Chapter 1

INTRODUCTION

The Baby-AT VI14 mainboard is a high-performance personal computer mainboard. This mainboard supports Intel® Pentium® processor/Pentium® processor with MMX™ technology, Cyrix®/IBM® 6x86/6x86L/6x86MX/MII, AMD® K5/K6/K6-2, and IDT™ Winchip processors. The mainboard also supports four 32-bit PCI (Peripheral Component Interconnect) Local Bus standard slots.

The mainboard uses the highly integrated VIA® 598AT chipset to support the AGP/PCI/ISA and Green standards, and to provide the Host/AGP bridge. The VIA® 586B 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 VIA® 586B chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfer data at the rate of 33MB/s.

The mainboard uses the programmable synchronous DC/DC controller for advanced processors. Synchronous operation allows the elimination of heat sinks in many applications. The mainboard also provides 22 output voltage from 1.80V to 3.50V in 100mV increments.

The mainboard also supports the System Hardware Monitor Controller as an optional function. This function includes: CPU fan control, CPU temperature detect and protect & system voltage detect.

1.1 Mainboard Features

Processor
- Socket 7 supports Intel® Pentium® processor/Pentium® processor with MMX™ technology.
- The Cyrix®/IBM® 6x86/6x86L/6x86MX/MII, AMD® K5/K6/K6-2 and IDT™ Winchip processors are also supported.

Chipset
- VIA® MVP3 chipset.

Clock Generator
- 66/75/83.3/95/100/112/124/133MHz clocks are supported.

Cache Memory
- Supports 1MB (Pipelined Burst SRAM) L2 Cache.

Main Memory
- Supports a maximum memory size of 768MB.
- Supports six memory banks using two 168-pin DIMM and two 72-pin SIMM.
- DIMM
  - supports 3.3v EDO(Extended Data Output) and SDRAM.
  - support Unbuffered DIMM.

Slots
- One AGP(Accelerated Graphics Port) slot.
  - AGP specification compliant
  - AGP 66/133MHz 3.3v device support
- Four 32-bit Master PCI Bus slots and two 16-bit ISA bus slots (wherein one PCI/ISA is shared).
- Supports 3.3v/5v PCI bus Interface.

On-Board IDE
- An IDE controller provides IDE HDD/CD-ROM with PIO, Bus Master and Ultra DMA/33 operation modes.
- Can connect up to four IDE devices.

On-Board Peripherals
- On-Board Peripherals include:
    - 1 floppy port supports 2 FDD with 360K, 720K, 1.2M, 1.44M and 2.88Mbytes.
    - 2 serial ports (COMA + COMB)
    - 1 parallel port supports SPP/EPP/ECP mode
    - 2 USB ports
    - 1 IrDA connector for SIR.
- Switching Regulator
    - provides CPU with voltage range from 1.80v to 3.52v.

BIOS
- The mainboard BIOS provides "Plug & Play" BIOS which detects the peripheral devices and expansion cards of the board automatically.
- The mainboard provides a Desktop Management Interface (DMI) function which records your mainboard specifications.
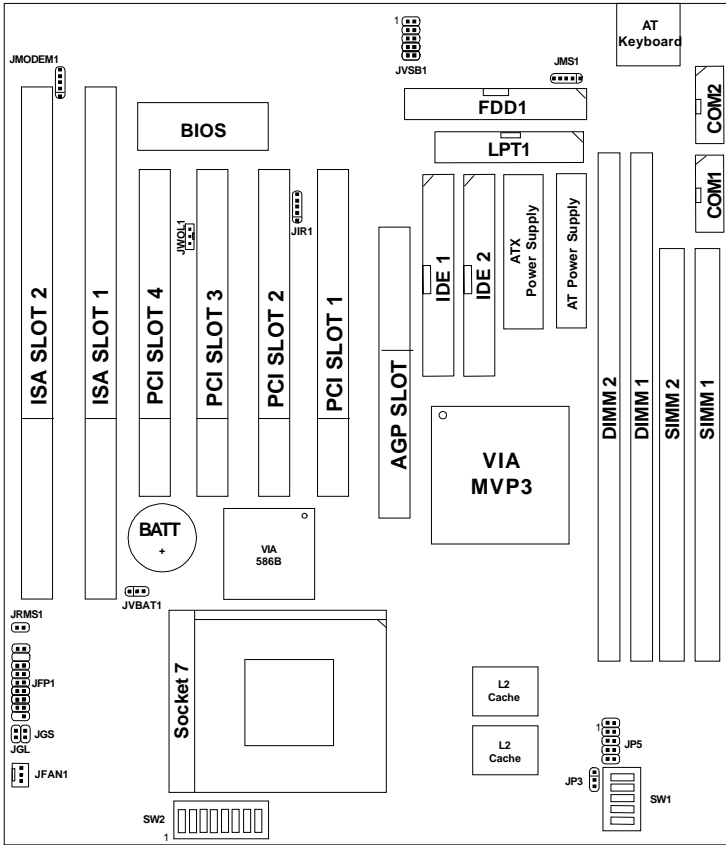
Dimension
- Baby-AT Form Factor : 24.4cm(L) x 22.2cm(W) x 4 layers PCB

Mounting
- 5 mounting holes.

1.2 Mainboard Layout


MS-5184 Baby AT VI14 Mainboard

Chapter 2

## Hardware Installation

2.1 Central Processing Unit: CPU

The **Baby AT VI14** mainboard operates with **Intel® Pentium® processor/ Pentium® processor w/MMX™ technology**, **Cyrix®/IBM 6x86/6x86L/ 6x86MX**, **AMD® K5/K6/K6-2** and **IDT™ Winchip** processors**.** It could operate with 1.8V to 3.52V processors. The mainboard provides a 321-pin ZIF Socket 7 for easy CPU installation. 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**
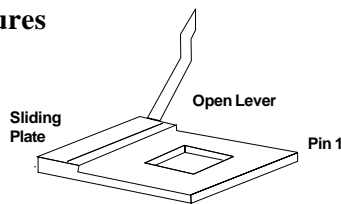
2. Locate Pin 1 in the socket and look for the white dot or cut edge in the CPU. Match Pin 1 with the white dot/cut edge. Then, insert the CPU. It should insert easily.

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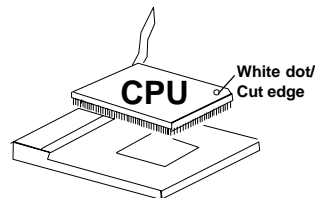
3. Press the lever down to complete the installation.

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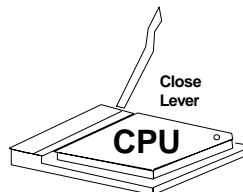
2.1-2 CPU Core Speed Derivation Procedures

1. The **DIP Switch SW1** is used to adjust the CPU, AGP, and PCI clock
   frequency.

SW1					Clock		
1	2	3	4	5	CPU	AGP	PCI
ON	ON	OFF	OFF	ON	133.3	88.7	44.3
ON	OFF	ON	OFF	ON	124	82.7	41.3
ON	ON	ON	OFF	ON	112	74.7	37.3
OFF	OFF	OFF	OFF	ON	100.2	66.6	33.3
ON	OFF	OFF	OFF	ON	95.25	63.5	31.7
OFF	ON	OFF	OFF	OFF	83.5	66.6	33.3
OFF	OFF	ON	ON	ON/OFF	75	75	37.5
OFF	ON	ON	ON	ON/OFF	66.8	66.6	33.4

a. The JP3 jumper setting is used to set the DRAM clock for CPU or
   AGP.

JP3	DRAM Clock
1 3	CPU Clock
1 3	AGP Clock

We provide CPU Bus Frequency setting for over
100Mhz. But setting the Bus Frequency over 100MHz
may cause unstable or damaging result. We do not
quarantee overclocking. (Damages resulting from
overclocking will not be covered by the warranty)

WARNING!

2. The SW2 (6, 7, & 8) 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	=	3.5
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	66MHz x 3.5
		=	233MHz

SW2			CPU
6	**7**	**8**	**Core/Bus Ratio**
OFF	OFF	OFF	1.5
ON	OFF	OFF	2.0
ON	ON	OFF	2.5
OFF	ON	OFF	3.0
OFF	OFF	OFF	3.5
ON	OFF	ON	4.0
ON	ON	ON	4.5
OFF	ON	ON	5.0
OFF	OFF	ON	5.5

2.1-3 Processor Voltage Setting

a. Vcore Voltage Setting: SW2

The Dip Switch SW2 (1-5) is used to set the processor Vcore voltage setting.


SW2
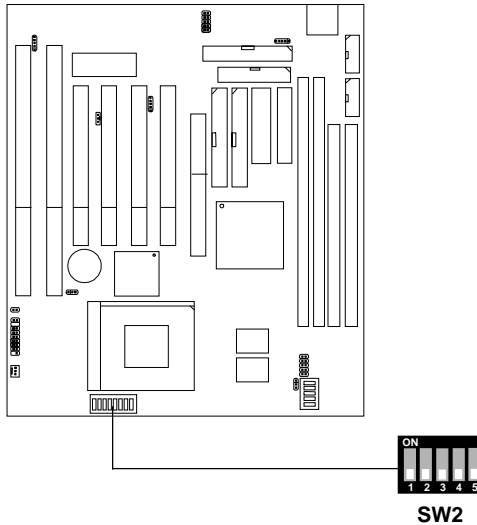
Note: Always consult vendor for proper CPU specification, before setting the processor voltage (Vcore/Vio). Improper setting may damage the processor and other components.
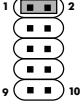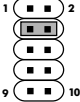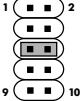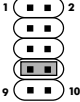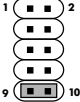
SW2					
1	2	3	4	5	Vcore
ON	ON	ON	ON	OFF	3.5
OFF	ON	ON	ON	OFF	3.40
ON	OFF	ON	ON	OFF	3.3
OFF	OFF	ON	ON	OFF	3.2
ON	ON	OFF	ON	OFF	3.1
OFF	ON	OFF	ON	OFF	3.0
ON	OFF	OFF	ON	OFF	2.9
OFF	OFF	OFF	ON	OFF	2.8
ON	ON	ON	OFF	OFF	2.7
OFF	ON	ON	OFF	OFF	2.6
ON	OFF	ON	OFF	OFF	2.5
OFF	OFF	ON	OFF	OFF	2.4
ON	ON	OFF	OFF	OFF	2.3
OFF	ON	OFF	OFF	OFF	2.2
ON	OFF	OFF	OFF	OFF	2.1
OFF	OFF	OFF	OFF	OFF	2.0
ON	ON	ON	ON	ON	2.05
OFF	ON	ON	ON	ON	2.0
ON	OFF	ON	ON	ON	1.95
OFF	OFF	ON	ON	ON	1.9
ON	ON	OFF	ON	ON	1.85
OFF	ON	OFF	ON	ON	1.8

b. Vi/o Voltage Setting: JP5

The Jumper Switch JP5 is used to set the processor Vi/o voltage setting.

JP5
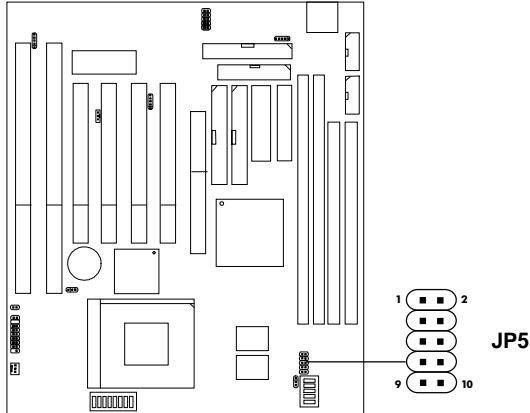
VI/O	JP5
3.3V	
3.45V	
3.6V	
3.8V	
4.0V	
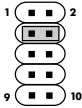
2.1-4 CPU Speed and Voltage Setting: SW1, SW2 & JP5

To adjust the speed and voltage of the CPU, you must know the specifications of your CPU (*always ask the vendor for CPU specifications*). Then refer to **Table 2.1 (Intel® processors)**, **Table 2.2 (Cyrix® processors)** and **Table 2.3 (AMD® processors)** for proper setting.
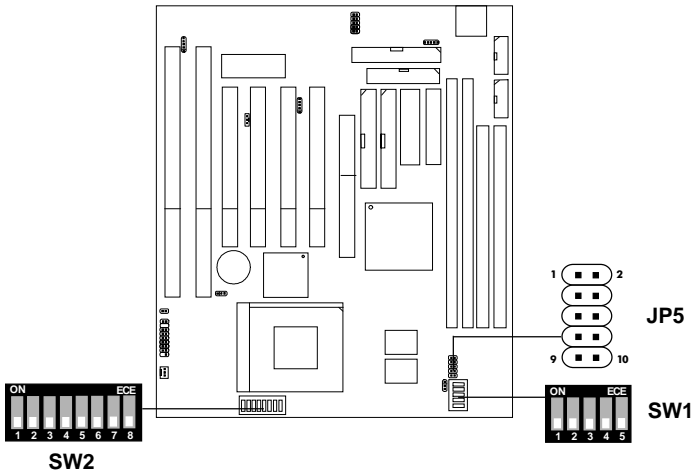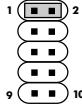
Table 2.1 Intel® processors

Intel® Pentium® processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
100MHz	3.5				
133MHz					
166MHz					
200MHz					

Intel® Pentium® processors with MMX™ technology
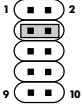
166MHz	3.3	2.8			
200MHz					
233MHz					

Note: If you encounter a CPU with different voltage, just go to Section 2.1-3 and look for the proper voltage settings.
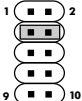
Table 2.2 Cyrix® processors

Cyrix® 6x86 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®. Cyrix® 6x86 processor should always use a more powerful fan (ask vendor for proper cooling fan).
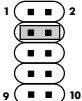
Cyrix® 6x86/6x86L processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
6x86 PR166	3.5				ON ··· ECE 1 2 3 4 5 6 7 8
6x86L PR166	3.4	2.8	1 ··· 2 ··· 9 ··· 10	ON ECE 1 2 3 4 5	ON ··· ECE 1 2 3 4 5 6 7 8
6x86L PR200					

Cyrix® 6x86MX processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
PR166 (66x2)	3.4	2.9			
PR200 (75x2)					
PR233 (75x2.5)					

Cyrix® 6x86MII processors
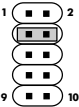
MII 300 (66x3.5)	3.4	2.9			
MII 300 (75x3)					
MII 333 (83x3)					

Note: If you encounter a CPU with different voltage, just go to Section 2.1-3 and look for the proper voltage settings.
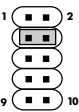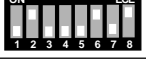
Table 2.3 AMD® processors

AMD® K5 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® K5 processor.

AMD® K5 processors
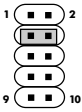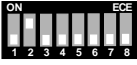
CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
PR133	3.5				
PR166					

AMD® K6 processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
166MHz	3.4	2.9		ON ECE 1 2 3 4 5	ON ECE 1 2 3 4 5 6 7 8
200MHz				ON ECE 1 2 3 4 5	ON ECE 1 2 3 4 5 6 7 8
233MHz	3.4	3.2	1 □ 2 / 9 □ 10	ON ECE 1 2 3 4 5	ON ECE 1 2 3 4 5 6 7 8
266MHz	3.4	2.2		ON ECE 1 2 3 4 5	ON ECE 1 2 3 4 5 6 7 8
300MHz				ON ECE 1 2 3 4 5	ON ECE 1 2 3 4 5 6 7 8

AMD® K6-2 processors

CPU Type	CPU Speed & Voltage				
	VI/O	Vcore	JP5	SW1	SW2
300MHz (100MHz FSB)	3.4	2.2			
350MHz (100MHz FSB)					
400MHz (100MHz FSB)					
333MHz (95MHz FSB)					
380MHz (95MHz FSB)					
300MHz (66MHz FSB)					
333MHz (66MHz FSB)					
366MHz (66MHz FSB)					

Note: If you encounter a CPU with different voltage, just go to Section 2.1-3 and look for the proper voltage settings.

2.1-5 CPU Fan Connector: JFAN1

This connector supports fan with +12V.   When connecting the wire to the connector, always take note that the red wire is the positive and should be connected to the +12V pin and the black one to GND.

GND

+12V

SPEED
N.C.

JFAN1
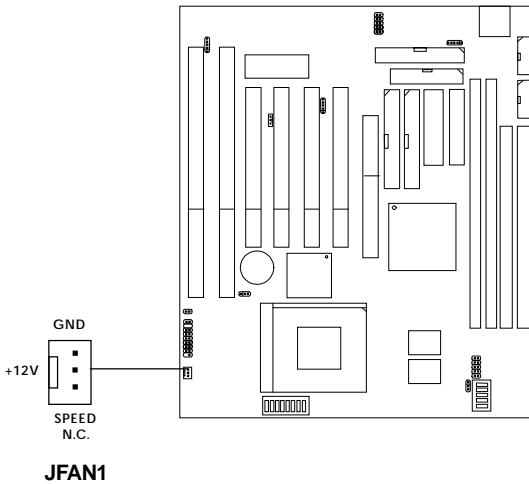
Note: Always consult vendor for proper CPU cooling fan.

2.2 Clear CMOS Jumper: JVBAT1

A battery must be used to retain the mainboard configuration in CMOS RAM. To retain the on-board battery you must always short pins 1-2 of JVBAT1.

JVBAT1
(Default)
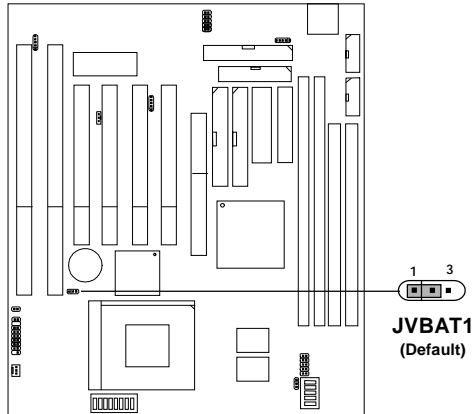
JVBAT1	Function
1 3	**Keep Data**
1 3	**Clear Data**

Note: You can clear CMOS by shorting 2-3 pin, while the system is off.   Leave for about 5 to 10 seconds. Then, return to 1-2 pin position. Avoid clearing the CMOS while the system is on for it will damage the mainboard. Always unplug the power cord from the wall socket.

2.3 Memory Installation

2.3-1 Memory Bank Configuration

The mainboard provides two unbuffered 168-pin DIMM(Double In-Line Memory) or two 72-pin SIMM(Single In-Line Memory) sockets. It supports six memory banks for a maximum of 768MB memory. Each bank supports up to 128MB memory. You can use SIMM from 4MB, 8MB, 16MB, 32MB, 64MB to 128MB, and DIMM from 8, 16, 32, 64,128 to 256MB.

⚠ **WARNING!**
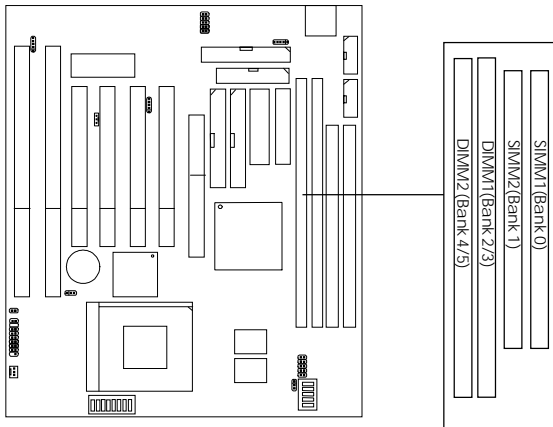
There are two kinds of DIMM specification supported by this mainboard: PC100 and PC66. PC100 DIMM Specs. can only be used with 100MHz CPU Bus Frequency processor.

2.3-2   Memory Installation Procedures:

A. How to install SIMM Module

Notched End
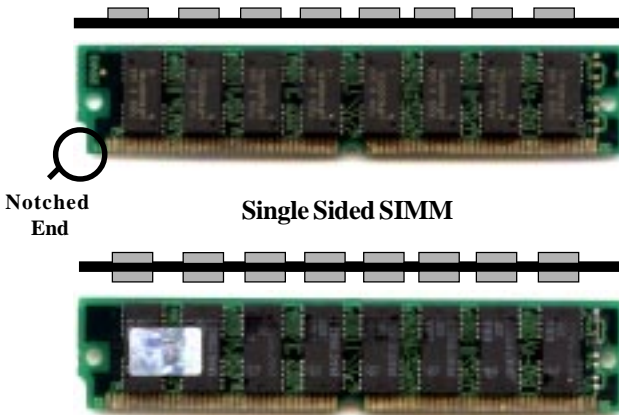
Single Sided SIMM

Double Sided SIMM

1. The SIMM slot has a "*Plastic Safety Tab*" and the SIMM memory module has a "Notched End", so the SIMM memory module can only fit in one direction.

2. Insert the SIMM memory modules into the socket at 45-degree angle. Then push into a vertical position so that it will snap into place.

3. The Mounting Holes and Metal Clips should fit over the edge and hold the SIMM memory modules in place.
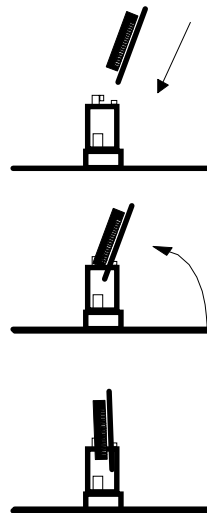
b. How to install a DIMM Module

Single Sided DIMM
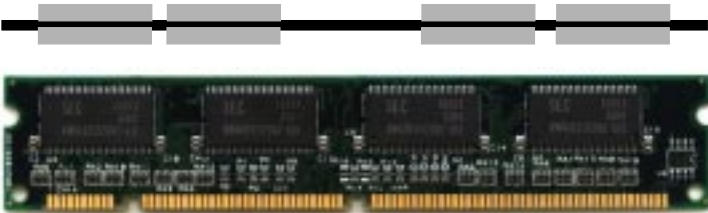
Double Sided DIMM

1. The DIMM slot has two Notch Key called "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
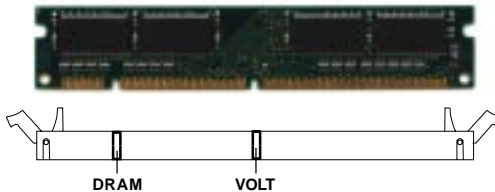
3. Close the plastic clip at the side of the DIMM slot.

2.3-3 Memory Population Rules

1. Make sure that the SIMM banks are using the same type and equal size density memory.

2. To operate properly, at least two 72-pin SIMM module must be installed in the same bank or one 168-pin DIMM module must be installed. The system cannot operate with only one 72-pin SIMM module.

3. This mainboard supports Table Free memory, so memory can be installed on (SIMM1 + SIMM2),(DIMM1), or (DIMM2) in any order.

4. You can mix DIMM and SIMM memory module.

5. Use only 3.3v DIMM memory module.

6. Use only 5v EDO SIMM memory module.

2.4 Case Connector: JFP1

The Power Switch, Reset Switch, Key Lock, Power LED, Speaker and HDD
LED are all connected to the JFP1 connector block.

JFP1
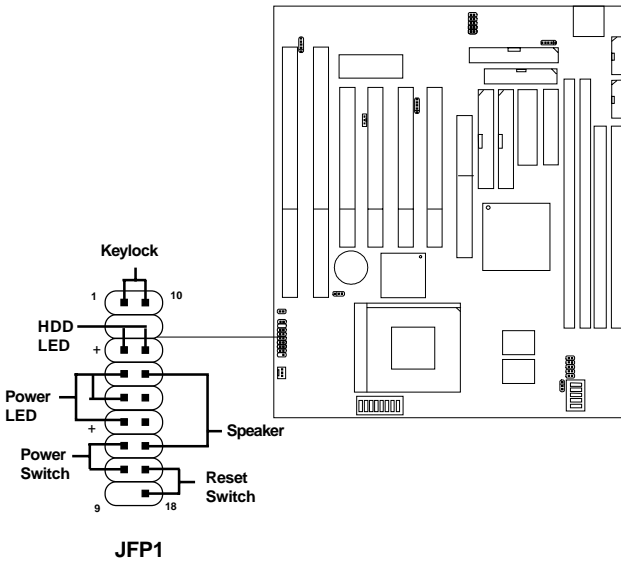
2.4-1 Power Switch

Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

2.4-2 Reset Switch

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.

2.4-3 Keylock

Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

2.4-4 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.

2.4-5 Speaker

Speaker from the system case is connected to this pin.

2.4-6 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.

2.5 Floppy Disk Connector: FDD1

The mainboard also provides a standard floppy disk connector FDD1 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.
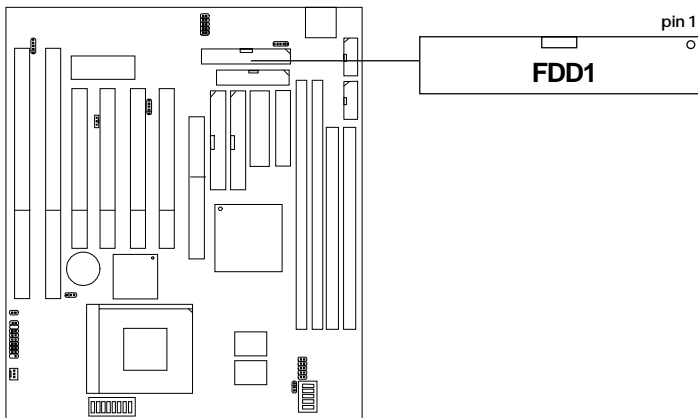
2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides for 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.
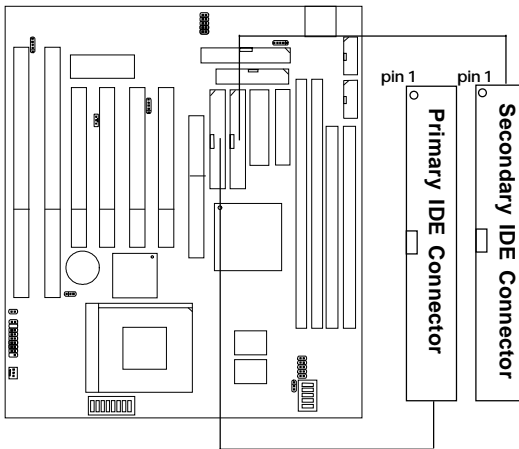
IDE1 (primary IDE connector)

 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 connect a Master and a Slave drive.

2.7 AT Power Supply Connector

This is a standard 12-pin AT-type or PS/2 type connector. Be sure to attach the connectors with the two black wires at the center.
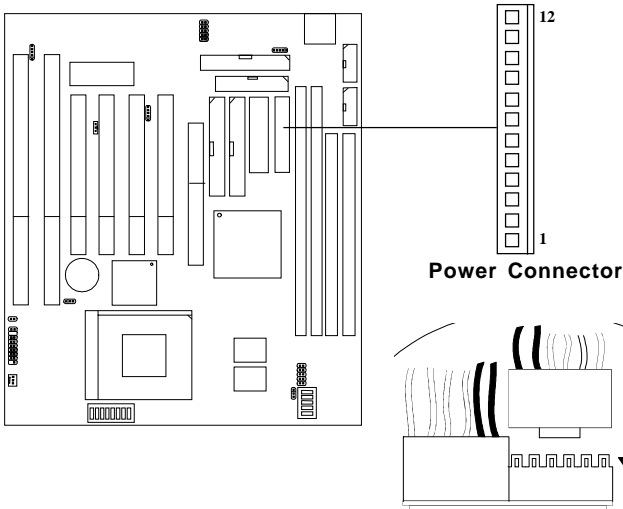
Power Connector

PIN DEFINITION

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

2.8 ATX 20-pin Power Connector

This type of connector already supports the remote ON/OFF function.
However, you need to connect the **Remote Power On/OFF switch (JRMS1).**

**ATX
Power Connector**
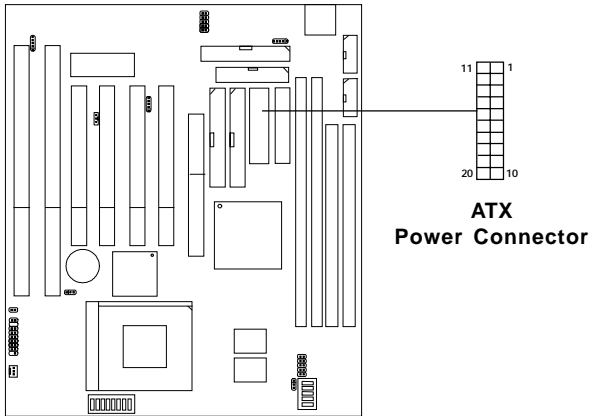
PIN DEFINITION

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

2.9 Serial Port Connectors: COM 1 & COM 2

The mainboard provides two serial port (COM 1 and COM 2) connectors. These two connectors are 16550A high speed communication ports that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into these connectors.
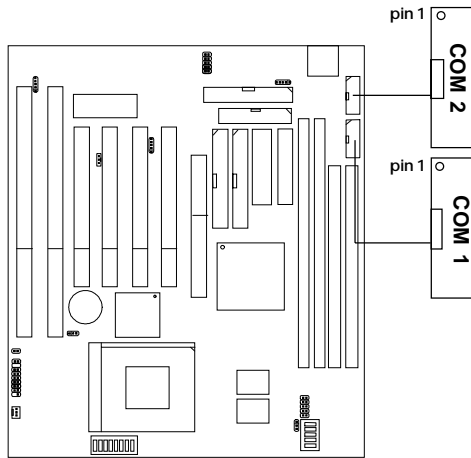
2.10 Parallel Port Connector: LPT1

The mainboard provides a connector for printer. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP).
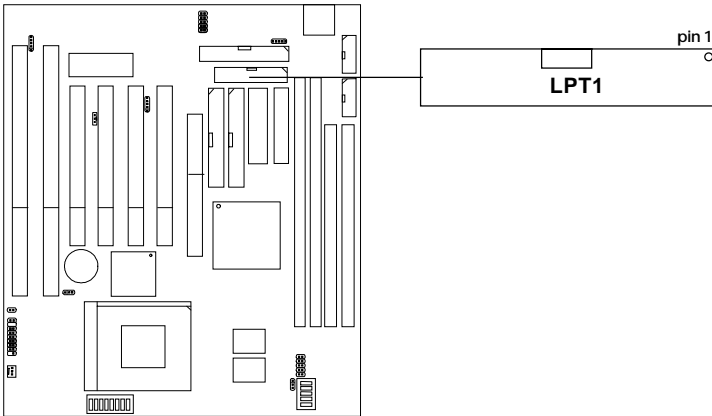
2.11 Infrared Module Connector: JIR1

The mainboard provides a 5-pin infrared connector(JIR1) for IR module.
This connector is for optional wireless transmitting and receiving infrared
module. If you want to use this function, you must configure the setting
through BIOS setup.
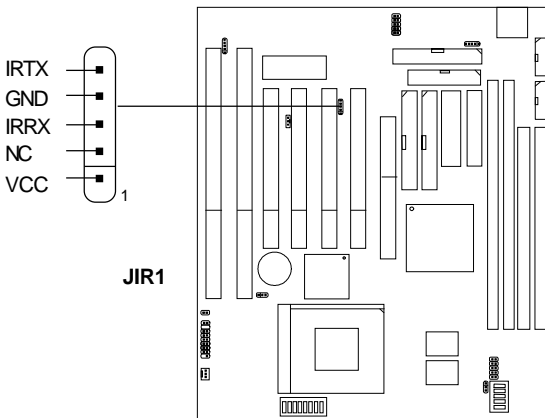
2.12 Keyboard Connector: ATKBC

The mainboard provides a standard AT® keyboard DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.

Pin1
NC

Pin5
CLK

Pin2
VCC

Pin3
DATA

Pin4
GND

**AT® Keyboard
Connector**
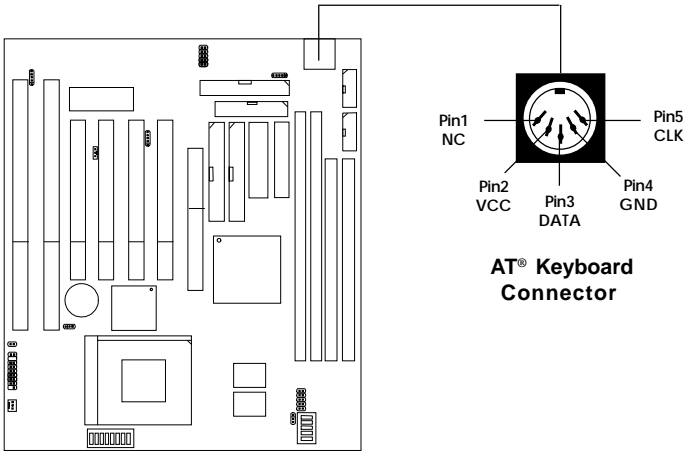
2.13 Mouse Connector: JMS1

The mainboard provides a 5-pin connector for PS/2® mouse cable. You can plug a PS/2® style mouse to PS/2® mouse cable. The connector location is shown below.
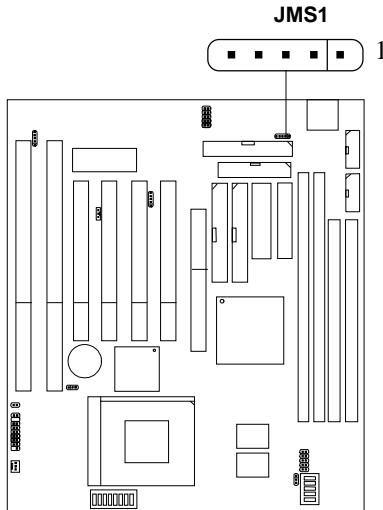
Pin 1	VCC
Pin 2	-
Pin 3	GND
Pin 4	CLK
Pin 5	DATA

2.14 USB Connector: JUSB1

Connect a USB cable to support USB device, such as keyboard and mouse.

JUSB1
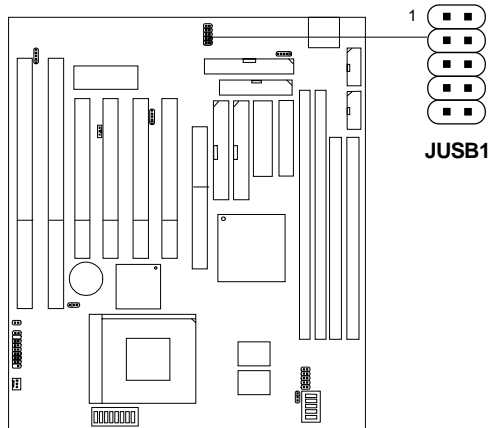
PIN	SIGNAL	DESCRIPTION
1/10	VCC	+5V
2	-Data 0	Negative Data Channel 0
3	+Data 0	Positive Data Channel 0
4/5	GND	Ground
6/7	GND	Ground
8	+Data 1	Positive Data Channel 1
9	-Data 1	Negative Data Channel 1

USB Port Description

2.15 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function.
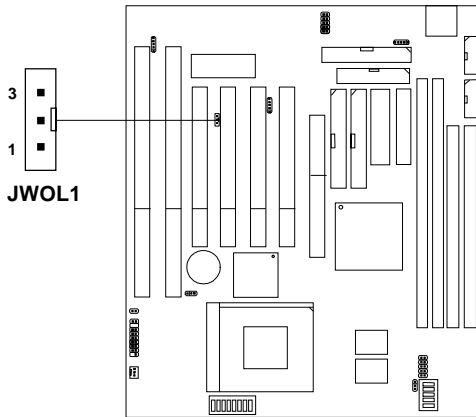
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

Note: LAN wake-up signal is active "high".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(750 ma power supply with 5V Stand-by)

2.16 Modem Wake Up Connector: JMODEM1

The JMODEM1 connector is for use with Modem add-on card that supports the Modem Wake Up function.
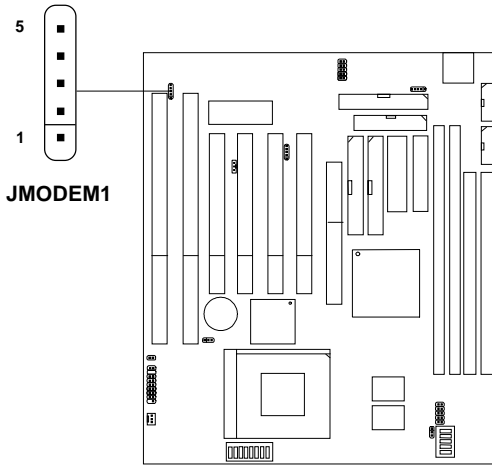
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

Note: Modem wake-up signal is active "low".

Note: To be able to use this function, you need a power supply that provide enough power for this feature.
(750 ma power supply with 5V Stand-by)

2.17 Power Saving Switch Connector: JGS

Attach a power saving switch to JGS. When the switch is pressed, the system immediately goes into suspend mode. Press any key and the system wakes up.
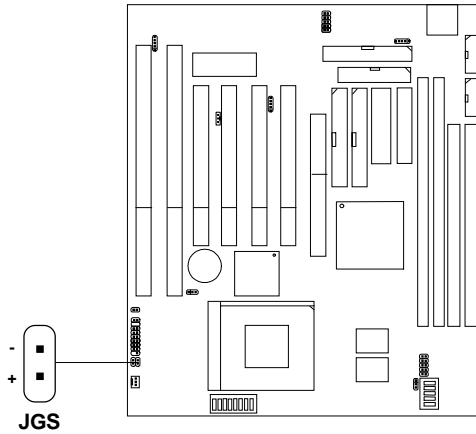
2.18 Power Saving LED Connector: JGL

JGL can be connected with Power Saving LED. LED will lit while the system is in suspend mode.
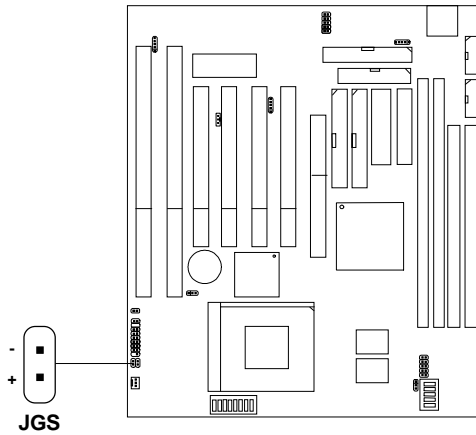
Chapter 3

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> immediately to allow you to enter Setup. The other way to enter Setup is to power on the computer. When the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press <Del> key or simultaneously press <Ctrl>, <Alt>, and <Esc> keys.

PRESS <DEL> TO ENTER SETUP, <ESC> TO SKIP MEMORY TEST

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, <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  (2A5LEM4F)
                 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.

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

Special Features Setup
This function is reserved for System Hardware Monitor.

Integrated Peripherals
Change, set, or disable onboard I/O, IRQ, and DMA assignement.

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

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 catego-ries. 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  (2A5LEM4F)
                         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.  │ Base  Memory:            640K     │ │
 │ │ Drive  B :  None          │  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 (2A5LEM4F)
                  BIOS FEATURES SETUP
                 AWARD SOFTWARE, INC.

 ┌─────────────────────────────────┬──────────────────────────────────┐
 │ Anti-Virus Protection  : 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 Floppy Seek    : Enabled │ DC000-DFFFF Shadow      :Disabled│
 │ Boot up NumLock status : On      │                                  │
 │ Gate A20 Option        : Fast    │                                  │
 │ Memory Parity/ECC Check : Enabled│                                  │
 │ 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 │
 │                                  │ F7 : Load Setup Defaults         │
 │                                  │                                  │
 └─────────────────────────────────┴──────────────────────────────────┘
```

Anti-Virus Protection

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. The settings are Enabled or Disabled.

> **!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 (i.e., DOS). The settings are A,C,SCSI/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, LS/ZIP,C. 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 Floppy Seek

During POST, BIOS will determine if the floppy disk drive installed is 40 or 80 tracks. 360K type is 40 tracks while 720K, 1.2M, and 1.44M are all 80 tracks.

Enabled(default) BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks. Take note that BIOS can not tell from 720K, 1.2M , or 1.44M drive type as they are all 80 tracks.

Disabled BIOS will not search for the type of floppy disk drive by track number. There will be no warning message if the drive installed is 360K.

Boot Up NumLock Status

The default value is On.

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

Gate A20 Option

Normal The A20 signal is controlled by keyboard controller or chipset hardware.
Fast (default) The A20 signal is controlled by port 92 or chipset specific method.

Memory Parity/ECC Check

Set this option to Enabled, to use the Parity/ECC function. This is used with DIMM module. The default setting is Disabled.

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

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/E8000 - EFFFF 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(2A5LEM4F)
                CMOS  SETUP  UTILITY
              CHIPSET  FEATURES  SETUP
```

```
┌─────────────────────────────────────────────────────────────────────┐
│ Bank 0/1 DRAM Timing    :FP/EDO70ns│ Auto Detect DIMM/PCI Clk :Enabled │
│ Bank 2/3 DRAM Timing    :FP/EDO70ns│ Spread Spectrum          :Disabled│
│ Bank 4/5 DRAM Timing    :FP/EDP70ns│                                   │
│ SDRAM Cycle Length      :3         │                                   │
│ DRAM Read Pipeline      :Enabled   │                                   │
│                                    │                                   │
│ Cache Rd+CPU WtPipeline :Enabled   │                                   │
│ Cache Timing            :Fast      │                                   │
│ Video BIOS Cacheable    :Enabled   │                                   │
│ System BIOS Cacheable   :Enabled   │                                   │
│ Memory Hole at 15MB Addr:Disabled  │                                   │
│ AGP Aperture Size       :64M       │                                   │
│ Onchip USB              :Enabled   │                                   │
│ USB Keyboard Support    :Disabled  │                                   │
│                                    ├───────────────────────────────────┤
│                                    │ Esc : Quit   ↑↓→←: Select item    │
│                                    │ F1 : Help PU/PD/+/- : modify      │
│                                    │ F5 : Old Value(Shift) F2 : Color  │
│                                    │ F7 : Load Setup Defaults          │
│                                    │                                   │
└─────────────────────────────────────────────────────────────────────┘
```

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

Bank 0/1 DRAM Timing
Bank 2/3 DRAM Timing
Bank 4/5 DRAM Timing
        The DRAM timing is controlled by the DRAM Timing Registers. The Timings programmed into this register are dependent on the system design. Slower rates may be required in certain system designs to support loose layouts or slower memory.

SDRAM Cycle Length
        This item allows you to select the SDRAM cycle length. The settings are 2 or 3.

DRAM Read Pipeline
        This item sets the timing for pipeline burst mode read from DRAM. The default setting is Enabled.

Cache Rd+CPU wt Pipeline
        This item can enabled the pipelining of Cache read and CPU write cycle. The default setting is Enabled.

Cache Timing
        This field allows you to determine the Cache burst mode timing.
        Fast   Cache burst mode timing are 31112111.
        Fastest   Cache burst mode timing are 31111111.

Video BIOS Cacheable
        Select Enabled allows caching of the system BIOS ROM at C0000h-F7FFFh, resulting in better video performance. However, if any program writes to this memory area, a system error may result.
        Enabled   Video BIOS access cached
        Disabled   Video BIOS access not cached

System BIOS Cacheable

Select Enabled allows caching of the system BIOS ROM at F000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

Enabled	BIOS access cached
Disabled	BIOS access not cached

Memory Hole At 15Mb Addr

In order to improve performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16 MB.

Enabled	Memory hole supported.
Disabled	Memory hole not supported.

AGP Aperture Size (MB)

Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

Onchip USB

Set this option to Enable or Disable the onchip USB controller. The default setting is Enabled.

USB Keyboard Support

Set this option to Enable or Disable the USB keyboard/mouse support. The default setting is Enabled.

Auto Detect DIMM/PCI Clk

This item allows the clock generator to auto-detect the interface of DIMM/PCI. If there's no DIMM/PCI card present, then the clock will be shut down. The default setting is Enabled.

Spread Spectrum

This item allows you to select the clock generator Spread Spectrum function. When overclocking the processor, always set this item to Disabled. The default is enabled.

3.7 Power Management Setup

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

```
                ROM  PCI/ISA  BIOS  (2A5LEM4F)
                    POWER  MANAGEMENT  SETUP
                     AWARD  SOFTWARE,  INC.
 ┌──────────────────────────────────────────────────────────────────┐
 │ ACPI Function      :Enabled     Primary INTR        :ON           │
 │ Power Management   :User Define  IRQ3(COM2)          :Primary      │
 │ PM Control by APM  :Yes          IRQ4(COM1)          :Primary      │
 │ Video Off Option   :Suspend>Off  IRQ5(LPT2)          :Primary      │
 │ Video Off Method   :V/H SYNC+blank IRQ6(Floppy Disk) :Disabled     │
 │ Soft-Off by PWR-BTTN:Delay 4sec  IRQ7(LPT1)          :Primary      │
 │                                  IRQ8(RTC Alarm)     :Disabled     │
 │ ***PM Timers***                  IRQ9(IRQ2 Redir)    :Primary      │
 │ HDD Power Down     :Disabled     IRQ10(reserved)     :Primary      │
 │ Doze Mode          :Disabled     Reserved            :Primary      │
 │ Suspend Mode       :Disabled     IRQ12(PS/2 mouse)   :Primary      │
 │                                  IRQ13(Coprocessor)  :Primary      │
 │ ***PM Events***                  IRQ14(Hard Disk)    :Primary      │
 │ VGA                :OFF          IRQ15(Reserved)     :Disabled     │
 │ LPT&COM            :LPT/COM                                        │
 │ HDD&FDD            :OFF                                            │
 │ DMA/master         :OFF          ┌──────────────────────────────┐ │
 │ Modem Ring Resume  :Disabled     Esc : Quit   ↑↓→←: Select item  │
 │ RTC Alarm Resume   :Disabled     F1 : Help PU/PD/+/- : modify    │
 │                                  F5 : Old Value(Shift) F2 : Color │
 │                                  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 meanings of each options.

ACPI Function

During Enabled, this will support ACPI function.

Power Management

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® 95/98, Windows® NT, etc.

Video Off Option

This option allows you to determine when to activate the video off feature to monitor the power management. The settings are Video Off after Suspend/All modes/Always On.

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.

Soft-off by PWRBTN

This field is for the soft-off function setting. When the board utilizes an ATX power supply, two types of settings are offered: Delay 4 sec. and Instant-off. When the setting is Delay 4 sec., users can power off the system by pressing POWER-ON button for 4 seconds. However, if users press POWER-ON button for less than 4 seconds, the system will enter suspend mode only. When the setting is Instant-off, pressing the POWER-ON button once will power off the system, and pressing again will power on the system.

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

Doze Mode

Disable   System will never enter DOZE mode.

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

Suspend   Mode

Disable   System will never enter SUSPEND mode.

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

PM Events

Award BIOS defines 7 PM events in the power management mode (Doze
&suspend). The user can initialize any PM Events to be Enable or Disable.
When the system detects all of the enabled events do not have any activity,
it will start the system Doze timer first if the Power Management is not
Disabled. Once the system Doze timer is timed out, it will process doze
power saving procedure by starting the system suspend timer. When the
suspend timer times out, all of the CPU clock will stop by dropping system
clock down to zero and remains this way until any one of the enabled events
occurrs.

VGA   **ON/OFF**
LPT &COM   **NONE/LPT/COM/LPT&COM**
HDD & FDD   **ON/OFF**
DMA/Master   **ON/OFF**

Modem Ring Resume

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

Note: If you have change the setting, you must let the system boot up until
it goes to the operating system, before this function will work.

RTC Alarm Resume

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 day of the month the
                               system will boot up. Set to 0, to boot every day.
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, before this function will work.

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 meanings of each options.

```
              ROM  PCI/ISA  BIOS  (2A5LEM4F)
              PNP/PCI  CONFIGURATION  SETUP
                  AWARD  SOFTWARE,  INC.
```

```
┌─────────────────────────────────────┬─────────────────────────────────────┐
│ PnP OS Installed        :No          │ CPU to PCI Write Buffer  :Enabled   │
│ Resources Controlled By :Manual      │ PCI Dynamic Bursting     :Enabled   │
│ Reset Configuration Data :Disabled   │ PCI Master 0 WS Write    :Enabled   │
│ ACPI I/O Device Mode    :Enabled     │ PCI Delay Transaction    :Enabled   │
│                                      │ PCI Master Read Prefetch :Enabled   │
│ IRQ-3 assigned to       :Legacy ISA  │ PCI#2 Access#1 Retry     :Enabled   │
│ IRQ-4 assigned to       :Legacy ISA  │ AGP Master 1 WS Write    :Enabled   │
│ IRQ-5 assigned to       :PCI/ISA PnP │ AGP Master 1 WS Read     :Disabled  │
│ IRQ-7 assigned to       :PCI/ISA PnP │                                     │
│ IRQ-9 assigned to       :PCI/ISA PnP │ PCI IRQ Actived By       :Level     │
│ IRQ-10assigned to       :PCI/ISA PnP │ Assign IRQ for USB       :Enabled   │
│ IRQ-11assigned to       :PCI/ISA PnP │ Assign IRQ for VGA       :Enabled   │
│ 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 │ F7 : Load Setup Defaults            │
│ DMA-7assigned to        :PCI/ISA PnP │                                     │
└─────────────────────────────────────┴─────────────────────────────────────┘
```

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 or 98. 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 resource 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 feature 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 : PCI/ISA PnP
IRQ-9   assigned to : PCI/ISA PnP
IRQ-10 assigned to : PCI/ISA PnP
IRQ-11 assigned to : PCI/ISA PnP
IRQ-12 assigned to : PCI/ISA PnP
IRQ-14 assigned to : PCI/ISA PnP

IRQ-15 assigned to : PCI/ISA PnP
DMA-0 assigned to : PCI/ISA PnP
DMA-1 assigned to : PCI/ISA PnP
DMA-3 assigned to : PCI/ISA PnP
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.

CPU to PCI Write Buffer
This item allows you to Enabled or Disabled the CPU to PCI Write Buffer. The default setting is Enabled.

PCI Dynamic Bursting
This setting allows you to Enabled or Disabled PCI Dynamic Bursting function. The default setting is Enabled.

PCI Master 0 WS Write
Enabled   zero wait state response.
Disabled   one wait state response.
The default setting is Enabled.

PCI Delay Transaction
This item allows you to Enabled to Disabled the PCI Delay Transaction.

PCI Master Read Prefetch
This item allows you to Enabled or Disabled the PCI Master Read Prefetch.

PCI#2 Access #1 Retry

Enabled   PCI#2 will be disconnected, if max retries are attempted without success.

Disabled   PCI#2 will not be disconnected until access is finish.

PCI IRQ Activated By

This sets the method by which the PCI Bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless advised otherwise by your system's manufacturer. The settings are level or edge.

Assign IRQ for USB

Set to Enabled when USB port will be used. Set to Disable if the USB port will not be used.

Assign IRQ for VGA

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

3.9 Load 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 (optional)

This Special Features Setup is used by System Hardware Monitor chipset.
You can manually change the value of each option.

```
            ROM  PCI/ISA  BIOS  (2A5LEM4F)
               INTEGRATED  PERIPHERALS
                 AWARD  SOFTWARE,  INC.

 ┌──────────────────────────────┬──────────────────────────────┐
 │ ******** POST SHOWING ******** │ ********* SYSTEM MONITOR ******** │
 │ CPU Fan Detected      :Enabled │                              │
 │                              │                              │
 │                              │ CPU Fan RPM           :6367  │
 │ Voltage Detected      :Enabled │ System Temperature    :26°C/78°F │
 │ Vcore Voltage Detected :Enabled │ CPU Temperature       :28°C/82°F │
 │ Vio Voltage Detected  :Enabled │ CPU Critical Temp     :Disabled │
 │ +3.3V Voltage Detected :Enabled │ Shutdown Temp         :Disabled │
 │ +5.0V Voltage Detected :Enabled │                              │
 │ + 12V Voltage Detected :Enabled │                              │
 │ - 12V Voltage Detected :Enabled │                              │
 │ -5.0V Voltage Detected :Enabled │                              │
 │                              │                              │
 │                              ├──────────────────────────────┤
 │                              │ Esc : Quit   ↑↓→←: Select item │
 │                              │ F1 : Help PU/PD/+/- : modify │
 │                              │ F5 : Old Value(Shift) F2 : Color │
 │                              │ F6 : Load BIOS Defaults       │
 │                              │ F7 : Load Setup Defaults      │
 └──────────────────────────────┴──────────────────────────────┘
```

CPU Fan Detected/Voltage Detected/Vcore Voltage Detected/
Vio Voltage Detected/+3.3V Voltage Detected/+5.0 Voltage
Detected/+12V Voltage Detected/-12V Voltage Detected/-5.0
Voltage Detected

During Enabled, this will show the CPU/FAN voltage chart during
system boot up. During Disabled, this will not show.

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

System Temperature/CPU Temperature
>   This will show the System and CPU temperature.

CPU Critical Temp
>   This option is for setting the critical temperature level for the processor. When the processor reach the temperature you set, this will reduce the load on the processor.

Shutdown Temp
>   This option is for setting the Shutdown temperature level for the processor. When the processor reach the temperature you set, this will shutdown the system. This function only works with Windows® 95 operating system.

3.11 Integrated Peripherals

```
              ROM  PCI/ISA  BIOS  (2A5LEM4F)
                  INTEGRATED  PERIPHERALS
                   AWARD  SOFTWARE,  INC.
```

```
┌─────────────────────────────────────────────────────────────────────┐
│ Onchip IDE First Channel :Enabled  Onboard Parallel Mode   :378/IRQ7  │
│ Onchip IDE Second Channel:Enabled  Parallel Port Mode      :ECP/EPP   │
│ IDE Prefetch Mode        :Enabled  ECP Mode Use DMA        :3         │
│ IDE HDD Block Mode       :Enabled  EPP Mode Select         :EPP1.9    │
│ IDE Primary Master PIO   :Auto                                        │
│ IDE Primary Slave PIO    :Auto                                        │
│ IDE Secondary Master PIO :Auto                                        │
│ 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                                        │
│ Init Display First       :PCI Slot                                    │
│                                                                       │
│ Onboard FDD controller   :Enabled                                     │
│ Onboard Serial Port 1    :Auto    Esc : Quit   ↑↓→←: Select item      │
│ Onboard Serial Port 2    :Auto    F1 : Help PU/PD/+/- : modify        │
│ UART2 Mode               :Standard F5 : Old Value(Shift) F2 : Color   │
│                                   F7 : Load Setup Defaults            │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

Onchip IDE First Channel
Enabled/Disabled

Onchip IDE Second Channel
Enabled/Disabled   The system provides for a 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 install 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.

IDE Prefetch Mode
    Enabled/Disabled

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 can not 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).

Init Display First

This item allows you to determine whether AGP or PCI slot will show display first. This option is only used with Windows® 98 support for multiple displays.

Onboard FDD 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 IRQ4

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.

UART2 Mode

This item allow you to determine which Infra Red (IR) function of onboard I/O chip. If you choose IR function, the COM 2 will not function.

Onboard Parallel Port

Disabled
(3BCH/IRQ7)/
(278H/IRQ5)/
(378H/IRQ7)

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/IRQ7   Line Printer port 1

Onboard Parallel Mode

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

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.

3.12 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:

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

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:

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

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 when you turn on your machine next time.

3.13 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 and 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) 1998 American Megatrends Inc.
A5I84MS VXXX XXXXXX

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)  1998  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  (optional)
                Auto-Detect  Hard  Disks
                  Change  User  Password
              Change  Supervisor  Password
                Change  Language  Setting
        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 3.2 to 3.7 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)1998  American  Megatrends,Inc.All  Rights  Reserved

Date (mm/dd/yyyy): Fri March 20, 1998
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


Month    : Jan-Dec                      ESC:Exit :Sel
Day      : 01-31                        PgUp/PgDn:Modify
Year     : 1901-2099                    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)  1998  American  Megatrends,  Inc.  All  Rights
                         Reserved
Quick Boot                    Disabled    │ Available  Options:
Pri Master ARMD Emulated      Auto        │ Enabled
Pri Slave ARMD Emulated       Auto        │ Disabled
Sec Master ARMD Emulated      Auto        │
Sec Slave ARMD Emulated       Auto        │
Ist Boot Device               Floppy      │
2nd Boot Device               IDE 0       │
3rd Boot Device               CD-ROM      │
Try Other Boot Devices        Yes         │
Initialize I2O Devices        No          │
Floppy Access Control         Read-Write  │
Hard Disk Access Control      Read-Write  │
S.M.A.R.T. For Hard Disk      Disabled    │
BootUp Num-Lock               On          │
PS/2 Mouse Support            Enabled     │
Primary Display               Abset       │
Password Check                Setup       │
Boot to OS/2                  No          │
Internal Cache                Writeback   │
External Cache                Writeback   │
System BIOS Cacheable         Enabled     │
C000, 32k Shadow              Cached      │ ESC:Exit  :Sel
C800, 16k Shadow              Disabled    │ PgUp/PgDn:Modify
CC00, 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:

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.

Pri Master ARMD Emulated as/Pri Slave ARMD Emulated as/Sec Master ARMD Emulated as/Sec Slave ARMD Emulated as
If set to Auto, the default emulation type will depend on the ARMD drive. The default emulation type is Floppy for LS120, HD for MO, and HD for ZIP drive.

1st Boot Device/2nd Boot Device/3rd Boot Device
This option sets the sequence of boot drives.
The settings are:

1st IDE-HDD	The system will boot from the first HDD.
2nd IDE-HDD	The system will boot from the Second HDD.
3rd IDE-HDD	The system will boot from the Third HDD.
4th IDE-HDD	The system will boot from the Fourth HDD.
Floppy	The system will boot from floppy drive.
ARMD-FDD	The system will boot from IOMEGA drive.
ARMD-HDD	The system will boot from LS-120 drive.
ATAPI CDROM	The system will boot from the CD-ROM.
SCSI	The system will boot from the SCSI.
Network	The system will boot from the Network drive.
Disable	Disable this sequence.

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

Initialize I2O Devices

If set to Yes, BIOS will initialize I2O processors, I2O storage device, and provide INT13 support for I20 storage device. If set to No, BIOS will not initialize I2O processors and I2O storage device.

Floppy Access Control

This option sets the Floppy to Read-only or Read-Write.

Hard Disk Access Control

This option sets the Hard Disk to Read-only or Read-Write. During the Read-only, if you try to write on the Hard disk, the system wil halt.

S.M.A.R.T. for Hard Disks

This option sets the SMART Function for the hard disk. The hard disk need to have SMART function for this feature to work.

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. The end user can then 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.

PS/2® Mouse Support

When this option is set to Enabled, AMI® BIOS supports a PS/2® mouse. The settings are Enabled and Disabled. The Optimal and Fail-Safe default settings are Enabled.

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 to permit the BIOS to run properly, if OS/2® is to be used with > 64MB of DRAM. The settings are Enabled or Disabled. The Optimal and Fail-safe default settings are Disabled.

Internal Cache/External Cache

This option selects the type of caching algorithm used by AMI® BIOS and the CPU for L1 cache memory(internal/external to the CPU). The settings are Writeback - a writeback algorithm is used, Write-through - a write-through algorithm is used or Disabled - AMI® BIOS does not specify the type of caching algorithm. The algorithm is set by the CPU. The Optimal and Fail-Safe default settings are Writeback.

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
     (C) 1998 American Megatrends, Inc. All Rights
                      Reserved
 USB Function                    Disabled    Available  Options:
 USB KB/Mouse Legacy Support     Disabled    Enabled
 Memory Hole                     Disabled    Disabled
 Cache Read Pipeline             Enabled
 CPU Write Pipeline              Enabled
 DRAM Read Pipeline              Enabled
 Linear Burst                    Disabled
 CAS Latency                     2 Clk
 ECC Mode                        Disabled
 AGP Aperture Size               64MB
 Delay Transaction               Enabled
 CPU to PCI Write Buffer         Enabled
 PCI Dynamic Bursting            Enabled
 PCI Master O W/S Write          Enabled
 PCI Delay Transaction           Enabled
 CLKGen for PCI Slot/DIMM        Yes



                                             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:

USB Function
Set this option to Enable or Disable the onchip USB controller. The default setting is Disabled.

USB KB/Mouse Legacy Support
Set this option to Enable or Disable USB Keyboard/Mouse. The default setting is Disabled

Memory Hole
This option allows the end user to specify the location of a memory hole. The cycle matching the selected memory hole will be passed to the ISA bus. If Enabled, the selected hole is not remapped.

Cache Read Pipeline
This item allows you to enable or disable the SRAM read pipeline function.

CPU Write Pipeline
This option allows you to Enable or Disable the CPU write pipeline function.

DRAM Read Pipeline
This item allows you to Enable or Disable the DRAM Read Pipeline function.

Linear Burst
This item allows you to Enable or Disable the linear burst function.

CAS Latency
This item allows you to select the SDRAM CAS Latency Time. The settings are 2 CLK or 3 CLK.

ECC Mode

Select Enabled or Disabled ECC (Error Correcting Code), according to the type of the installed DRAM.

AGP Aperture Size

This option determines the effective size of the graphics aperture used in the particular PAC configuration. The AGP aperture is memory-mapped, while graphics data structure can reside in a graphics aperture. The aperture range should be programmed as not cacheable in the processor cache, accesses with the aperture range are forwarded to the main memory, then PAC will translate the original issued address via a translation table that is maintained on the main memory. The option allows the selection of an aperture size of 4MB, 8MB, 16MB, 32MB, 64MB, 128MB, and 256MB.

Delay Transaction

During Enabled, the chipset delay transaction mechanism will enable the chipset to target the PCI transaction. A read cycle from Host to PCI is immediately retrieved due to any pending PCI to DRAM cycle. During Disabled, a read cycle from Host to PCI is waited until time-out due to any pending PCI to DRAM cycle.

CPU to PCI Write Buffer

This item allows you to Enable or Disable the CPU to PCI Write Buffer. The default setting is Enabled.

PCI Dynamic Bursting

This setting allows you to Enable or Disable PCI Dynamic Bursting Function. The default setting is Enabled.

PCI Master 0 WS Write

Enabled   Zero wait-state response
Disabled   One wait-state response
The default setting is Enabled.

PCI Delay Transaction

This item allows you to Enable or Disable the PCI Delay Transaction.

ClkGen for PCI Slot/DIMM

This item allows the clock generator to auto-detect the interface of PCI/DIMM. If there's no PCI/DIMM present, the clock will be shutdown.

4.5 Power Management Setup

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

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

ACPI Aware OS                     Enabled    Available  Options:
Power  Management  /  APM         Disabled   Enabled
Green  PC Monitor  Power  State   Stand By   Disabled
Video  Power  Down Mode           Suspend
Hard Disk Power Down Mode         Stand By
Standby Time Out                  1
Suspend Time Out                  1
Throttle  Slow  Clock  Ratio      50-62.5%
Modem Use IRQ                     N/A
Display  Activity                 Ignore
IRQ3                              Monitor
IRQ4                              Monitor
IRQ5                              Ignore
IRQ7                              Monitor
IRQ9                              Ignore
IRQ10                             Ignore
IRQ11                             Ignore
IRQ13                             Ignore
IRQ14                             Monitor
IRQ15                             Ignore
Power  Button  Function           Suspend
PWR Status LED
Ring  Resume From  Soft-Off       Disabled
LAN Resume From Soft-OFf          Disabled
RTC Alarm Resume From Soft-Off    Disabled
RTC Alarm Date                    15
RTC Alarm Hour                    12         ESC:Exit  :Sel
RTC Alarm Minute                  50         PgUp/PgDn:Modify
RTC Alarm Second                  30         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 Power Management Setup, press <ESC> to go back to the main menu.

Description of the item on screen follows:

ACPI Aware OS
During Enabled, this will support ACPI function.

Power Management/APM
Set this option to Enabled to enable the chipset's power management features and APM(Advanced Power Management). The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are 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, or Suspend. 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.

Standby Time Out

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, 4 min, 8 min, 10 min, 20 min, 30 min, 40 min, 50 min, or 60 min. The Optimal and Fail-Safe default settings are Disabled.

Suspend Time Out

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, 4 min, 8 min, 10 min, 20 min, 30 min, 40 min, 50 min, or 60 min. The Optimal and Fail-Safe default settings are Disabled.

Throttle 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.

Modem Use IRQ

This indicates which IRQ no. will be used by the Modem(if there is a Modem).

Display Activity/IRQ3/IRQ4/IRQ5/IRQ7/IRQ9/IRQ10/ IRQ11/IRQ13/IRQ14/IRQ15

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.

Power Button Function

During Suspend, 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 On/Off, the system will turn off once you push the switch.

PWR Status LED

This allows you to select the type of power status LED.

Ring Resume from Soft-Off/LAN Resume from Soft-Off

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

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.

RTC Alarm Resume From Soft-Off

This function is for setting the Date, Hour, Minute, and Second for your computer to boot up. During Disabled, you cannot use this function. During Enabled, Choose the Date, Hour, Minute, and Second:

RTC Alarm Date	Choose which day the system will boot up.
RTC Alarm Hour	Choose which hour the system will boot up.
RTC Alarm Minute	Choose which minute the system will boot up.
RTC Alarm Second	Choose which 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.

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
       (C) 1998 American Megatrends, Inc. All Rights
                          Reserved
  Plug and Play Aware O/S          No          Available  Options:
  Clear  NVRAM                     Enabled     Enabled
  PCI Latency Timer (PCI Clocks)   64          Disabled
  PCI VGA Palette Snoop            Disabled
  PCI IDE BusMaster                Enabled
  OffBoard PCI IDE Card            Auto
  OffBoard PCI IDE Primary IRQ     Disabled
  OffBoard PCI IDE Secondary IRQ   Disabled
  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                             PCI/PnP
  IRQ4                             PCI/PnP
  IRQ5                             PCI/PnP
  IRQ7                             PCI/PnP
  IRQ8                             PCI/PnP
  IRQ9                             PCI/PnP
  IRQ10                            PCI/PnP
  IRQ11                            PCI/PnP     ESC:Exit  :Sel
  IRQ12                            PCI/PnP     PgUp/PgDn:Modify
  IRQ14                            PCI/PnP     F2/F3:Color
  IRQ15                            PCI/PnP
```

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 or 98 is PnP-aware. The settings are Yes or No. The Optimal and Fail-Safe default settings No.

Clear NVRAM

During Enabled, this option will reset 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

This setting allows you to Enable or Disable PCI IDE Busmaster function.

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.

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

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.

4.7 Peripheral Setup

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

```
           AMIBIOS  SETUP  -  PERIPHERAL  SETUP
     (C)  1998  American  Megatrends,  Inc.  All  Rights
                        Reserved

OnBoard  FDC                   Enabled      Available  Options:
OnBoard  Serial  Port1         3F8h/COM1    Enabled
OnBoard  Serial  Port2         2F8h/COM2    Disabled
OnBoard  Parallel  Port        378
  Parallel  Port  Mode         ECP
  EPP  Version                 N/A
  Parallel  Port  IRQ          7
  Parallel  Port  DMA  Channel 3
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	Onboard FDC to be set at
FDC exist	Disabled
none FDC exist	Enabled

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

Onboard Serial Port 1/Onboard Serial Port 2

Choose 3F8, for the BIOS to automatically detect the device.

If the ISA add-on card has				Onboard 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.*

Onboard Parallel Port

Choose Auto, the BIOS automatically assigned onboard parallel port to the available parallel port or disabled.

If the ISA add-on card has			Onboard parallel port to be set as	
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.*

EPP Version

This option is for setting which EPP version will be used. The settings are 1.7 and 1.9.

Parallel Port Mode

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

Parallel Port IRQ

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

Onboard 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 onboard parallel port on ECP mode.

Onboard IDE

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

4.8 Hardware Monitor Setup (optional)

The Hardware Monitor Setup is used to monitor the Current CPU temperature, CPU Fan speed, Chassis Fan Speed, Power fan speed, Vcore, etc.

```
        AMIBIOS  SETUP  -  HARDWARE  MONITOR  SETUP
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                       Reserved

-=System Hardware Monitor=-              Available  Options:
System  Thermal                Ignore   Enabled
Thermal Slow Clock Ratio       50-62.5% Disabled
CPU  Critical  Temperature     40°c/104°f
  Current  CPU  Temperature    30°c/100°f
  Current  CPU  Fan  Speed     5273RPM
  Current  Chassis Fan  Speed  0 RPM
  Current  Power Fan  Speed    0 RPM
  Vcore                        2.2V
  Vtt                          1.5V
  Vio                          3.3V
  +5,000V                      +5V
  +12,000V                     +12V
  -12,000V                     -12V
  -5,000V                      -5V




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