	PIN #	DEFINITION
1	STROBE	14	AUTO FEED#
2	DATA0	15	ERR#
3	DATA1	16	INIT#
4	DATA2	17	SLIN#
5	DATA3	18	GND
6	DATA4	19	GND
7	DATA5	20	GND
8	DATA6	21	GND
9	DATA7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SELECT		

2.16   PS/2® Keyboard Connector: PSKBC
PS/2® Mouse Connector: PSMSC

The mainboard provides a standard PS/2® keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

It also provides a standard PS/2® mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2® mouse directly into this connector. The connector location are shown below:

PS/2® Mouse (6-pin Female)
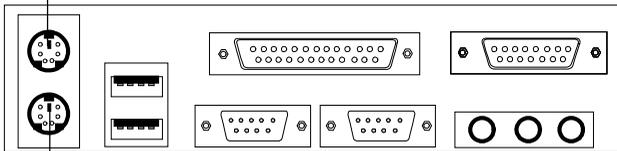
PS/2® Keyboard (6-pin Female)

2.17   USB Connectors: USB

The mainboard provides a **USB(Universal Serial Bus)** connector for attaching USB devices like: keyboard, mouse or etc. You can plug it directly to this connector.

USB port 1

USB port 2
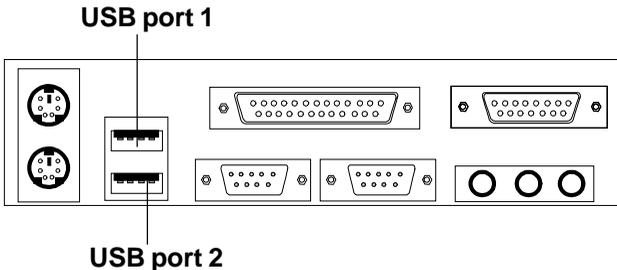
2.18   Joystick/Midi Connectors

You can connect joystick or game pads to this connector.

Joystick/Midi(15-Pin Female)
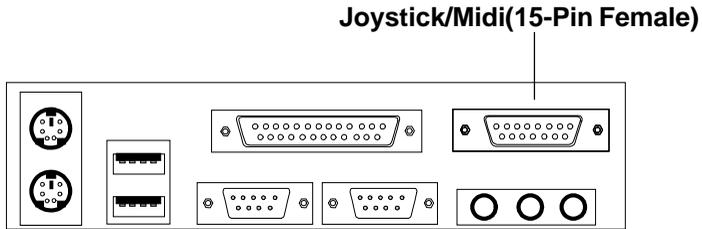
2.19 Audio Port Connectors

Line Out are connectors for Speakers or Headphones. **Line In** are used for outside CD player, Tape layer, or other audio devices. And **Mic** are connector for the microphones.

Line Out   Line In   Mic
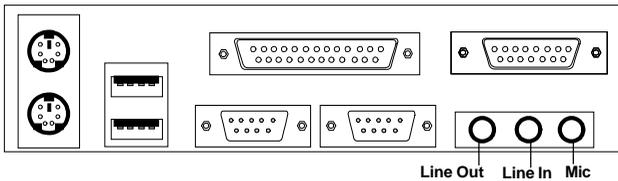
1/8" Stereo Audio Connectors

Chapter 3

AWARD® BIOS SETUP

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

3.1 Entering Setup

Power on the computer and press <Del> or <Ctrl><Alt><Esc> keys immediately to allow you to enter Setup.

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

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

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

3.2 Getting Help

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

Status Page Setup Menu/Option Page Setup Menu
Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <F1> or <Esc>.

3.3 The Main Menu

Once you enter Award®BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from eleven 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  (2A59IM4C)
                      CMOS  SETUP  UTILITY
                    AWARD  SOFTWARE,  INC.
 ┌─────────────────────────────────────────────────────────────┐
 │                                                               │
 │  STANDARD  CMOS  SETUP      SPECIAL  FEATURES  SETUP          │
 │                                                               │
 │  BIOS  FEATURES  SETUP      INTEGRATED  PERIPHERALS           │
 │                                                               │
 │  CHIPSET  FEATURES  SETUP   SUPERVISOR  PASSWORD              │
 │                                                               │
 │  POWER  MANAGEMENT  SETUP   USER  PASSWORD                    │
 │                                                               │
 │  PNP/PCI  CONFIGURATION     IDE  HDD  AUTO  DETECTION         │
 │                                                               │
 │  LOAD  SETUP  DEFAULTS      SAVE  &  EXIT  SETUP              │
 │                                                               │
 │                             EXIT  WITHOUT  SAVING             │
 │                                                               │
 ├─────────────────────────────────────────────────────────────┤
 │  Esc : Quit               ↑↓→←     : Select Item             │
 │  F10 : Save & Exit Setup  (Shift)F2 : Change Color           │
 ├─────────────────────────────────────────────────────────────┤
 │                                                               │
 │          Time,  Date,  Hard  Disk  Type...                   │
 │                                                               │
 └─────────────────────────────────────────────────────────────┘
```

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

BIOS Features Setup
         This setup page includes all the items of Award® special enhanced features.

Chipset Features Setup

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

Power Management Setup

This category determines the power consumption for system after setting the specified items. Default value is Disable.

PCI Configuration Setup

This category specifies the IRQ level for PCI and ISA devices.

Supervisor Password/User Password

Change, set or disable password. This function allows the user access to the system and setup or just setup.

Load Setup Defaults

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

Special Features Setup

This function is reserved for LM78 system hardware monitor function.

IDE HDD Auto Detection

Automatically configure hard disk parameters.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

3.4 Standard CMOS Setup

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

```
                    ROM  PCI/ISA  BIOS  (2A59IM4A)
                         STANDARD  CMOS  SETUP
                         AWARD  SOFTWARE,  INC.
┌──────────────────────────────────────────────────────────────────┐
│ Date(mm:dd:yy): Fri, Feb 28,1997                                   │
│ Time(hh:mm:ss): 00:00:00                                           │
│                                                                    │
│   HARD DISKS      TYPE SIZE CYLS HEADS PRECOMP LANDZONE  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,3.5in. ┌──────────────────────────────────────┐  │
│ Drive  B : None         │ Base  Memory:              640K       │  │
│                         │  Extended  Base  Memory:15360K        │  │
│                         │   Other  Memory:           384K       │  │
│ Video     : EGA/VGA     ├──────────────────────────────────────┤  │
│ Halt  On  : All, but Keyboard Total  Memory:        16384K       │  │
│                         └──────────────────────────────────────┘  │
│                                                                    │
│ ESC : Quit      ↑↓→←   : Select Item    PU/PD/+/- : Modify         │
│ F1  : Help      (Shift)F2 : Change Color                           │
└──────────────────────────────────────────────────────────────────┘
```

Date

The date format is <day><month> <date> <year>.

Day	Day of the week, from Sun to Sat, determined by BIOS. Read-only.
month	The month from Jan. through Dec.
date	The date from 1 to 31, can be keyed by numeric function keys.
year	The year, depends on the year of the BIOS

Time

The time format is <hour> <minute> <second>.

PrimaryMaster/PrimarySlave
SecondaryMaster/Secondary Slave

These categories identify the types of 2 channels that have been installed in the computer. There are 45 pre-defined types and 4 user defin-able types for Enhanced IDE BIOS. Type 1 to Type 45 are pre-defined. Type User is user-definable.

Press PgUp/<+> or PgDn/<-> to select a numbered hard disk type or type the number and press <Enter>.   Note that the specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use Type User to define your own drive type manually.

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

If the controller of HDD interface is ESDI, the selection shall be
"Type 1".
If the controller of HDD interface is SCSI, the selection shall be
"None".
If the controller of HDD interface is CD-ROM, the selection shall be
"None".

CYLS.	number of cylinders
HEADS	number of heads
PRECOMP	write precom
LANDZONE	landing zone
SECTORS	number of sectors
MODE HDD	access mode

3.5 BIOS Features Setup

```
                    ROM PCI/ISA BIOS (2A59IM4A)
                       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 : Disabled │ D0000-D3FFF Shadow   :Disabled  │
│ Boot Sequence        : A,C,SCSI │ D4000-D7FFF Shadow   :Disabled  │
│ Swap Floppy Drive    : Disabled │ D8000-DBFFF Shadow   :Disabled  │
│ Boot up NumLock status : On     │ DC000-DFFFF Shadow   :Disabled  │
│ Security Option      : Setup    │                                 │
│ PCI/VGA palette snoop : Disabled │                                 │
│ OS select for DRAM>64MB : Non-OS2 │                                 │
│ Report No FDD For WIN 95 : Yes  │                                 │
│                                 │                                 │
│                                 ├─────────────────────────────────┤
│                                 │ Esc : Quit   ↑↓→←: Select item  │
│                                 │ F1 : Help PU/PD/+/- : modify    │
│                                 │ F5 : Old Value(Shift) F2 : Color│
│                                 │ F6 : Load BIOS Defaults         │
│                                 │ F7 : Load Setup Defaults        │
└─────────────────────────────────┴─────────────────────────────────┘
```

Virus Warning

During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear. For the meantime, you can run an anti-virus program to locate the problem.

> **!WARNING!**
> Disk Boot Sector is to be modified
> Type "Y" to accept write or "N" to abort write
> Award Software, Inc.

Disabled (default) No warning message to appear when anything attempts to access the boot sector or hard disk partition table.

Enabled   Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector of hard disk partition table.

Note: *This function is available only for DOS and other OS that do not trap INT13.*

CPU Internal Cache

The default value is Enabled. If your CPU is without Internal Cache then this item "CPU Internal Cache" will not be shown.

Enabled (default) Enable cache
Disabled   Disable cache

Note: The internal cache is built in the processor.

CPU External Cache

Choose Enabled or Disabled. This option enables the level 2 cache memory.

Quick Power On Self Test

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

Enabled   Enable quick POST
Disabled (default) Normal POST

Boot Sequence

This category determines which drive the computer searches first for the disk operating system (ex. DOS). The settings are A,C,SCSI/LS/ZIP,C/C,A,SCSI/C,CD-ROM,A/CD-ROM,C,A/D,A,SCSI/E,A,SCSI/F,A,SCSI/SCSI,A,C/SCSI,C,A/C only. Default value is A,C,SCSI.

Swap Floppy Drive

Switches the floppy disk drives between being designated as A and B. Default is Disabled.

Boot Up NumLock Status

The default value is On.

On (default)	Keypad is numeric keys.
Off	Keypad is arrow keys.

Security Option

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

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup(default)	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

PCI VGA Palette Snooping

Choose Disabled or Enabled. Some graphic controllers which are not VGA compatible, take the output from a VGA controller and map it to their display as a way to provide the boot information and the VGA compatibility.

However, the color information coming from the VGA controller is drawn from the palette table inside the VGA controller to generate the proper colors, and the graphic controller needs to know what is in the palette of the VGA controller. To do this, the non-VGA graphic controller watches for the Write access to the VGA palette and registers the snoop data. In PCI based systems, where the VGA controller is on the PCI bus and a non-VGA graphic controller is on an ISA bus, the Write Access to the palette will not show up on the ISA bus if the PCI VGA controller responds to the Writes.

In this case, the PCI VGA controller should not respond to the Write. It should only snoop the data and permit the access to be forwarded to the ISA bus. The non-VGA ISA graphic controller can then snoop the data on the ISA bus. Unless you have the above situation, you should disable this option.

Disabled (default)	Disables the function
Enabled	Enables the function

OS Selection for DRAM > 64MB

Allows OS2® to be used with > 64 MB of DRAM. Settings are Non-OS/2 (default) and OS2. Set to OS/2 if using more than 64MB and running OS/2®.

Report No FDD For WIN 95

When set to yes, BIOS will not report any IRQ for FDD when FDD is disabled in Windows® 95. This function is only used when you are testing SCT for Windows® 95 Logo.

Video BIOS Shadow

Determines whether video BIOS will be copied to RAM for faster execution. Video shadow will increase the video performance.

Enabled (default)	Video shadow is enabled
Disabled	Video shadow is disabled

C8000 - CFFFF Shadow/D0000 - DFFFF Shadow

Determines whether the optional ROM will be copied to RAM for faster execution.

Enabled	Optional shadow is enabled
Disabled (default)	Optional shadow is disabled

Note: For C8000-DFFFF optional-ROM on PCI BIOS , BIOS will automatically enable the shadow RAM. User does not have to select the item.

3.6 Chipset Features Setup

The Chipset Features Setup option is used to change the values of the chipset registers. These registers control most of the system options in the computer.

Choose the "CHIPSET FEATURES SETUP" from the Main Menu and the following screen will appear.

```
        ROM  PCI/ISA  BIOS(2A59IM4A)
            CMOS  SETUP  UTILITY
          CHIPSET  FEATURES  SETUP
```

```
Auto Configuration    :Enabled
DRAM Timing           :70ns
DRAM Leadoff Timing    :10/6/4
DRAM Read Burst (EDO/FP) :x333/x444
DRAM Write Burst Timing :x333
Fast EDO Lead Off     :Disabled
Refresh RAS# Assertion :5 Clks
Fast RAS to CAS Delay  :3
DRAM Page IDLE Timer   :2
DRAM Enhanced Paging   :Enabled
Fast MA to RAS# Delay  :2 Clks
SDRAM (CAS Lat/RAS-to-CAS):3/3
SDRAM Speculative Read :Disabled
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 :2    F1 : Help PU/PD/+/- : modify
Memory Hole at 15M-16M  :Disabled  F5 : Old Value(Shift) F2 : Color
PCI 2.1 compliance     :Disabled  F6 : Load BIOS Defaults
                               F7 : Load Setup Defaults
```

Note: Change these settings only if you are familiar with the chipset.

Auto Configuration

Choosing Enabled (default) will automatically configure chipset features using default settings. Choose Disable to customize setup.

DRAM Timing

Sets the DRAM speed at 70ns (default) or 60ns. It will set the speed of the EDO/FP DRAM.

DRAM Leadoff Timing

To be able to change the setting, Auto configuration must be disable. If the Bus Clock is 75MHz, set it to 11/7/4. If the Bus Clock is 66/60/55 MHz, set it to 10/6/4. Default setting is 10/6/4.

DRAM Read Burst (EDO/FP)

Under Auto config., the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used. The settings are x222/x333, x333/x444, or x444/x444.

Note: If the user sets DRAM Read Burst (EDO/FP) as: x333/x444 it signifies that:
   a. 60ns EDO with 75 MHz Bus Clock is set at x333. If the Bus Clock is 66/60/55 MHz, then it is set at x222.
   b. 60ns FP with 75 MHz is set at x444. If the Bus Clock is 66/60/55, then it is set at x333.
   c. 70ns EDO and FP DRAM, the burst time must be increased. So you must set x222 to x333 and x333 to x444.

DRAM Write Burst Timing

This option chooses the Write Burst Timing for accessing DRAM. See: DRAM Read Burst Option. Choose x222/x333/x444.

Fast EDO Lead Off

Under Auto config., the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option. Choose Enable or Disable. If the system is using EDO DRAM, choose enable. But if the system is using both EDO and FP DRAM, choose Disable.

Refresh RAS# Assertion

The settings are 4 Clks or 5 Clks. Using 60 ns DRAM at 75 Mhz Bus Clock must be set to 5 Clks, while 66/60/55 Mhz Bus Clock must be set to 4 Clks. But if you use 70 ns DRAM, it must be set to 5 Clks.

Fast RAS to CAS Delay

The settings are 2 or 3. 2 RAS to CAS delay is set to 2 clock, while 3 RAS to CAS delay is set to 3 clock. The clock is dependent with the DRAM Timing and Bus Clock.

DRAM Page IDLE Timer

The settings are 2 Clks, 4 Clks, 6Clks, or 8 Clks. Default setting is 2 Clks.

DRAM Enhanced Paging

Choose Enable(default) or Disable.

Fast MA to RAS# Delay

The settings are 1 Clks or 2 Clks(default). During 1T, one bus clock is allowed, while 2T allows two bus clock for MA address setup time to RAS assertion. This is also dependent on DRAM Timing.

SDRAM (CAS Lat/RAS-to-CAS)

The settings are 3/3 or 2/2. This option is for SDRAM CAS latency time and RAS# to CAS# delay time. The default setting is 3/3.

SDRAM Speculative Read

The settings are enable or disable. If you only use One Bank for SDRAM and there's no EDO or FP mixed together, the setting is Enable. If two banks are used by SDRAM, it will automatically be set to disable. The default setting is enable.

System BIOS Cacheable

By choosing Disabled (default) the system BIOS will be shadowed into DRAM only. Enabled will have the system BIOS shadowed and cacheable.

Video RAM Cacheable

Same as system BIOS Cacheable

8-bit I/O recovery time: 1/2/3/4/5/6/7/NA
16-bit I/O recovery time: 1/2/3/NA

Choose the recovery time for 8-bit and 16-bit I/O cycles respectively.

Note: NA is not available and so the recovery time of 3.5 SYSCLK will be inserted.

Memory Hole At 15M-16M

Choosing Enabled will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on to the PCI. PCI cycles matching an enabled hole are ignored. Disabled (default) will disable this function.

Note: A selected (Enabled) hole is not remapped.

PCI 2.1 Compliance

The Settings are Enable or Disable. During Enable, those PCI add-on cards with PCI 2.1 compliance will perform better. But some PCI card does not meet PCI 2.1 compliance, so the default setting is Disabled.

3.7 Power Management Setup

The Power Management Setup will appear on your screen like this:

```
           ROM  PCI/ISA  BIOS  (2A59IM4A)
              POWER  MANAGEMENT  SETUP
               AWARD  SOFTWARE,  INC.
```

```
Power Management       :User Define ** Reload Global Timer Events **
PM Control by APM      :Yes          IRQ [3-7,9-15],NMI : Enabled
Video Off Method       :DPMS         Primary IDE 0      : Enabled
Video Off After        :Standby      Primary IDE 1      : Disabled
                                     Secondary IDE 0    : Disabled
Doze Mode              :Disabled     Secondary IDE 1    : Disabled
Standby Mode           :Disabled     Floppy Disk        : Enabled
Suspend Mode           :Disabled     Serial Port        : Enabled
HDD Power Down         :Disabled     Parallel Port      : Enabled
Throttle Duty Cycle    :62.5%
VGA Active Monitor     :Disabled
Soft-Off by PWR-BTTN   :Instant-Off
CPUFAN Off In Suspend  :Enabled
Resume by Ring         :Disabled
Resume by Alarm        :Disabled


** Break Event From Suspend **       Esc : Quit    ↑↓→←: Select item
IRQ 8  Clock Event : Disabled        F1 : Help PU/PD/+/- : modify
                                     F5 : Old Value(Shift) F2 : Color
                                     F6 : Load BIOS Defaults
                                     F7 : Load Setup Defaults
```

Power Management

This category determines the power consumption for system after selecting below items. Default value is Disable. The following pages tell you the options of each item & describe the meaning of each options.

Power Management

Disable	Global Power Management will be disabled.
User Define	Users can configure their own power management.
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

Note : Enable this for O.S. with APM like Windows®95, Windows®NT, etc.

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 (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor.
DPMS	This function is enabled only for VGA card supporting DPMS.

Note: Green monitors detect the V/H SYNC signals to turn off its electron gun.

Video Off After

The settings are N/A, Standby, Doze, or Suspend. This option is for choosing the setting in which the monitor will turn off.

N/A   Always turn on.
Doze   During Doze mode, the monitor will be turned off.
Standby During Standby mode, the monitor will be turned off.
Suspend During Suspend mode, the monitor will be turned off.
The default setting is Standby.

Doze Mode

Disable   System will never enter DOZE mode.

1 Min/2 Min/   Defines the continuous idle time before the
4 Min/6 Min/   system enters DOZE mode.
8 Min/10 Min/ If any item defined in the options of "Power
20 Min/30 Min/ Down and Resume events" is enabled & active,
40 Min/1 Hr   DOZE timer will be reloaded. When the system
have entered Doze mode, any of the items
enabled in "Wake Up Events in Doze and
Standby" will trigger the system to wake up.

Standby Mode

Disable   System will never enter STANDBY mode.

1 Min/2 Min/   Defines the continuous idle time before the
4 Min/6 Min/   system enters STANDBY mode.
8 Min/10 Min/ If any item defined in the options of "Power
20 Min/30 Min/ Down and Resume events" is enabled & active,
40 Min/1 Hr   STANDBY timer will be reloaded. When the
system has entered Standby mode , any of the
items that are enabled in "Wake Up Events of
Doze and Standby" will trigger the system to
wake up.

Suspend Mode

Disable	System will never enter SUSPEND mode.

1 Min/2 Min/   Defines the continuous idle time before the
4 Min/6 Min/   system enters SUSPEND mode.
8 Min/10 Min/   If any item defined in the options of "Power
20 Min/30 Min/   Down & Resume Events" is enabled & active,
40 Min/1 Hr   SUSPEND timer will be reloaded. When the
system has entered SUSPEND mode, any of the
items enabled in the "Power Down & Resume
Events" will trigger the system to wake up.

HDD Power Down

Disable	HDD's motor will not shut off.

1 Min/2 Min/   Defines the continuous HDD idle time before
3 Min/4 Min/   the HDD enters the power saving mode (motor
5 Min/6 Min/   off). BIOS will turn off the HDD's motor when
7 Min/8 Min/   time is out.
9 Min/10 Min/
11 Min/12 Min/
13 Min/14 Min/
15 Min

Throttle Duty Cycle

This option will determine how much power will be used by the CPU , if the system goes into suspend mode.

VGA Active Monitor

During Enabled, if there's no activity in the monitor screen, the system will go into Power Saving Mode. During Disabled, the system will go into Power Saving Mode, whether there is activity in the monitor screen or not. The settings are Disabled and Enabled.

Soft-Off by PWR-BTTN

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch once, the system goes into suspend mode and if you push it more than 4 seconds, the system will be turned off. During instant-off, the system will turn off once you push the switch.

CPUFAN Off In Suspend

During Enabled, if the system goes into suspend mode, the CPU fan will stop. During Disabled, if the system goes into suspend mode the CPU fan will not stop.

Note: Only JFAN1 has this function.

Resume by Ring

During Disabled, the system will ignore any incoming call from the modem. During Enabled, the system will boot up if there's an incoming call from the modem.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system. Then, power off the system. This function will work the next time you power on.

Resume by Alarm

This function is for setting date and time for your computer to boot up. During Disabled, you cannot use this function. During Enabled, choose the Date and Time Alarm:

Date(of month) Alarm	You can choose which month the system will boot up.
Time(hh:mm:ss) Alarm	You can choose what hour, minute and second the system will boot up.

Note: If you have change the setting, you must let the system boot up until it goes to the operating system. Then, power off the system. This function will work the next time you power on.

IRQ 8 Clock Event

        IRQ[3-7,9-15], NMI   **: Enabled**
        Primary IDE 0   **: Enabled**
        Primary IDE 1   **: Disabled**
        Secondary IDE 0   **: Disabled**
        Secondary IDE 1   **: Disabled**
        Floppy Disk   **: Enabled**
        Serial Port   **: Enabled**
        Parallel Port   **: Enabled**

       During Enabled, if any interrupt event occurs, the system will wake-up from suspend mode. During Disabled, the system will not monitor any interrupt event.

3.8 PNP/PCI Configuration Setup

You can manually configure the PCI Device's IRQ. The following pages tell you the options of each item & describe the meaning of each options.

```
                    ROM  PCI/ISA BIOS (2A69HM4D)
                    PNP/PCI  CONFIGURATION  SETUP
                        AWARD  SOFTWARE,  INC.
 ┌────────────────────────────────────┬──────────────────────────────────────┐
 │ PnP OS Installed       :No         │ PCI IDE IRQ Map To : PCI-Auto         │
 │ Resources Controlled By :Manual    │  Primary IDE INT#  : A                │
 │ Reset Configuration Data :Disabled │  Secondary IDE INT#: B                │
 │                                    │                                       │
 │ IRQ-3 assigned to      :Legacy ISA │ Assign IRQ for VGA     : Enabled      │
 │ IRQ-4 assigned to      :Legacy ISA │ Used MEM base addr     : N/A          │
 │ IRQ-5 assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-7 assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-9 assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-10assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-11assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-12assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-14assigned to      :PCI/ISA PnP│                                       │
 │ IRQ-15assigned to      :PCI/ISA PnP│                                       │
 │ DMA-0assigned to       :PCI/ISA PnP│                                       │
 │ DMA-1assigned to       :PCI/ISA PnP│ Esc : Quit    ↑↓→←: Select item       │
 │ DMA-3assigned to       :PCI/ISA PnP│ F1 : Help PU/PD/+/- : modify          │
 │ DMA-5assigned to       :PCI/ISA PnP│ F5 : Old Value(Shift) F2 : Color      │
 │ DMA-6assigned to       :PCI/ISA PnP│ F6 : Load BIOS Defaults               │
 │ DMA-7assigned to       :PCI/ISA PnP│ F7 : Load Setup Defaults              │
 └────────────────────────────────────┴──────────────────────────────────────┘
```

PnP OS Installed

When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows®95. When set to NO, BIOS will initialize all the PnP cards. So, for non-PnP operating system (DOS, Netware®), this option must set to NO.

Resources Controlled By

By Choosing "Auto", the system BIOS will detect the system resources and automatically assign the relative IRQ and DMA Channel for each peripheral.

By Choosing "Manual"(default), the user will need to assign IRQ & DMA for add-on cards. Be sure that there is no conflict for IRQ/DMA and I/O ports.

Note: When choosing "Auto", you must be sure that all of the system add-on cards are PnP type.

Reset Configuration Data

The system BIOS supports the PnP features so the system needs to record which resource is assigned and protect resources from conflict. Every peripheral device has a node which is called ESCD. This node records which resources are assigned to it. The system needs to record and update ESCD to the memory locations. These locations (4K) are reserved at the system BIOS.

If Disabled (default) is chosen, the system's ESCD will update only when the new configuration varies from the last one.

If Enabled is chosen, the system will be forced to update the system's ESCD. Then, this option will be auto-set to Disable.

IRQ-3	assigned to	: Legacy ISA
IRQ-4	assigned to	: Legacy ISA
IRQ-5	assigned to	: PCI/ISA PnP
IRQ-7	assigned to	: Legacy ISA
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
DMA-5 assigned to   : PCI/ISA PnP
DMA-6 assigned to   : PCI/ISA PnP
DMA-7 assigned to   : PCI/ISA PnP

The above settings will be shown on the screen only if "Manual" is chosen for the *Resources Controlled By* function.

Legacy is the term which signifies that a resource is assigned to the ISA Bus and provides for non PnP ISA add-on card. PCI/ISA PnP signifies that a resource is assigned to the PCI Bus or provides for ISA PnP add-on cards and peripherals.

PCI IDE IRQ Map To

PCI-Auto: This setting is for off-board PCI IDE card and is fully compatible with PCI specifications.

PCI-Slot 1-4:   This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications. You must specify which PCI slot the PCI IDE Card is installed in.

ISA: This setting is used if the off-board PCI IDE card uses an edge trigger and IRQ routes directly to the ISA Bus.

Note: The user will need to disable the on-board on-chipset PCI IDE controller when installing off-board PCI IDE add-on cards. (See the INTEGRATED PERIPHERALS SETUP) These two options choose the primary and secondary IDE Channel interrupts when the user installs off-board PCI IDE add-on cards.

Assign IRQ for VGA

Lets the user choose which IRQ to assign for VGA card.

Used MEM base addr

Lets the user choose the Legacy ISA addr. The settings are NA#, C800, CC00, D000, D400, D800 or DC00.

3.9 Load BIOS/Setup Defaults

This Main Menu item loads the default system values. If the CMOS is corrupted, the defaults are loaded automatically. Choose this item and the following message appears:

" Load Setup Defaults (Y / N) ? N "

To use the Setup defaults, change the prompt to "Y" and press < Enter >

Note: The Setup defaults can be customized to increase performance.
However the BIOS defaults can always be used as a back up if
there is some problem with the mainboard operation.

3.10 Special Features Setup

This Special Features Setup are used by the LM78 chipset. You can
manually change the value of each option.

```
                    ROM  PCI/ISA  BIOS  (2A69HM4C)
                        INTEGRATED  PERIPHERALS
                        AWARD  SOFTWARE,  INC.
 ┌──────────────────────────────────┬──────────────────────────────────┐
 │ CPU Voltage            :Auto      │ System Temperature    :29°C/84°F │
 │ Voltage Detected       :Enabled   │ CPU Temperature       :30°C/86°F │
 │ Power Fan Detected     :Disabled  │                                  │
 │ CPU FAN Detected       :Enabled   │                                  │
 │ Chassis Intrusion Detect :Disabled│                                  │
 │                                   │                                  │
 │                                   │                                  │
 │                                   │                                  │
 │                                   │                                  │
 │                                   │                                  │
 │                                   │ Esc : Quit    ↑↓→←: Select item  │
 │                                   │ F1 : Help PU/PD/+/- : modify     │
 │                                   │ F5 : Old Value(Shift) F2 : Color │
 │                                   │ F6 : Load BIOS Defaults          │
 │                                   │ F7 : Load Setup Defaults         │
 └──────────────────────────────────┴──────────────────────────────────┘
```

CPU Voltage
        This is for setting the voltage of the CPU you are using, so that
LANDesk® software can monitor your CPU voltage.

Voltage Detected
        During Enabled, this will show the CPU voltage chart during boot
up. And during Disabled, this will not show the CPU voltage chart.

Power Fan Detected
        During Enabled, this will monitor your power fan.

CPU Fan Detected

　　　　During Enabled, this will monitor the RPM of your CPU fan.

Chassis Intrusion Detected

　　　　During Enabled, this will monitor your Chassis if someone have open the case.

System Temperature/CPU Temperature

　　　　This will show the System and CPU temperature.

3.11 Integrated Peripherals

```
                    ROM  PCI/ISA  BIOS  (2A69HM4D)
                        INTEGRATED  PERIPHERALS
                        AWARD  SOFTWARE,  INC.
```

```
┌─────────────────────────────────────────────────────────────────────┐
│  IDE HDD Block Mode      :Enabled │ Onboard Parallel Mode   :378/IRQ7 │
│  IDE Primary Master PIO  :Auto    │ Parallel Port Mode      :SPP      │
│  IDE Primary Slave PIO   :Auto    │ ECP Mode Use DMA        :1,3      │
│  IDE Secondary Master PIO :Auto   │ EPP Mode Select         :EPP1     │
│  IDE Secondary Slave PIO  :Auto   │                                   │
│  IDE Primary Master UDMA  :Auto   │                                   │
│  IDE Primary Slave UDMA   :Auto   │                                   │
│  IDE Secondary Master UDMA:Auto   │                                   │
│  IDE Secondary Slave UDMA :Auto   │                                   │
│  On-Chip Primary PCI IDE :Enabled │                                   │
│  On-Chip Primary PCI IDE :Enabled │                                   │
│  USB Keyboard Controller :Disabled│                                   │
│                                   │                                   │
│  Onboard FDD controller  :Enabled │                                   │
│  Onboard Serial Port 1   :3F8/IRQ4│───────────────────────────────────│
│  Onboard Serial Port 2   :2F8/IRQ3│ Esc : Quit    ↑↓→← : Select item  │
│  Onboard IR Controller   :Disabled│ F1 : Help PU/PD/+/- : modify      │
│                                   │ F5 : Old Value(Shift) F2 : Color  │
│                                   │ F6 : Load BIOS Defaults           │
│                                   │ F7 : Load Setup Defaults          │
└─────────────────────────────────────────────────────────────────────┘
```

IDE HDD Block Mode
>   **Enabled/Disabled** Enabled allows the Block mode access for the
>   IDE HDD.

IDE Primary Master PIO
>   **Auto/Mode0/Mode1-4**

IDE Primary Slave PIO
>   **Auto/Mode0/Mode1-4**

IDE Secondary Master PIO
>   **Auto/Mode0/Mode1-4**

IDE Secondary Slave PIO
Auto/Mode0/Mode1-4

For these 4 IDE options, choose "Auto" to have the system BIOS auto detect the IDE HDD operation mode for PIO access.

Note: Some IDE HDD cannot operate at the responding HDD's mode. When the user has selected "Auto" and the system BIOS has accepted the HDD response mode, the user may degrade the HDD's operation mode. Ex: If the HDD reported it can operate in mode 4 but it is not operating properly, the user will have to manually change the operation mode to mode 3.

Choosing Mode 1-4 will have the system ignore the HDD's reported operation mode and use the selected mode instead.

Note: According to ATA specs. Mode 4 transfer rate is > Mode 3 > Mode 2 > Mode 1 > Mode 0. If the user's HDD can operate at Mode 3 the user can also select a slower Mode (i.e. Mode 0-2) but not a faster Mode (ie Mode 4).

On-Chip Primary PCI IDE
Enabled/Disabled

On-Chip Secondary PCI IDE
Enabled/Disabled

The system provides for an On-Board On-Chipset PCI IDE controller that supports Dual Channel IDE (Primary and Secondary). A maximum of 4 IDE devices can be supported. If the user installs the Off-Board PCI IDE controller (i.e. add-on cards), the user must choose which channels will be disabled. This will depend on which channel will be used for the Off-Board PCI IDE add-on card.

USB Keyboard Support
    Enabled/Disabled   Choosing Enabled will allow the system to use USB keyboard without a device driver.

Onboard FDC Controller
    Enabled/Disabled   The system has an on-board Super I/O chip with a FDD controller that supports 2 FDDs for 360K/720K/1.2M/1.44M/ 2.8M. Choose "Enabled" to use the on-board FDD controller for accessing the FDD. Otherwise choose "Disabled" to use the off-board FDD controller.

Onboard Serial Port 1
        Disabled/(3F8/IRQ4)/(2F8/IRQ3)/ (3E8/IRQ4)/(2E8/IRQ3)

Onboard Serial Port 2
        Disabled/(3F8/IRQ4)/(2F8/IRQ3)/(3E8/IRQ4)/(2E8/IRQ3)
        The system has an On-board Super I/O chipset with 2 serial ports. The On-board serial ports can be selected as:

                Disabled
                3F8/IRQ4   COM 1 uses IRQ4
                2F8/IRQ3   COM 2 uses IRQ3
                3E8/IRQ4   COM 3 uses IRQ4
                2E8/IRQ3   COM 4 uses IRQ3

Note: Because the ISA Bus Interrupt accepts low to high edge trigger, the interrupt request line cannot be shared by multiple sources. If an off-board ISA add-on card with a serial port is installed, the user may have to disable the on-board serial port because it will conflict with IRQ request line for the off-board serial port.

Onboard IR Controller

Enabled/Disabled	The system has an on-board Super I/O chip with an IR controller. Choose "Enabled" to use the on-board IR controller for accessing the IR devices. Otherwise choose "Disabled" to use the off-board IR controller.

IR Mode

This function is for choosing which IR mode to use. Leave this on the default setting of Irda.

Onboard Parallel Port

Disabled (3BCH/IRQ7)/ (278H/IRQ5)/ (378H/IRQ5)	There is a built-in parallel port on the on-board Super I/O chipset that provides Standard, ECP, and EPP features. It has the following options:

Disable
3BCH/IRQ7   Line Printer port 0
278H/IRQ5   Line Printer port 2
378H/IRQ5   Line Printer port 1

Onboard Parallel Mode

SPP : Standard Parallel Port
EPP : Enhanced Parallel Port
ECP : Extended Capability Port

SPP/(EPP/SPP)/ ECP(ECP/EPP)	To operate the onboard parallel port as Standard Parallel Port only, choose "SPP." To operate the onboard parallel port in the ECP and SPP modes simultaneously, choose "ECP/SPP." By choosing "ECP", the onboard parallel port will operate in ECP mode only. Choosing "ECP/EPP" will allow the onboard parallel port to support both

the ECP and EPP modes simultaneously. The ECP mode has to use the DMA channel, so choose the onboard parallel port with the ECP feature. After selecting it, the following message will appear: "ECP Mode Use DMA". At this time, the user can choose between DMA channels 3 or 1. The onboard parallel port is EPP Spec. compliant, so after the user chooses the onboard parallel port with the EPP function, the following message will be displayed on the screen: "EPP Mode Select." At this time either EPP 1.7 spec. or EPP 1.9 spec. can be chosen.

3.11 Supervisor/User Password Setting

      This Main Menu item lets you configure the system so that a password is required each time the system boots or an attempt is made to enter the Setup program. Supervisor Password allows you to change all CMOS settings but the User Password setting doesn't have this function. The way to set up the passwords for both Supervisor and User are as follow:

1. Choose "Change Password" in the Main Menu and press <Enter>. The following message appears:

<p align="center">"Enter Password:"</p>

2. The first time you run this option, enter your password up to only 8 characters and press <Enter>. The screen does not display the entered characters. For no password just press <Enter>.

3. After you enter the password, the following message appears prompting you to confirm the password:

<p align="center">"Confirm Password:"</p>

4. Enter exactly the same password you just typed in to confirm the password and press <Enter>.

5. Move the cursor to Save & Exit Setup to save the password.

6. If you need to delete the password you entered before, choose the Supervisor Password and press <Enter>. It will delete the password that you had before.

7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there the next time you turn on your machine.

3.12 IDE HDD Auto Detection

You can use this utility to automatically detect the characteristics of most hard drives.

When you enter this utility, the screen asks you to select a specific hard disk for Primary Master. If you accept a hard disk detected by the BIOS, you can enter "Y" to confirm and then press <Enter> to check next hard disk. This function allows you to check four hard disks. You may press the <Esc> after the <Enter> to skip this function and go back to the Main Menu.

```
                        ROM  ISA  BIOS
                     CMOS  SETUP  UTILITY
                   AWARD  SOFTWARE,  INC.

  HARD DISKS        TYPE  SIZE  CYLS  HEADS  PRECOMP  LANDZONE   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


          Select Primary Master    Option (N=Skip) : N

       OPTIONS   SIZE     CYLS    HEAD    PRECOMP  LANDZ SECTOR MODE

          2      2112     1023     64        0      4094   63    LBA
          1      2113     4095     16      65535    4094   63    NORMAL
          3      2113     2047     32      65535    4094   63    LARGE



                        [ESC: Skip]
```

Chapter 4

AMI® BIOS USER's GUIDE

The system configuration information and chipset register information is stored in the CMOS RAM. This information is retained by a battery when the power is off. Enter the BIOS setup (if needed) to modify this information.

The following pages will describe how to enter BIOS setup, and all about options.

4.1 Enter BIOS Setup

Enter the AMI®Setup Program's Main Menu as follows:

1. Turn on or reboot the system. The following screen appears with a series of diagnostic check.

```
AMIBIOS (C) 1996 American Megatrends Inc.


Hit <DEL> if you want to run setup








(C) American Megatrends Inc.
61-XXXX-001169-00111111-071592-i82440FX-H
```
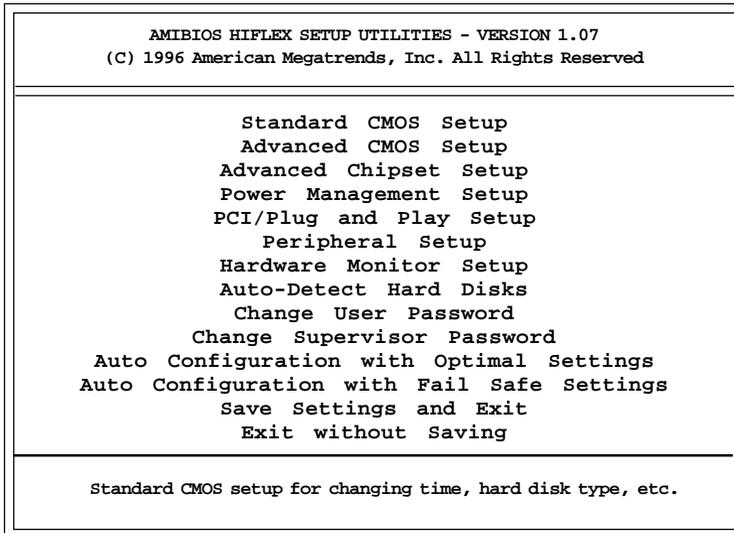
2. When the "Hit <DEL>" message appears, press <DEL> key to enter the BIOS setup screen.

3. After pressing <DEL> key, the BIOS setup screen will appear.

Note: *If you don't want to modify CMOS original setting, then don't press any key during the system boot.*

```
AMIBIOS HIFLEX SETUP UTILITIES - VERSION 1.07
(C) 1996 American Megatrends, Inc. All Rights Reserved


             Standard  CMOS  Setup
             Advanced  CMOS  Setup
           Advanced  Chipset  Setup
           Power  Management  Setup
          PCI/Plug  and  Play  Setup
              Peripheral  Setup
           Hardware  Monitor  Setup
           Auto-Detect  Hard  Disks
            Change  User  Password
         Change  Supervisor  Password
   Auto  Configuration  with  Optimal  Settings
  Auto  Configuration  with  Fail  Safe  Settings
           Save  Settings  and  Exit
            Exit  without  Saving


  Standard CMOS setup for changing time, hard disk type, etc.
```

4. Use the <UP> and <DOWN> key to move the highlight scroll up or down.

5. Use the <ENTER> key to select the option.

6. To exit, press <ESC>. To save and exit, press <F10>.

7. Section 4.2 to 4.8 will explain the option in more details.

4.2 Standard CMOS Setup

1. Press <ENTER> on "Standard CMOS Setup" of the main menu screen .

```
          AMIBIOS  SETUP  -  STANDARD  CMOS  SETUP
(C)1996  American  Megatrends,Inc.All  Rights  Reserved

Date (mm/dd/yyyy): Fri June 20, 1997
Time (hh/mm/ss):   17:09:25

Floppy Drive A:              1.44 MB 3 1/2
Floppy Drive B:              Not Installed
                                              LBA   Blk   PIO   32Bit
           Type  Size  Cyln  Head  WPcom Sec  Mode  Mode  Mode  Mode
Pri Master :Auto                              ON    ON    AUTO  ON
Pri Slave  :Auto                              ON    ON    AUTO  ON
Sec Master :Auto                              ON    ON    AUTO  ON
Sec Slave  :Auto                              ON    ON    AUTO  ON

Boot  Sector  Virus  Protection Disabled


Time is 24 hour format:                  ESC:Exit  :Sel
Hour: 00-23 Minute: 00-59 Second: 00-59  PgUp/PgDn:Modify
(1:30AM = 01:30:00, 1:30PM = 13:30:00)   F2/F3:Color
```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.

3. After you have finished with the Standard CMOS Setup,   press <ESC> to go back to the main menu.

4.3 Advanced CMOS Setup

1. Press <ENTER> on "Advanced CMOS Setup" of the main menu

```
                AMIBIOS SETUP - ADVANCED CMOS SETUP
          (C) 1996 American Megatrends, Inc. All Rights Reserved

Ist Boot Device          FLOPPY        Available  Options:
2nd Boot Device          IDE-0         Enabled
3rd Boot Device          CD-ROM        Disabled
4th Boot Device          Disabled
Try Other Boot Devices   Yes
Quick Boot               Enabled
BootUp Num-Lock          On
Floppy Drive Seek        Enabled
Floppy Access Control    Normal
HDD Access Control       Normal
PS/2 Mouse Support       Enabled
System Keyboard          Absent
Primary Display          VGA/EGA
Password Check           Setup
Boot to OS/2             No
Internal Cache           Writeback
External Cache           Writeback
System BIOS Cacheable    Enabled
C000, 32k Shadow         Enabled
C800, 16k Shadow         Disabled
CC00, 16k Shadow         Disabled
D000, 16k Shadow         Disabled
D400, 16k Shadow         Disabled      ESC:Exit  :Sel
D800, 16k Shadow         Disabled      PgUp/PgDn:Modify
DC00, 16k Shadow         Disabled      F2/F3:Color
```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.

3. After you have finished with the Advanced CMOS Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

1st Boot Device/2nd Boot Device/3rd Boot Device/
4th Boot Device

This option sets the sequence of boot drives.

The settings are:

IDE0	The system will boot from the first HDD.
IDE1	The system will boot from the Second HDD.
IDE2	The system will boot from the Third HDD.
IDE3	The system will boot from the Fourth HDD.
F(optical)	The system will boot from LS-120(120M Floppy).
SCSI	The system will boot from the SCSI.
Network	The system will boot from the Network drive.
CD-ROM	The system will boot from the CD-ROM.
Disable	Disable this sequence.

Try other Boot Devices

This option sets the device boot, if all the Four Boot Devices failed.

Quick Boot

Set this option to Enabled to permit AMI® BIOS to boot within 5 seconds. This option replaces the old ABOVE 1 MB Memory Test option. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

Boot up Num Lock

When this option is set to Off, AMI® BIOS turns off the Num Lock key when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard. The settings are On or Off. The optimal default and Fail-Safe default settings are On.

Floppy Drive Seek

When this option is set to Enabled, AMI® BIOS performs a Seek command on floppy drive A: before booting the system. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Disabled.

Floppy Access Control

        This option sets the Floppy to Read-only or Normal(Full Access).

HDD Access Control

        This option sets the HDD to Read-only or Normal(Full Access).
During Read-only, if you try to write on the HDD, the system will halt.

PS/2 Mouse Support

        When this option is set to Enabled, AMI® BIOS will auto-detect the
presence of a PS/2® mouse and reserved an IRQ for the mouse. The settings
are Enabled and Disabled. The Optimal and Fail-Safe default settings are
Enabled.

System Keyboard (leave on the default setting of Absent)

Primary Display

        This option configures the primary display subsytem in the
computer. The settings are Mono(monochrome), 40CGA, 80CGA or VGA/
EGA. The optimal and Fail-Safe default settings are VGA/EGA.

Password Check

        This option specifies the type of AMI® BIOS password protection
that is implemented. The Optimal and Fail-Safe default settings are Setup.

Boot to OS/2

        Set this option to Enabled only if your using OS/2® and the memory
size is 64MB.

Internal Cache/External Cache

        This option Enabled or Disabled the Internal and the External
Cache.

System BIOS Cacheable

AMI®BIOS always copies the system BIOS from ROM to RAM for faster execution. Set this option to Enabled to permit the contents of the F0000h RAM memory segment to be written to and read from cache memory. The settings are Enabled or Disabled. The Optimal default setting is Enabled. The Fail-Safe default setting is Disabled.

C000, 32K Shadow

These options specify how the contents of the video ROM are handled. The settings are:

Disabled - the Video ROM is not copied to RAM.

Cached - the contents of the video ROM from C0000h - C7FFFh are not only copied from ROM to RAM; it can also be written to or read from cache memory.

Shadow - the Contents of the video ROM from C0000h - C7FFFh are copied(shadowed) from ROM to RAM for faster execution.

The Optimal and Fail-Safe default setting is Cached.

C800, 16k Shadow/CC00, 16k Shadow/D000, 16K Shadow/ D400, 16k Shadow/D800, 16k Shadow/DC00, 16K Shadow

These options specify how the contents of the adaptor ROM named in the option title are handled. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards. The settings are;

Disabled - The specified ROM is not copied to RAM.

Cache - The contents of the ROM area are not only copied from ROM to RAM for faster execution, it can also be written to or read from cache memory.

Shadow - The contents of the ROM area are copied from ROM to RAM for faster execution.

The Optimal and Fail-Safe default settings are Disabled.

4.4 Advanced Chipset Setup

1. Press <ENTER> on "Advanced Chipset Setup" of the main menu screen.

```
              AMIBIOS SETUP - ADVANCED CHIPSET SETUP
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Memory Hole                      Disabled       Available  Options:
DRAM Speed                       60ns           Enabled
DRAM Read Burst Timing           x2EDO X3FPM    Disabled
DRAM Write Burst Timing          x3EDO X3FPM
DRAM Lead off Timing             10/6/3
Memory Address Drive Strength    10mA, 10mA
SDRAM CAS Latency/RAS to CAS     3/3
Speculative Lead Off Timing      Disabled
DRAM Page Idle Timeout (HCLK's)  2
Fast EDO Read Cycle Timing       Enabled
SDRAM Speculative Read LOgic     Disabled
Enhanced Paging                  Enabled
DRAM Refresh RAS Cycles (HCLK's) 4
DRAM Refresh Rate                31.2 us
8-Bit I/O Recovery Time          Disabled
16-Bit I/O Recovery Time         Disabled
CD-ROM Option                    0
USB Keyboard/Mouse Support       Disabled



                                                ESC:Exit  :Sel
                                                PgUp/PgDn:Modify
                                                F2/F3:Color
```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.

3. After you have finished with the Advanced Chipset Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Memory Hole

Choosing Enabled, will enable a memory hole in the DRAM space. The CPU cycle matching the enabled hole will be passed on the PCI. PCI cycles matching an Enabled hole are ignored. Disabled(default) will disable this function.

DRAM Speed

This option specifies the speed for the DRAM used in the computer for system memory. Sets the DRAM speed at 70ns (default) or 60ns. It will set the speed of the EDO/FP DRAM.

DRAM Read Burst Timing

Under Auto config. the BIOS will identify which type of DRAM is being used. Choose the setting accordingly. To customize, use this option which sets the Read Burst time for accessing the DRAM. The timing used depends on the type of DRAM and access time being used.

DRAM Write Burst Timing

This option chooses the Write Burst Timing for accessing DRAM.

DRAM Lead off Timing

To be able to change the setting, Auto configuration must be disable. If the Bus Clock is 75MHz set it to 11/7/4, and if the Bus Clock is 66/60/55 MHz set it to 10/6/4. Default setting is 10/6/3.

Memory Address Drive Strength

Leave on the default setting of 10mA, 10mA.

SDRAM CAS Latency/RAS to CAS

The settings are 3/3 or 2/2. This option is for SDRAM CAS latency time and RAS# to CAS# delay time. The default setting is 3/3.

Speculative Lead Off Timing
    Leave on the default setting of Disabled.

DRAM Page Idle Timeout (HCLK's)
    The settings are 2 , 4 , 6, or 8 Clks. Default settings is 2 Clks.

Fast EDO Read Cycle Timing
    The BIOS will identify which type of DRAM is being used.
Choose the setting accordingly. To customize, use this option. Choose
Enable or Disable. If the system is using EDO DRAM, choose Enabled. But
if the system is using both EDO and FP DRAM, choose Disabled.

SDRAM Speculative Read Logic
    The settings are Enabled or Disabled. The default setting is enable.

Enhanced Paging
    Leave on the default setting of Enabled.

DRAM Refresh RAS Cycles (HCLS's)
    Leave on the default setting of 5.

DRAM Refresh Rate
    Leave on the default setting of 15.6 us.

8-Bit I/O Recovery Time / 16-Bit I/O Recovery Time
    Choose the recovery time for 8-bit and 16-bit I/O cycles respec-
tively.

CD-ROM Option
    Leave on the default setting of 0.

USB Keyboard/Mouse Support
    Set this option to Enabled or Disabled USB keyboard/mouse.
The Optional and Fail-Safe default settings are Disabled.

4.5 Power Management Setup

1. Press <ENTER> on "Power Management Setup" of the main menu screen.

```
            AMIBIOS SETUP - POWER MANAGEMENT SETUP
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Power Management / APM           Enabled      Available  Options:
Instant On Support               Disabled     Enabled
Green PC Monitor Power State      Stand By     Disabled
Video Power Down Mode            Suspend
Hard Disk Power Down Mode        Stand By
Hard Disk Time Out (Minute)      Disabled
Standby Time Out (Minute)        10
Suspend Time Out (Minute)        10
Slow Clock Ratio                 37.5-50%
Display Activity                 Ignore
Serial port 1                    Monitor
Serial port 2                    Monitor
Parallel port                    Ignore
Floppy disk                      Ignore
Primary IDE 0                    Monitor
Primary IDE 1                    Monitor
Secondary IDE 0                  Ignore
Secondary IDE 1                  Ignore
Resume on Ring                   Disabled
Modem Use IO Port                N/A
Modem Use IRQ                    N/A          ESC:Exit  :Sel
Soft-Off by PWR-BTTN             Instant-off  PgUp/PgDn:Modify
RTC Alarm Resume From Soft Off   Disabled     F2/F3:Color
RTC Alarm Date                   N/A


RTC Alarm Hour                   N/A
RTC Alarm Minute                 N/A
RTC Alarm Second                 N/A
```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and <PGDN> keys to modify the highlighted item.

3. After you have finished with the Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

Power Management/APM

Set this option to Enabled to enable the Intel® 82371AB chipset ISA power management features and APM(Advanced Power Management). The settings are Enabled, Inst-On(instant-on) or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Instant On Support (leave on the default setting of Disabled)

Green PC Monitor Power State

This option specifies the power state that the green PC-compliant video monitor enters when AMI® BIOS places it in a power savings state after the specified period of display inactivity has expired. The settings are Off, Standby, Suspend or Disabled. The Optimal and Fail-Safe default settings are Standby.

Video Power Down Mode

This option specifies the power conserving state that the VESA VGA video subsystem enters after the specified period of display inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Standby.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are Disabled, Standby or Suspend. The Optimal and Fail-Safe default settings are Disabled.

Hard Disk Timeout (Minute)

This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the Hard Disk Power Down mode option (see the previous page). The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Standby Timeout (Minute)

This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Suspend Timeout (Minute)

This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are Disabled, 1 min, 2 min, 3 min, 4 min, 5 min, 6 min, 7 min, 8 min, 9 min, 10 min, 11 min, 12 min, 13 min, 14 min or 15 min. The Optimal and Fail-Safe default settings are Disabled.

Slow Clock Ratio

This option specifies the speed at which the system clock runs in power saving states. The settings are expressed as a ratio between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are 1:1, 1:2, 1:4, 1:8, 1:16, 1:32, 1:64 or 1:128. The Optimal and Fail-Safe defaults are 1:8.

Display Activity/Serial port 1/Serial port 2/Parallel port/Floppy disk/Primary IDE 0/Primary IDE 1/Secondary IDE 0/ Secondary IDE 1

When set to Monitor, these options enable event monitoring on the specified hardware interrupt request line. If set to Monitor and the computer is in a power saving state, AMI® BIOS watches for activity on the specified IRQ line. The computer enters the full on power state if any activity occurs.

AMI® BIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are Monitor or Ignore. The Optimal and Fail-Safe default settings are Disabled for all the above options except IRQ3, IRQ4, IRQ7, IRQ12, IRQ14 or IRQ15. The Optimal default settings for these options is Monitor.

Resume on Ring

This function is to power up the system using modem. During Disabled, the system ignore any incoming call from the modem. During Enabled, the system will boot up if there's an incoming call from the modem.

Modem Use IO Port

Leave on default setting of N/A.

Modem Use IRQ

This indicates which IRQ will be used by the MODEM (if there is a MODEM). The settings are 3, 4, 5 ,7 ,9, 10, or N/A.

Soft-Off by PWR-BTTN

The settings are Delay 4 sec or Instant-off. During Delay 4 sec, if you push the switch once the system goes into suspend mode and if you push it more than 4 seconds, the system will turn off. And during Instant-off, the system will shut down once you push the switch.

RTC Alarm Resume From Soft Off

This function is for setting Date, Hour, Minute , and Second for your system to boot up. During Disabled, you can not use this function. And during Enabled, choose the Date, Hour, Minute, and Second:

RTC Alarm Date	You can choose the date that the system will boot up.
RTC Alarm Hour	You can choose the hour of the day that the system will boot up
RTC Alarm Minute	You can choose the minute that the system will boot up.
RTC Alarm Second	You can choose the second that the system will boot up.

4.6 PCI/Plug and Play Setup

1. Press <ENTER> on "PCI/Plug and Play Setup" of the main menu
   screen.

```
              AMIBIOS SETUP - PCI/PLUG AND PLAY SETUP
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Plug and Play Aware O/S          No          Available  Options:
Reset NVRAM                      No          Enabled
PCI Latency Timer (PCI Clocks)   64          Disabled
PCI VGA Palette Snoop            Disabled
PCI IDE Busmaster                Disabled
OffBoard PCI IDE Card            Auto
OffBoard PCI IDE Primary IRQ     Disabled
OffBoard PCI IDE Secondary IRQ   Disabled
Assign IRQ to PCI VGA            Yes
PCI Slot1 IRQ Priority           Auto
PCI Slot2 IRQ Priority           Auto
PCI Slot3 IRQ Priority           Auto
PCI Slot4 IRQ Priority           Auto
DMA Channel 0                    PnP
DMA Channel 1                    PnP
DMA Channel 3                    PnP
DMA Channel 5                    PnP
DMA Channel 6                    PnP
DMA Channel 7                    PnP
IRQ3                             ISA
IRQ4                             ISA
IRQ5                             PCI/PnP      ESC:Exit  :Sel
IRQ7                             ISA          PgUp/PgDn:Modify
IRQ9                             PCI/PnP      F2/F3:Color
```

```
IRQ10                            PCI/PnP
IRQ11                            PCI/PnP
IRQ14                            PCI/PnP
IRQ15                            PCI/PnP
Reserved Memory Size             Disabled
Reserved Memory Address          C8000
```

2. Use <UP> and <DOWN> to choose the item and <PGUP> and
   <PGDN> keys to modify the highlighted item.

3. After you have finished with the PCI/Plug and Play Setup, press
   <ESC> to go back to the main menu.

Description of the item on screen follows:

Plug and Play Aware O/S

Set this option to Yes if the operating system in this computer is aware of and follows the Plug and Play specification. Currently, only Windows®95 is PnP-aware. The settings are Yes or No. The Optimal and Fail-Safe default settings No.

Clear NVRAM

During Enabled, this option will clear the NVRAM on every boot.

PCI Latency Timer (PCI Clocks)

This option specifies the latency timings (in PCI clocks) for all PCI devices on the PCI bus. The settings are 32, 64, 96, 128, 160, 192, 224 or 248. The Optimal and Fail-Safe default settings are 64.

PCI VGA Palette Snoop

When this option is set to Enabled, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example, if there are two VGA devices in the computer (one PCI and ISA) and the Bit settings are:

Disabled - Data read and written by the CPU is only directed to the PCI VGA device's palette registers.

Enabled - Data read and written by the CPU is directed to both the PCI VGA device's palette registers and the ISA VGA device palette registers, permitting the palette registers of both devices to be identical.

This option must be set to Enabled if an ISA adapter card requires VGA palette snooping. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

PCI IDE BusMaster

Set this option to Enabled to specify that the IDE controller on the PCI local bus includes a bus mastering capability. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Disabled.

Offboard PCI IDE Card

This option specifies if an offboard PCI IDE controller adapter card is installed in the computer. You must specify the PCI expansion slot on the mainboard where the offboard PCI IDE controller is installed. If an offboard PCI IDE controller is used, the onboard IDE controller is automatically disabled. The settings are Auto(AMI®BIOS automatically determines where the offboard PCI IDE controller adaper card is installed), Slot1, Slot2, Slot3 or Slot4. The Optimal and Fail-Safe settings are Auto.

If an offboard PCI IDE controller adapter card is installed in the computer, you must also set the Offboard PCI IDE Primary IRQ and Offboard PCI IDE Secondary IRQ options.

Offboard PCI IDE Primary IRQ/
Offboard PCI IDE Secondary IRQ

These options specify the PCI interrupt used by the Primary (or Secondary) IDE channel on the offboard PCI IDE controller. The settings are Disabled, Hardwired, INTA, INTB, INTC or INTD. The Optimal and Fail-Safe default settings are Disabled.

Assign IRQ to PCI VGA

Choose the IRQ to be assigned to the PCI VGA display adapter card. The Optimal and Fail-Safe default settings No.

DMA Channel 0/DMA Channel 1/DMA Channel 3/DMA Channel 5/DMA Channel 6/DMA Channel 7

These options specify the bus that the specified DMA channel is used. These options allow you to reserve DMAs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove a DMA from the available DMAs passed to devices that are configurable by the system BIOS. The available DMA pool is determined by reading the ESCD NVRAM. If more DMAs must be removed from the pool, the end user can use these options to reserve the DMA by assigning an ISA/EISA setting to it.

IRQ3/IRQ4/IRQ5/RQ7/IRQ9/IRQ10/IRQ11/IRQ14/IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards.

These options determine if AMI® BIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMI® BIOS. All IRQs used by onboard I/O are configured as PCI/PnP. If all IRQs are set to ISA/EISA and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are ISA/EISA or PCI/PnP. The Optimal and Fail-Safe default settings are IRQ3 through 7 are ISA/EISA. The Optimal and Fail-Safe default settings PCI/PnP.

Reserved Memory Size
This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are Disabled, 16K, 32K, or 64K. The Optimal and Fail-Safe default settings are Disabled.

Reserved Memory Address
This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

4.7 Peripheral Setup

1. Press <ENTER> on "Peripheral Setup" of the main menu screen.

```
                  AMIBIOS SETUP - PERIPHERAL SETUP
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OnBoard FDC                    Enabled        Available  Options:
OnBoard Serial PortA           3F8h/COM1      Enabled
OnBoard Serial PortB           2F8h/COM2      Disabled
IR Port Support                Disabled
  IR Base Address Select       2E8
  IR IRQ Select                10
OnBoard Parallel Port          378
  Parallel Port Mode           Normal
  EPP Version                  N/A
  Parallel Port IRQ            7
  Parallel Port DMA Channel    N/A
Onboard IDE                    Both




                                              ESC:Exit  :Sel
                                              PgUp/PgDn:Modify
                                              F2/F3:Color
```

2. Use <up> and <down> to choose the item and <PgUp> and
    <PgDn> keys to modify the highlighted item.

3. After you have finished with the Peripheral Setup, press <ESC> to
    go back to the main menu.

Description of the item on screen follows:

Onboard FDC

Choose Auto, for the BIOS to automatically detect the device

If the ISA add-on card has	On-board FDC to be set at
FDC exist	Disabled
No FDC exist	Enabled

Choose Enabled, Enabling on-board FDC.
Choose Disabled, Disabling on-board FDC.
The Optimal and Fail-Safe default settings are Auto.

Onboard Serial Port A/Onboard Serial Port B

Choose Enabled, for the BIOS to automatically detect the device.

If the ISA add-on card has				On-board Serial port to be set at			
COM1 (I/O:3F8H)	COM2 (I/O:3F8H)	COM3 (I/O:3E8H)	COM4 (I/O:2E8H)	PORT1	IRQ ASSIGNED	PORT2	IRQ ASSIGNED
✓	✓	✓	✓	DISABLED	X	DISABLED	X
✓	✓	X	X	COM3	4	COM4	3
X	X	✓	✓	COM1	4	COM2	3
✓	X	X	✓	COM2	3	COM3	4
X	✓	✓	X	COM1	4	COM4	3
✓	✓	✓	X	COM4	3	DISABLED	X
✓	✓	X	✓	COM3	4	DISABLED	X
✓	X	✓	✓	COM2	3	DISABLED	X
X	✓	✓	✓	COM1	4	DISABLED	X
X	X	X	X	COM1	4	COM2	3
✓	X	X	X	COM2	3	COM3	4
X	✓	X	X	COM1	4	COM3	4
X	X	✓	X	COM1	4	COM2	3
X	X	X	✓	COM1	4	COM2	3

Note: *If the onboard serial port interrupt and ISA add-on card interrupt are in conflict, the serial port will not work properly. Please disable one of the devices.*

IR Port Support(leave on the default setting of Disabled)

Onboard Parallel Port

Choose Auto, for the BIOS to automatically assigned on-board parallel port to available parallel port or disabled

If the ISA add-on card has			On-board parallel port	
LPT1 I/O:378H	LPT2 I/O:278H	LPT3 I/O:3BCH	PORT ASSIGNED	IRQ ASSIGNED
✓	✓	✓	Disabled	X
✓	✓	X	LPT3	5
✓	X	✓	LPT2	5
X	✓	✓	LPT1	7
✓	X	X	LPT2	5
X	✓	X	LPT1	7
X	X	✓	LPT1	7
X	X	X	LPT1	7

Note: *If the onboard parallel port interrupt and ISA add-on card interrupt are in conflict, the parallel port will not work properly. Please disable one of the devices.*

Parallel Port Mode

This option allows user to choose the operating mode of the on-board parallel port. The settings are Normal, SPP/EPP or ECP mode.

EPP Version(leave on the default setting of N/A)

Parallel Port IRQ

If the on-board parallel mode is not on auto mode, the user can select the interrupt line for on-board parallel port. We suggest that the user select the interrupt for the onboard parallel port as shown below:

On-board parallel port set at	Parallel Port IRQ
LPT1(378H)	7
LPT2(278H)	5
LPT3(3BCH)	5

Parallel Port DMA Channel

This option allows user to choose DMA channel 1 to 3 for the on-board parallel port on ECP mode.

On-board IDE

Set this option to enable or disable on-board IDE controller.

4.8 Hardware Monitor Setup

These settings are used by LM78 chipset which are optional. To enable the best performance, leave all the settings on the default mode.

```
        AMIBIOS SETUP - PERIPHERAL SETUP
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CPU Current Voltage (V)        3.3        Available  Options:

---LM75 & LM78 Setup---
CPU Thermal Setup (℃)          60
CPU Current Temperature (℃)    30
Thermal Slow Clock Ratio       75%
CPU Temperature Display         yes
System Temperature Set (℃)     50
System Current Temperature (℃) 29
Chassis Intrusion              Disabled
Power FAN Message Display       No
CPU FAN Message Display         Yes
System Temperature Display      Yes




                                          ESC:Exit  :Sel
                                          PgUp/PgDn:Modify
                                          F2/F3:Color
```

Description of the item on screen follows:

CPU Thermal Setup
This is for setting the CPU temperature. You must leave this on the default setting of 60.

CPU Current Temperature
This will show the CPU Current temperature.

Thermal Slow Clock Ratio
This will show the thermal slow clock ratio.

CPU Temperature Display
If set to yes, during boot-up this will show the CPU temperature.

System Temperature Set
This is for setting the system temperature. You must leave this on the default setting of 50.

System Current Temperature
This wil show the current temperaure of the system.

Chassis Intrusion(reserved)
During Enabled, the on-board chassis intrusion sensor will monitor any intrusion on the chassis.

Power FAN Message Display/CPU FAN Message Display
If set to yes, if any of the fans malfunction, then it will show warning messages.

System Temperature Display
If set to yes, if the temperature gets too high or too low, this will show warning messages.

Chapter 5

AUDIO INSTALLATION GUIDE

INTRODUCTION

The Sound Blaster 16, lets you enjoy CD-quality digital audio. This
mainboard audio comes with an extensive suite of Windows applications
and Creative® Wavesynth to help enhance your productivity and enjoyment.

Chip List:
❒ **Creative® VIBRA 16X**

Installation CD
This CD contains audio driver and audio software applications. To install
the drivers, please follow the installation procedures provided by this
manual.

Note: This drivers are originally created for floppy diskettes. Please
substitute any corresponding directory names (such as A: or B:) to
your CD-ROM drive letter (such as D: or E:)

System Requirements
Computer system requirements: 90MHz Intel® Pentium® processor or above

Monitor: VGA Support, minimum 640x480 resolution

Operating system: DOS 5.0 or higher, Windows® 3.1, Windows® 95

CD-ROM: Double Speed or Higher

Read Latest Important Information
Read the README.TXT file on the installation disk for important
information you have to know before starting installation.

5.1 Install MS-5153 Audio Drivers

1. Driver

1.1 Install Enhance Audio Drivers for Windows® 95

After installing Windows®95 in the mainboard, Windows®95 will auto-detect the changes in your hardware configuration, and will show you a message. To get a higher performance, you need to install the Driver.

To install MS-5153 Enhance Audio Drivers, follows the steps below:

Step 1: Power up your computer and boot to Windows® 95

Step 2: Insert the **I430tx CD** into your CD-ROM

Step 3: Once Windows®95 is up, a "New Hardware Found" message will appear. Select the item "**Creative Drivers Disk**" and Click "**OK**".

Step 4: The "**Install from Disk**" dialog box will appear. Select the drive of your CD-ROM (such as D: or E:). Then, look for **VIBRA16>WIN95>DRV** folder and click "**OK**".

Step 5: Once you have installed your sound card, you can check for it by going into **Control Panel** and select the **System** icon. Under **Device Manager**, select the **sound, video and game controllers** from the device list. The C**reative Sound Blaster 16 Plug and Play** and **Creative Gameport Joystick** icons will appear, showing that Windows® 95 had detected your on-board sound.

1.2 Install Enhance Audio Drivers for DOS or Windows® 3.1

The **Install.exe** is a Windows® 3.1 setup program that installs both DOS and Windows® 3.1 drivers and utilities at the same time.

To install MS-5153 Enhance Audio Drivers, follows the steps below:

Step 1: Select Run....from the File menu.

Step 2: Insert the **I430tx CD** into your CD-ROM

Step 3: Look for the CD-ROM drive. Type (CD-ROM drive such as d:) d:\VIBRA16\DOSWIN\\INST\INSTALL.EXE and press <ENTER>.

Step 4: Follow the instructions on the screen to complete the installation.

5.2 Install MS-5153 Audio Utility Drivers

1. Utility

1.1 Install Audio Utility Drivers for Windows® 95

The Sound Blaster 16 utility provides user-friendly and powerful Windows applications, that allows you to record, play, and edit 8-bit (tape quality) and 16-bit (CD-quality) wave data in your Windows environment. It also provides some special effects that will help you enhance your wave data.

To install MS-5153 Audio Utility Drivers, follow the steps below:
Step 1: Power up your computer and boot to Windows® 95
Step 2: Insert the **I430tx CD** into your CD-ROM
Step 3: Look for **Vibra16/Win95/Util/Setup** on your CD-ROM
        drive.
Step 4: Follow the instructions on the screen to complete
        installation

Note: In the middle of installation, it will look for the Audio drivers for updating, just change the folder from **utility** to **driver**.

2. User's Guide

The Sound Blaster 16 Utility Windows application provide an on-line help "User's Guide" to help you understand all the functions of your Sound Blaster 16 Windows application.

3. Sound Blaster 16 Utility Windows Application

Creative Remote
A multi-player "remote control" that enables you to control the Creative CD, Creative Wave, and Creative MIDI Players.

Creative CD
A player that allows you to play audio CDs from your CD-ROM drive, compile playlist, and gives names to the track on your CD.

Creative Wave
A player that allows you to play a wave file, compile a playlist, and record a MIDI file or audio CD into wave format.

Creative MIDI
A player that allows you to play a MIDI file and compile a playlist.

Creative Mixer
An audio mixer that allows you to combine and manipulate sounds from various audio sources. You can control the volume of an audio source, select and mix different audio sources during playback and recording.

Creative Soundo'LE
A player that allows you to play and record wave data. It also allows you to embed sounds into other Windows applications that are OLE compliant, such as WordPad and Word.

Creative Wave Studio
An editor that allows you to record, play, edit, and enhance 8-bit and 16-bit wave data in the Windows environment.

5.3 Install MS-5153 Creative® WaveSynth

1. Creative® Wavesynth

1.1 Install Creative® Wavesynth for Windows® 95

The Creative® Wavesynth is a revolutionary way to add music to
your computer. It is a software-based wavetable synthesizer that
allows you to play high quality music for Windows multimedia
applications and computer games. You can think of it as General
MIDI music synthesizer that acts like a multi-channel audio mixer
with high-quality reverb.

Creative® Wavesynth is the first software synthesizer specially
designed for Sound Blaster 16 audio cards and 90MHz Intel®
Pentium® processor (and above) computer running Windows® 3.1 or
Windows® 95. It uses hand-crafted 16-bit sampled sounds to
produce musical notes. These samples are copied to your hard disk
when you install Creative® Wavesynth.

To install MS-5153 Creative Wavesynth, follow the steps below:
Step 1: Power up your computer and boot to Windows® 95
Step 2: Insert the **I430tx CD** into your CD-ROM
Step 3: Look for **Vibra16/Synth/Setup** on your CD-ROM drive.
Step 4: Follow the instructions on the screen to complete
installation.

2. User's Guide

The Creative® Wavesynth provide an on-line help "How to use
Wavesynth" to help you understand all the functions of your Creative®
Wavesynth.
Note: You can only use Creative® Wavesynth, if you are using 90MHz Intel®
Pentium® processor and above.

5.4 Creative® 3D Stereo Enhancement

To enable Creative®3D Stereo Enhancement, follow the steps below:

Step 1: Go to the **Control Panel**, and double click on the **System** icon.

Step 2: Choose **Device Manager**, and click on the **Sound, video   and game controllers**.

Step 3: Select **Creative Sound Blaster 16 Plug and Play.**

Step 4: Click on the **Properties** button.

Step 4: Choose **Settings**.

Step 4: Click on **Use Creative 3D Stereo Enhancement**..