Chapter 1

INTRODUCTION

The ATX LX11 mainboard is a high-performance personal computer mainboard based on the Socket 370 Intel® Celeron™ processor. The Intel® Celeron™ processor supports MMX™ (Multimedia Extension) technology.

The mainboard uses the highly integrated Intel® 82443LX AGP chipset to support the PCI/ISA and Green standards, and to provide the Host/AGP bridge. The Intel® 82371EB chipset integrates all system control functions such as ACPI (Advanced Configuration and Power Interface). The ACPI provides more Energy Saving Features for the OSPM(OS Direct Power Management) function. The Intel® 82371EB chipset also improves the IDE transfer rate by supporting Ultra DMA/33 IDE that transfers data at the rate of 33MB/s.

The mainboard also supports the System Hardware Monitor Controller as an optional function. Its functions include: CPU /power supply/chassis fan revolution detect, CPU/system voltage monitor, system temperature monitor, and chassis intrusion detect(optional).

1.1 Mainboard Features

CPU
- Socket 370 for Intel®Celeron™ processor.
- Support 300MHz, 333MHz, 366MHz, 400MHz, 466MHz and faster.

Chipset
- Intel®82440LX chipset.

Clock Generator
- 66.6/68MHz clocks are supported
- 75/83MHz are only used for overclocking.

Main Memory
- Support six memory banks using three 168-pin unbuffered DIMM.
- Support a maximum memory size of 384MB for EDO/SDRAM
- Support 3.3v Extended Data Output (EDO) and SDRAM DIMM.

Slots
- One AGP (Accelerated Graphics Port) slot.
    - AGP specification
    - AGP 66/133MHz 3.3v device support
- Five 32-bit Master PCI Bus slots and two 16-bit ISA bus slots (wherein one PCI/ISA slot is shared)
    *See Chapter 2-24 for further details on PCI slots.
- Support 3.3v/5v PCI bus Interface.

On-Board IDE
- An IDE controller on the Intel®82371EB PCI Chipset 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.

Audio (Optional)
- Creative®ES1373
  - PCI 2.1 compliant
  - PC97/PC98 specification compliant
  - 3D audio effects.
  - 64-voice wavetable synthesizer
  - Direct Sound Hardware Accelerator
  - Direct Music Hardware Accelerator
  - Full-Duplex stereo

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
- ATX Form Factor : 30.5cm(L) x 19cm(W) x 4 layers PCB

Mounting
- 6 mounting holes.

System Hardware Monitor (optional)
- CPU/Power Supply/Chassis Fan Revolution Detect
- CPU Fan Control (the fan will automatically stop when the system enters suspend mode)
- System Voltage Detect
- CPU Overheat Warning.
- Display Actual Current Voltage

Other Features
- Keyboard Password Wake-Up
- LAN Wake-UP
- Internal/External Modem Wake-Up
- SB_Link Ready

1.2 Mainboard Layout
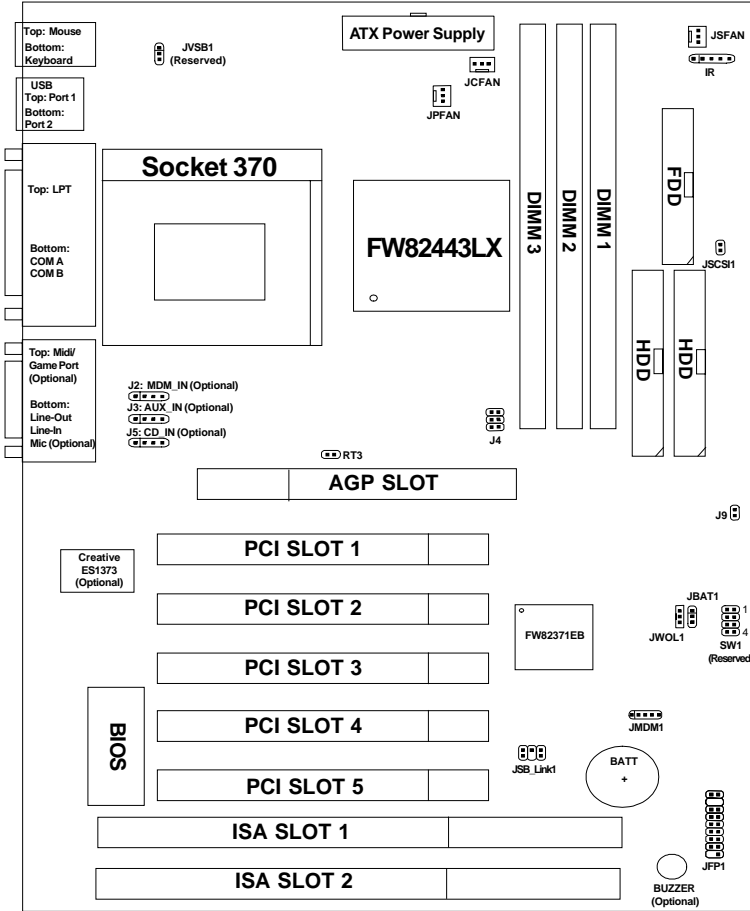
MS-6161 ATX LX11 Mainboard
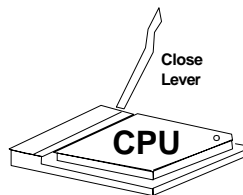
Chapter 2

HARDWARE INSTALLATION

2.1 Central Processing Unit: CPU

The mainboard operates with **Intel® CeleronTM processor.** The mainboard uses a CPU socket called Socket 370 for easy CPU installation. The CPU should always have a Heat Sink and 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.

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.

3. Press the lever down to complete the installation.

2.1-2 CPU Core Speed Derivation Procedure

1. This mainboard can auto-detect the Core/Bus (Fraction) ratio of the CPU.

If	CPU Clock	=	66MHz
	Core/Bus ratio	=	5.5
then	CPU core speed	=	Host Clock x Core/Bus ratio
		=	66MHz x 5.5
		=	366MHz

SW1				CPU
1	**2**	**3**	**4**	**Core/Bus Ratio**
ON	ON	ON	ON	2
ON	ON	OFF	ON	3
ON	OFF	OFF	ON	3.5
ON	ON	ON	OFF	4
ON	OFF	ON	OFF	4.5
ON	ON	OFF	OFF	5
ON	OFF	OFF	OFF	5.5
OFF	ON	ON	ON	6
OFF	OFF	ON	ON	6.5
OFF	ON	OFF	ON	7
OFF	OFF	OFF	ON	7.5
OFF	ON	ON	OFF	8

ON = Short   **OFF = Open**

Note: SW1 is reserved for future use.

2. The Jumper Switch J4 (1, 2, and 3) is used to set the CPU Bus frequency.

J4			CPU
1	**2**	**3**	**Bus Frequency**
open	open	open	66MHz
open	open	short	68MHz
open	short	open	75MHz
short	open	short	83MHz

Note: You can set the CPU Bus Frequency through J4 or BIOS setting. If you set this in the BIOS setting, the Jumper Switch J4 setting will be void.

2.1-3 CPU Speed Setting: SW1 & J4

To adjust the speed of the CPU, you must know the specification of
your CPU (*always ask the vendor for CPU specification*). The
mainboard can auto-detect 66MHz CPU Bus Frequency.
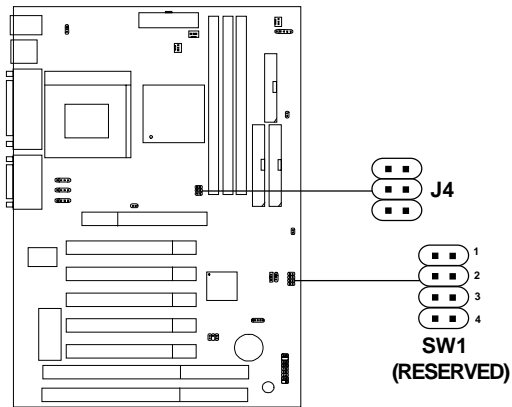
Note: SW1 is reserved for future use.

2.1-4 Fan Power Connectors: JCFAN/JPFAN/JSFAN

These connectors support system cooling fan with + 12V. It supports three
pin head connector.   When connecting the wire to the connector, always
take note that the red wire is the positive and should be connected to the
+12V, the black wire is Ground and should be connected to GND. If your
mainboard has System Hardware Monitor chipset on-board, you must use a
specially designed fan with speed sensor to take advantage of this function.
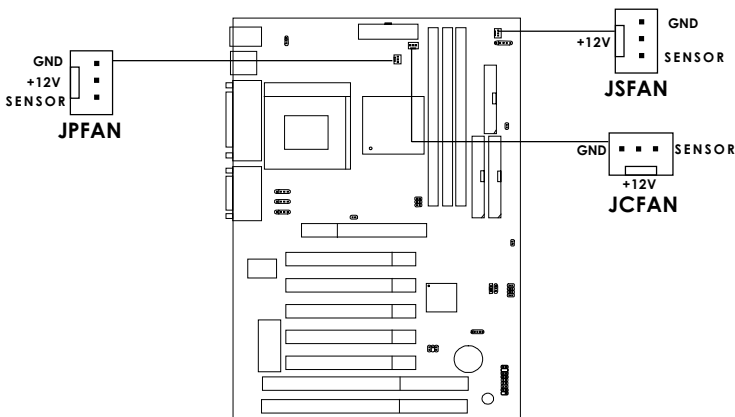

JCFAN : Processor Fan
JPFAN: Power Supply Fan
JSFAN: Chassis Fan

For fans with fan speed sensor, every rotation of the fan will send out 2
pulses. System Hardware Monitor will count and report the fan rotation
speed.

Note: 1. Always consult vendor for proper CPU cooling fan.

2.2 Clear CMOS Jumper: JBAT1

A battery must be used to retain the mainboard configuration in CMOS
RAM. Short 1-2 pins of JBAT1 to store the CMOS data.

JBAT1
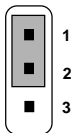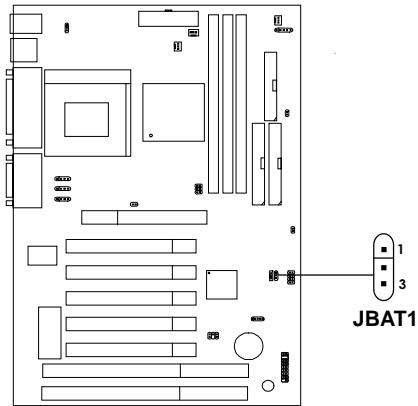
Keep Data
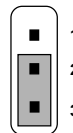
Clear Data

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

2.3 Memory Installation

2.3-1 Memory Bank Configuration

The mainboard supports a maximum memory size of 384MB for EDO/ SDRAM: It provides three 168-pin **unbuffered** DIMMs (Double In-Line Memory Module) sockets. It supports 8 MB to 128 Mbytes DIMM memory module.
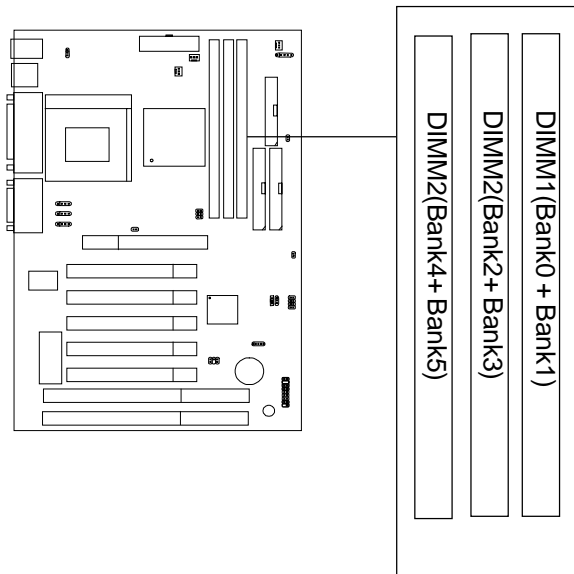
2.3-2 Memory Installation Procedures

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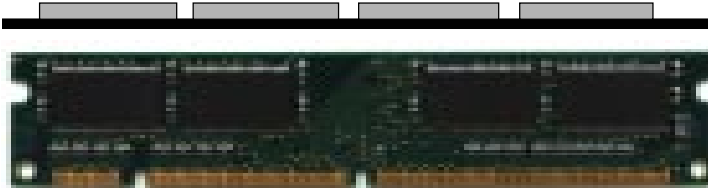
Single Sided DIMM
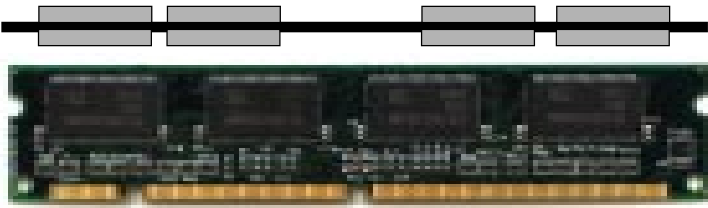
Double Sided DIMM

1. The DIMM slot has 2 Notch Keys "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
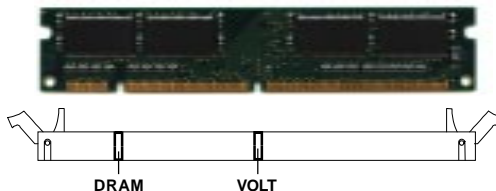
3. The plastic clip at the side of the DIMM slot will automatically close.

2.3-3 Memory Population Rules

1. Supports only EDO/SDRAM DIMM.

2. To operate properly, at least one 168-pin DIMM module must be in-
    stalled.

3. This mainboard supports Table Free memory, so memory can be installed
    on DIMM1, DIMM 2 or DIMM 3 in any order.

4. Supports 3.3 volt DIMM.

5. The DRAM addressing and the size supported by the mainboard is
    shown below:

Table 2.3-1 EDO DRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	SYMM	10	10	8MBx4	16MBx8
	1Mx16	ASYM	12	8	8MBx4	16MBx8
	2Mx8	ASYM	11	10	16MBx8	32MBx16
	2Mx8	ASYM	12	9	16MBx8	32MBx16
	4Mx4	SYMM	11	11	32MBx16	64MBx32
	4Mx4	ASYM	12	10	32MBx16	64MBx32
64M	2Mx32	ASYM	11	10	16MBx2	32MBx4
	2Mx32	ASYM	12	9	16MBx2	32MBx4
	2Mx32	ASYM	13	8	16MBx2	32MBx4
	4Mx16	SYMM	11	11	32MBx4	64MBx8
	4Mx16	ASYM	12	10	32MBx4	64MBx8
	8Mx8	ASYM	12	11	64MBx8	128MBx16

Table 2.3-2 SDRAM Memory Addressing

DRAM Tech.	DRAM Density & Width	DRAM Addressing	Address Size		MB/DIMM	
			Row	Column	Single no. Side(S) pcs.	Double no. Side(D) pcs.
16M	1Mx16	ASYM	11	8	8MBx4	16MBx8
	2Mx8	ASYM	11	9	16MBx8	32MBx16
64M	2Mx32	ASYM	11	9	32MBx2	64MBx4
	2Mx32	ASYM	12	8	16MBx2	32MBx4
	4Mx16	ASYM	11	10	32MB	64MB
	4Mx16	ASYM	13	8	32MB	64MB
	8Mx8	ASYM	13	9	64MB	128MB
64M.	2Mx32	ASYM	11	8	16MB	32MB
	4Mx16	ASYM	12	8	---	---
	8Mx8	ASYM	12	9	---	---

2.4 Case Connector: JFP1

The Power Switch, Reset Switch, Power LED, Speaker, Keylock and HDD
LED are all connected to the JFP1 connector block.
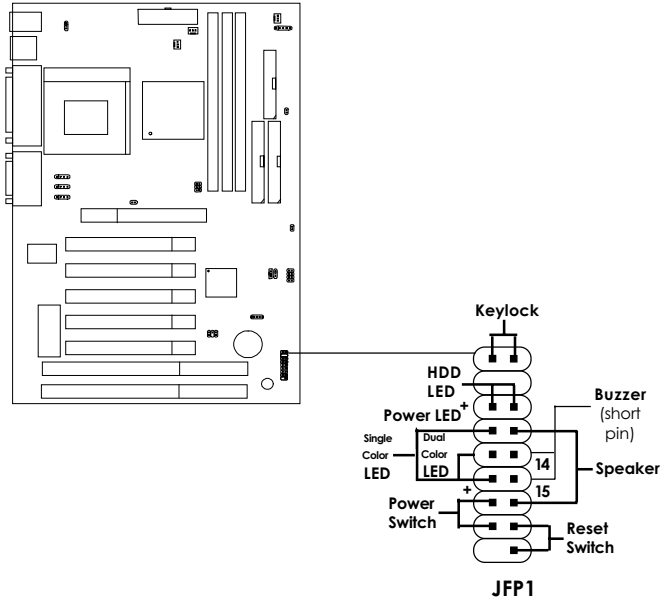
2.4-1 Power Switch
Connect to a 2-pin push button switch. This switch has the same feature with JRMS1.

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 Power LED
The Power LED is lit while the system power is on. Connect the Power LED from the system case to this pin. There are two types of LED that you can use: 3-pin single color LED or 2-pin dual color LED(ACPI request).

> **a.** 3 pin single color LED connect to pin 4, 5, & 6. This LED will lit when the system is on.
> **b.** 2 pin dual color LED connect to pin 5 & 6.
>> **GREEN** Color: Indicate the system is full on mode.
>> **ORANGE** Color: Indicate the system is in suspend mode.

2.4-4 Speaker
Speaker from the system case is connected to this pin.
If on-board Buzzer is available:
Short pin 14-15:   On-board Buzzer Enabled.
Open pin 14-15:   On-board Buzzer Disabled.

2.4-5 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.

2.4-6 Keylock
Keylock allows you to disable the keyboard for security purposes. You can connect the keylock to this pin.

2.5 Floppy Disk Connector: FDD

The mainboard also provides a standard floppy disk connector FDD that supports 360K, 720K, 1.2M, 1.44M and 2.88M floppy disk types. This connector supports the provided floppy drive ribbon cables.
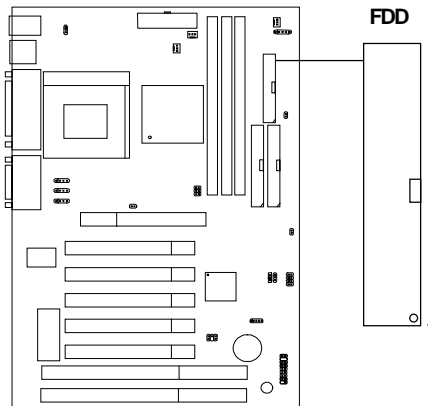
2.6 Hard Disk Connectors: IDE1 & IDE2

The mainboard has a 32-bit Enhanced PCI IDE Controller that provides PIO mode 0~4, Bus Master, and Ultra DMA/33 function. It has two HDD connectors IDE1 (primary) and IDE2 (secondary). You can connect up to four hard disk drives, CD-ROM, 120MB Floppy (reserved for future BIOS) and other devices to IDE1 and IDE2. These connectors support the provided IDE hard disk cable.
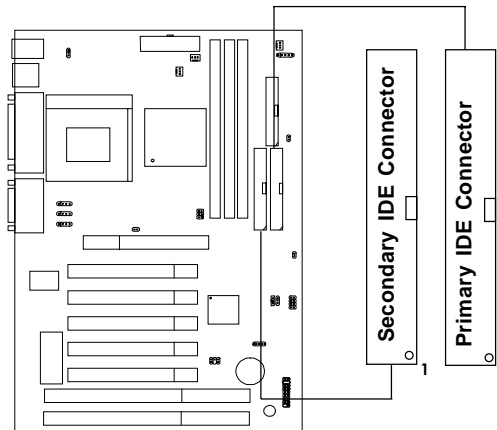
IDE1(Primary IDE Connector)

The first hard drive should always be connected to IDE1. IDE1 can connect a Master and a Slave drive. You must configure second hard drive to Slave mode by setting the jumper accordingly.

IDE2(Secondary IDE Connector)

IDE2 can also connect a Master and a Slave drive.

2.7 Power Supply

2.7-1 ATX 20-pin Power Connector: JWR1

This connector supports the power button on-board. Using the ATX power supply, functions such as Modem Ring Wake-Up and Soft Power Off are supported by this mainboard. This power connector supports instant power on function which means that system will boot up instantly when the power connector is inserted on the board.

ATX Power Connector
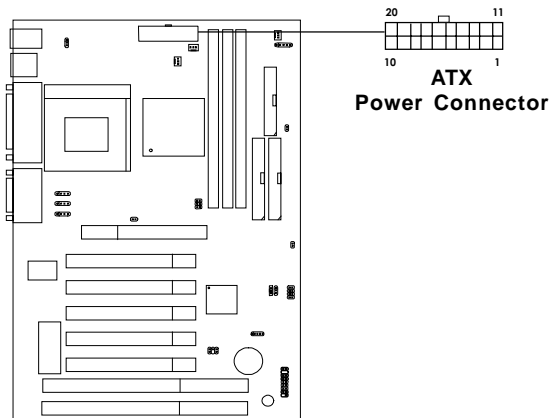
PIN DEFINITION

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

Warning: Since the mainboard has the instant power on function, make sure that all components are installed properly before inserting the power connector to ensure that no damage will be done.

2.7-2 Remote Power On/Off Switch: J9

Connect to a 2-pin push button switch. During OFF state, press once and the system turns on. **During ON stage, push once and the system goes to sleep mode: pushing it more than 4 seconds will change its status from ON to OFF**. If you want to change the setup, you could go to the BIOS Power Management Setup. This is only used for ATX type power supply.

J9
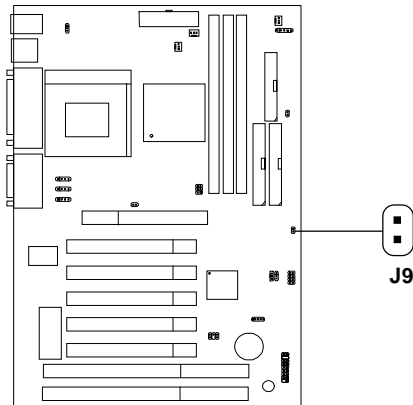
2.8 IrDA Infrared Module Connector: IR1

The mainboard provides one 5-pin infrared (IR1) connector for IR modules.
This connector is for optional wireless transmitting and receiving infrared
module. You must configure the setting through the BIOS setup to use the
IR function.
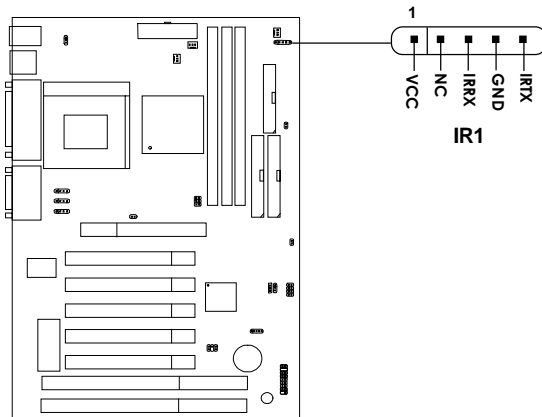
2.9 Serial Port Connectors: COM A & COM B

The mainboard provides two 9-pin male DIN connectors for serial ports COM A & COM B. These are 16550A high speed communication port that send/receive 16 bytes FIFOs. You can attach a mouse or a modem cable directly into this connector.
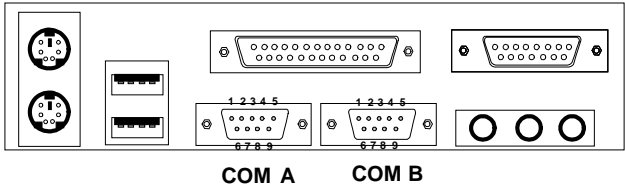
Serial Port (9-pin Male)

PIN DEFINITION

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

2.10   Parallel Port Connector: LPT1

The mainboard provides a 25 pin female centronic connector for LPT. A parallel port is a standard printer port that also supports Enhanced Parallel Port(EPP) and Extended capabilities Parallel Port(ECP). See connector and pin definition below:

Parallel Port (25-pin Female)

LPT 1
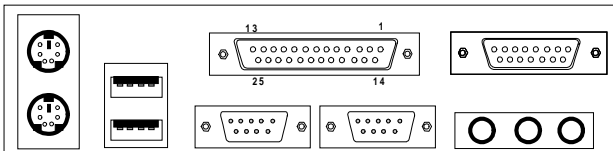
PIN DEFINITION

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

2.11 Mouse Connector: JKBMS1

The mainboard provides a standard PS/2®mouse mini DIN connector for attaching a PS/2® mouse. You can plug a PS/2®mouse directly into this connector. The connector location and pin definition are shown below:
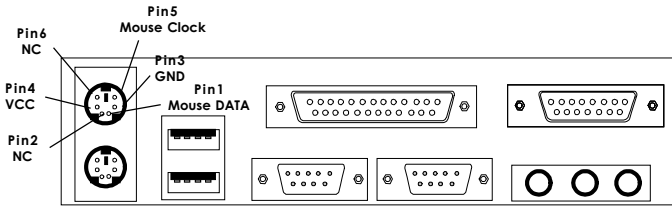
PS/2 Mouse (6-pin Female)

2.12 Keyboard Connector: JKBMS1

The mainboard provides a standard PS/2®keyboard mini DIN connector for attaching a keyboard. You can plug a keyboard cable directly to this connector.
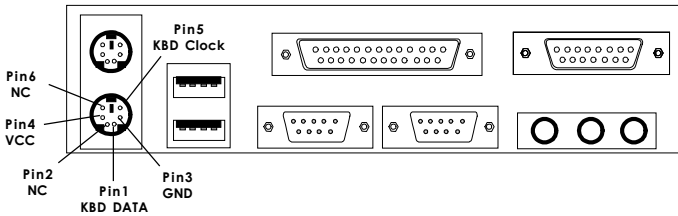
PS/2 Keyboard (6-pin Female)

2.13 Joystick/Midi Connectors (Optional)

You can connect joystick or game pad to this connector.

Joystick/MIDI
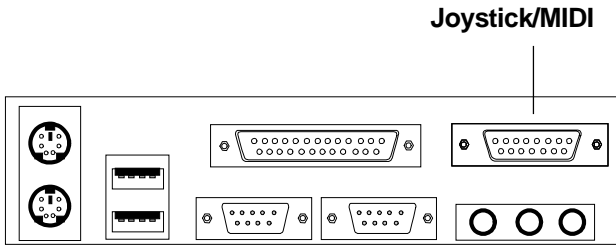
2.14 Audio Port Connectors (Optional)

Line Out is a connector for Speakers or Headphones. **Line In** is used for external CD player, Tape layer, or other audio devices. **Mic** is a connector for the microphones.

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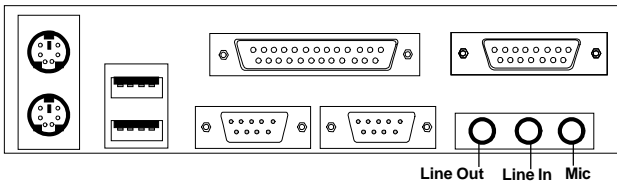
1/8" Stereo Audio Connectors

2.15 USB Connectors

The mainboard provides a **UHCI(Universal Host Controller Interface) Universal Serial Bus root** for attaching USB devices like: keyboard, mouse and other USB devices. You can plug the USB device directly to this connector.

USB Port 2

USB Port 1
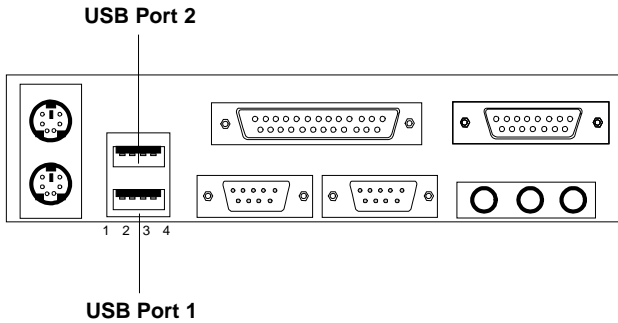
PIN	SIGNAL
1	VCC
2	-Data0
3	GND
4	+Data0

2.16 Wake-Up on LAN Connector: JWOL1

The JWOL1 connector is for use with LAN add-on cards that supports Wake Up on LAN function. To use this function, you need to set the "Wake-Up on LAN" to enable at the BIOS Power Management Setup.
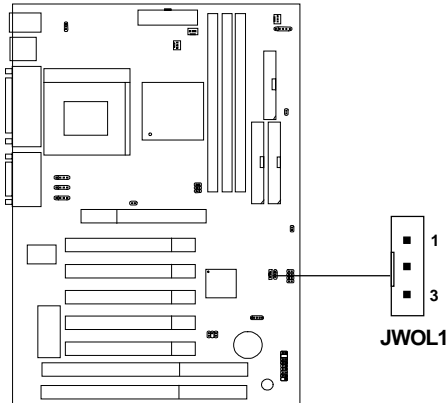
PIN	SIGNAL
1	5VSB
2	GND
3	MP_WAKEUP

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. (Power supply with 750mA 5V Stand-by)

2.17 Modem Wake Up Connector: JMDM1

The JMDM1 connector is for used with Modem add-on card that supports the Modem Wake Up function. To use this function, you need to set the "Resume By Ring" to enable at the BIOS Power Management Setup.
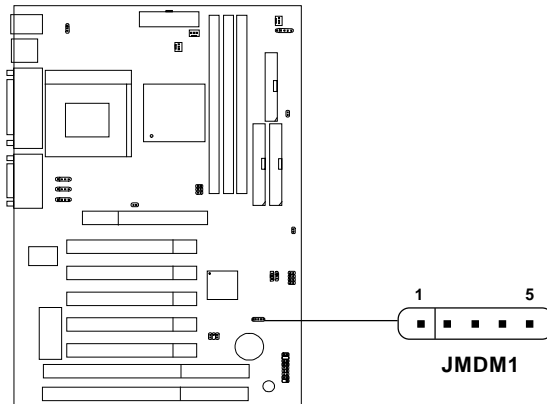
PIN	SIGNAL
1	NC
2	GND
3	MDM_WAKEUP
4	NC
5	5VSB

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. (Power supply with 750mA 5V Stand-by)

2.18 SB_Link™ Sound Card Connector: JSB_Link

The mainboard provides a distributed DMA connector for PCI sound card with this feature, such as Creative® PCI 3D sound card.

JSB_Link
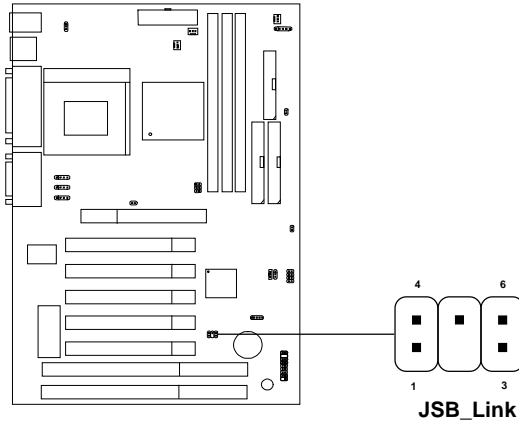
Pin	Definition
1	DMA Grand Signal
2	NC
3	GND
4	GND
5	DMA Request Signal
6	Serial Interrupt Signal

2.19   Modem-In: J2 (Optional)

The connector is for Modem with internal voice connector.

SPK IN GND MIC OUT
J2
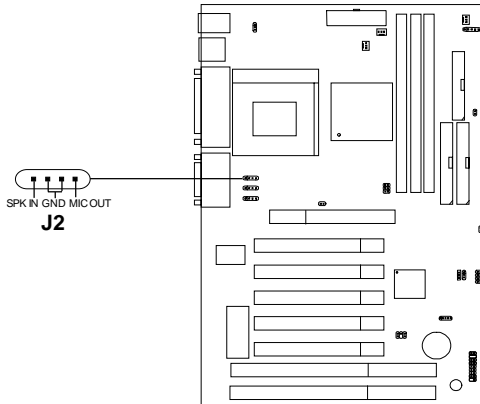
SPK_IN is connected to the Modem Speaker Out connector.
MIC_OUT is connected to the Modem Microphone In connector.

2.20 AUX Line In Connector: J3 (Optional)

This connector is used for DVD Add on Card with Line In connector.

LGND R
J3
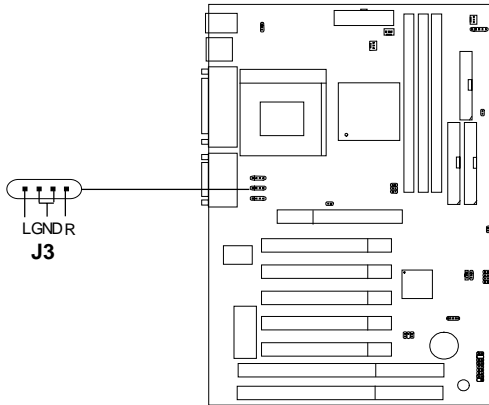
2.21 CD-In Modem Connector: J5 (Optional)

This connector is for CD-ROM voice connector.

L GND R
J5
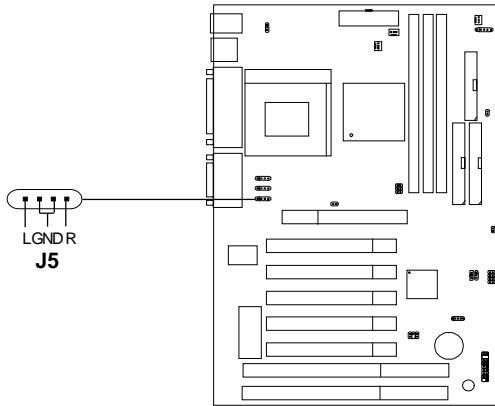
2.22 Keyboard Power: JVSB1

The JVSB1 jumper is for setting keyboard power. This function should be set in the BIOS for the keyboard and PS/2 mouse Wake-up function.

JVSB1
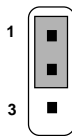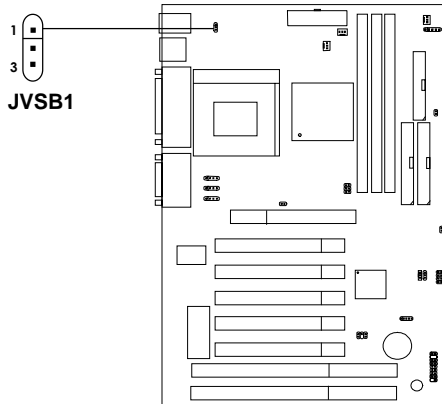
5V Standby
Enable keyboard
power on function
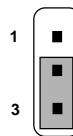
5V (default)
Disable keyboard
power on function

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

2.23 SCSI Active LED: JSCSI1

The JSCSI1 can be connected with LED connector from any SCSI card. This will enable the Hard disk Front panel to show any activity on the SCSI card.

JSCSI1
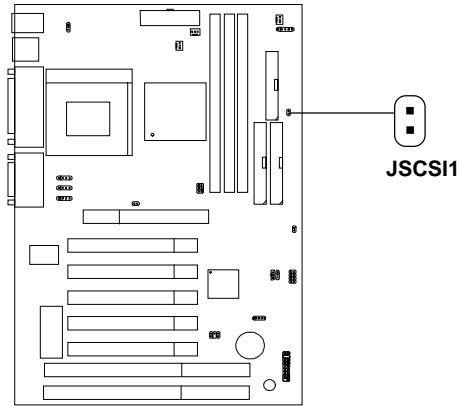
2.24 PCI and ISA Slots

There are 5 PCI slots and 2 ISA slots. All PCI slots can be used as master.
But since the 1st and 5th PCI slots share the same bus master signal, only
one of these slots can be used as a master at a time; which means that if a
master card is installed in PCI slot 1, PCI Slot 5 can only accomodate a slave
card, and vice versa.
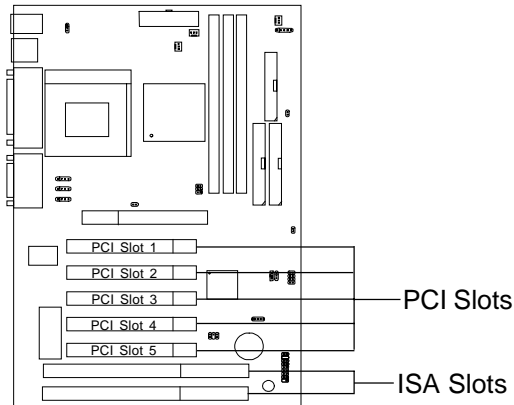
NOTE: 1. If on-board Creative sound is not installed, then all 5 PCI slots
can use Bus Master cards.
2. If on-board Creative sound is installed, then PCI slots 2, 3 and
4 can still use Bus Master cards. However, only one of PCI
slots 1 and 5 can use a Bus Master card at a time.

2.25 TOP TECH. II: RT3 (Optional)

This is used to check the AGP card or LX chipset temperature. The RT3 is a 2-pin connector which can be inserted with a 20cm length thermistor. It is located near the chipset heatsink that monitors the chipset temperature. The BIOS setup for "TOP TECH. II" should be set to enabled.

20CM length Thermistor

RT3
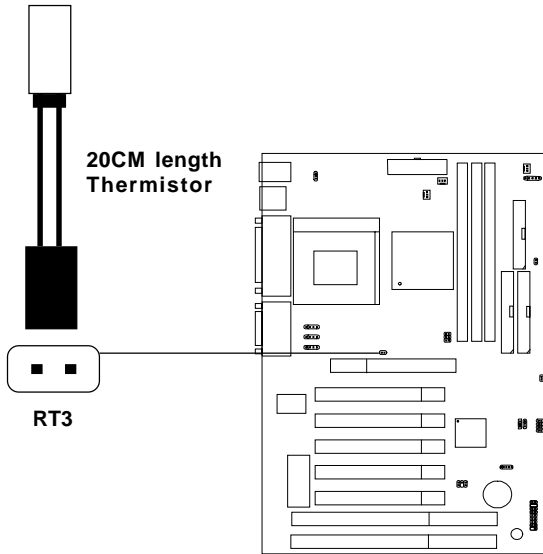
Chapter 3

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.

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

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

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

3.2 Getting Help

Main Menu

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

Status Page Setup Menu/Option Page Setup Menu

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

3.3 The Main Menu

Once you enter Award®BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from eleven setup functions and two exit choices. Use arrow keys to select among the items and press <Enter> to accept or enter the sub-menu.

```
                 ROM  PCI/ISA  BIOS  (2A69JM40)
                      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  (2A69JM40)
                     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  (2A69JM40)
                        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 │
 │ CPU L2 Cache ECC Checking:Enabled│ D0000-D3FFF  Shadow     :Disabled │
 │ Quick Power on Self Test :Disabled│ D4000-D7FFF  Shadow     :Disabled │
 │ Boot From LAN First     :Disabled│ D8000-DBFFF  Shadow     :Disabled │
 │ Boot  Sequence          :A,C,SCSI│ DC000-DFFFF  Shadow     :Disabled │
 │ Swap Floppy Drive       :Disabled│                                   │
 │ Boot up Floppy Seek     :Enabled │                                   │
 │ Floppy FIFO Control     :Disabled│                                   │
 │ Boot up NumLock status  :On      │                                   │
 │ Gate A20 Option         :Fast    │                                   │
 │ Security Option         :System 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.

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

Enable   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.

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.

Note: The external cache is built in the processor.

CPU L2 Cache ECC Checking

Choose Enabled or Disabled. This option enables the level 2 cache memory ECC(error check correction). Using 66MHz CPU BUS Pentium®II processor, set to Enabled or Disabled. For Celeron™ processor w/o Cache, always set to Disabled.

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 From LAN First

During Enabled, the system will boot from the LAN card (if there's any) first.

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. 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.

Floppy FIFO Control

During Enabled, the FDD disk will perform better.

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.

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(2A69JM40**)**

```
┌─────────────────────────────────┬──────────────────────────────────┐
│ Auto Configuration    :Enabled  │ SDRAM CAS Latency Time   :3       │
│ DRAM Speed Selection  :60ns     │ Auto Detect DIMM/PCI Clk :Enabled │
│ MA Wait State         :Slow     │ Spread Spectrum Modulated:Enabled │
│ EDO RAS# To CAS# Delay :3       │ CPU Host Clock           :Disabled│
│ EDO RAS# Precharge Time :3      │                                   │
│ EDO DRAM Read Burst    :x333    │                                   │
│ EDO DRAM Write Burst   :x222    │                                   │
│ DRAM Data Integrity Mode :Non-ECC│                                  │
│ CPU-To-PCI IDE Posting :Enabled │                                   │
│ System BIOS Cacheable  :Disabled│                                   │
│ Video BIOS Cacheable   :Disabled│                                   │
│ Video RAM Cacheable    :Disabled│                                   │
│ 8 Bit I/O Recovery Time :1      │                                   │
│ 16 Bit I/O Recovery Time :1     │                                   │
│ Memory Hole At 15M-16M :Disabled├──────────────────────────────────┤
│ Passive Release        :Enabled │ Esc : Quit     ↑↓→← : Select item │
│ Delayed Transaction    :Disabled│ F1 : Help PU/PD/+/- : modify      │
│ AGP Aperture Size (MB) :64      │ F5 : Old Value(Shift) F2 : Color  │
│ SDRAM RAS-To-CAS Delay :Slow    │ F7 : Load Setup Defaults          │
│ SDRAM RAS Precharge Time :Slow  │                                   │
└─────────────────────────────────┴──────────────────────────────────┘
```

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

Auto Configuration

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

DRAM Speed Selection

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.

60ns	DRAM Timing Type.
50ns	DRAM Timing Type.

MA Wait State

This item allows you to select MA Wait State. The settings are Fast or Slow.

EDO RAS# To CAS# Delay

This sets the relative delay between the row and column address strobes from DRAM (EDO). The settings are 2 or 3.

EDO RAS# Precharge Time

Defines the length of time for Row Address Strobe from DRAM (EDO) is allowed to precharge. The settings are 3 or 4.

EDO DRAM Read Burst

This sets the timing for burst mode reads from DRAM(EDO). Burst Read and write requests are generated by the CPU in four separate parts. The lower the timing numbers, the faster the system will address memory.

x222	Read DRAM (EDO) timings are 2-2-2
x333	Read DRAM (EDO) timings are 3-3-3

EDO DRAM Write Burst

This sets the timing for burst mode writes from DRAM (EDO). Burst read and write requests are generated by the CPU in four separate parts. The lower the timing numbers, the faster the system will address memory.

x222	Write DRAM timings are 2-2-2-2
x333	Write DRAM timings are 3-3-3-3

DRAM Data Integrity Mode

Select Non-ECC or ECC(error-correcting code), according to the type of installed DRAM. The settings are Non-ECC (default) or ECC.

CPU To PCI IDE Posting

Set this option to Enabled to enable posted messages from the CPU to the PCI bus or IDE controller. The settings are Enabled or Disabled. The Optimal and Fail-Safe default settings are Enabled.

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

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

Video RAM Cacheable

Select Enabled allows caching of the video RAM, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

8 Bit I/O Recovery Time

The recovery time is the length of time, measured in CPU clocks, which the system will delay after the completion of an input/output request. This delay takes place because the CPU is operating so much faster than the input/output bus that the CPU must be delayed to allow for the completion of the I/O.

This item allows you to determine the recovery time allowed for 8 bit I/O. Choices are from NA, 1 to 8 CPU clocks.

16 Bit I/O Recovery Time

This item allows you to determine the recovery time allowed for 16 bit I/O. Choices are from NA, 1 to 4 CPU clocks.

Memory Hole At 15M-16M

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.

Passive Release

When Enabled, CPU to PCI bus accesses are allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM. The settings are Enabled or Disabled.

Delayed Transaction

The chipset has an embedded 32-bit posted write buffer to support delay transactions cycles. Select Enabled to support compliance with PCI specification version 2.1. The settings are Enabled or Disabled.

AGP Aperture Size (MB)

Select the size the 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.

SDRAM RAS-to-CAS Delay

This item allows you to select SDRAM RAS-to-CAS Delay. The settings are Fast or Slow.

SDRAM RAS Precharge Time

This item allows you to select SDRAM RAS Precharge Time. The settings are Fast or Slow.

SDRAM CAS Latency Time

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

Auto Detect DIMM/PCI Clk

This item allows you to select theDIMM/PCI clock. The other sockets will not generate when DIMM/PCI cards are not installed. The setting should be set to enabled which works better for EMI.

Spread Spectrum

This item allows you to select the clock generator Spread Spectrum function. The default is enabled.

CPU Host Clock

This item allows you to select the processor FSB (Front Side Bus). You can choose from 66MHz, 68MHz, 75MHz, or 83MHz. The default setting is 66 MHz.

NOTE: 75 and 83.3 MHz are used for overclocking purposes. We do not guarantee that the Motherboard, CPU or other components will work properly under these speed.

3.7 Power Management Setup

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

```
            ROM  PCI/ISA  BIOS  (2A69JM40)
               POWER  MANAGEMENT  SETUP
                AWARD  SOFTWARE,  INC.

Power Management      :User Define Wake Up On LAN       : Disabled
PM Control by APM     :Yes         IRQ 8 Break Suspend  : Disabled
Video Off Method      :DPMS
Video Off After       :Standby     ** Reload Global Timer Events **
Modem Use IRQ         : 3          IRQ [3-7,9-15],NMI : Disabled
Reserve IRQ9          :Yes         Primary IDE 0      : Enabled
                                   Primary IDE 1      : Enabled
Doze Mode             :Disabled    Secondary IDE 0    : Disabled
Standby Mode          :Disabled    Secondary IDE 1    : Disabled
Suspend Mode          :Disabled    Floppy Disk        : Disabled
HDD Power Down        :Disabled    Serial Port        : Enabled
Throttle Duty Cycle   :62.5%       Parallel Port      : Disabled
VGA Active Monitor    :Disabled
Soft-Off by PWR-BTTN  :Instant-Off
CPUFAN Off in Suspend :Enabled
Resume by Ring        :Disabled
Resume by Alarm       :Disabled
                                   Esc : Quit   ↑↓→←: Select item
                                   F1 : Help PU/PD/+/- : modify
                                   F5 : Old Value(Shift) F2 : Color
                                   F7 : Load Setup Defaults
Power Status LED      :Dual Color
```

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.

Power Management

Disable	Global Power Management will be disabled.
User Define	Users can configure their own power management.
Min Saving	Pre-defined timer values are used such that all timers are in their MAX value.
Max Saving	Pre-defined timer values are used such that all timers are in their MIN value.

PM Control by APM

No	System BIOS will ignore APM when power managing the system.
Yes	System BIOS will wait for APM's prompt before it enter any PM mode

Note: Enable this for O.S. with APM like Windows®95/98, Windows®NT, etc.

Video Off Method

Blank Screen	The system BIOS will only blank off the screen when disabling video.
V/H SYN C+Blank	In addition to (1), BIOS will also turn off the V-SYNC & H-SYNC signals from VGA card to monitor.
DPMS	This function is enabled only for VGA card supporting DPMS.

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

Video Off After

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

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

The default setting is Standby.

MODEM Use IRQ

Name the interrrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system. The settings are NA, 3, 4, 5, 7, 9, 10, or 11.

Reserve IRQ9

This option allows user to enabled the ACPI function by selecting Yes and disabled the ACPI function by selecting No. The default setting is Yes.

Doze Mode

Disable	System will never enter DOZE mode.
1 Min/2 Min/ 4 Min/8 Min/ 12 Min/20 Min/ 30 Min/40 Min/ 1 Hr	Defines the continuous idle time before the system enters DOZE mode. If any item defined in the options of "Power Down and Resume events" is enabled & active, DOZE timer will be reloaded. When the system have entered Doze mode, any of the items enabled in "Wake Up Events in Doze and Standby" will trigger the system to wake up.

Standby Mode

Disable	System will never enter STANDBY mode.
1 Min/2 Min/ **4 Min/8 Min/** **12 Min/20 Min/** **30 Min/40 Min/** **1 Hr**	Defines the continuous idle time before the system enters STANDBY mode. If any item defined in the options of "Power Down and Resume events" is enabled & active, STANDBY timer will be reloaded. When the system has entered Standby mode , any of the items that are enabled in "Wake Up Events of Doze and Standby" will trigger the system to wake up.

Suspend Mode

Disable	System will never enter SUSPEND mode.
1 Min/2 Min/ **4 Min/8 Min/** **12 Min/20 Min/** **30 Min/40 Min/** **1 Hr**	Defines the continuous idle time before the system enters SUSPEND mode. If any item defined in the options of "Power Down & Resume Events" is enabled & active, SUSPEND timer will be reloaded. When the system has entered SUSPEND mode, any of the items enabled in the "Power Down & Resume Events" will trigger the system to wake up.

HDD Power Down

Disable	HDD's motor will not shut off.
1 Min/2 Min/ **3 Min/4 Min/** **5 Min/6 Min/** **7 Min/8 Min/** **9 Min/10 Min/** **11 Min/12 Min/** **13 Min/14 Min/** **15 Min**	Defines the continuous HDD idle time before the HDD enters the power saving mode (motor off). BIOS will turn off the HDD's motor when time is out.

Throttle Duty Cycle

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

VGA Active Monitor

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

Soft-Off by PWR-BTTN

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

CPUFAN Off in Suspend

During Enabled, if the system goes into suspend mode, the CPU fan will stop. During Disabled, if the system goes into suspend mode, the CPU fan will resume.

Resume by Ring

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

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

Resume by Alarm

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

Date(of month) Alarm   You can choose which 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.

Power Status LED

This item determines which status the Power LED will use. The settings are Blink, Dual Color, and Single Color. During Blink, the power LED will blink when the system enters the suspend mode. When the mode is in Dual Color, the power LED will change its color during suspend mode. Choose the Single Color and the power LED will always remain lit.

Wake Up On LAN

To use this function, you need a LAN add-on card which support power on functions. It should also support the wake-up on LAN jumper (JWOL1).

Enabled   Wake up on LAN supported.

Disabled   Wake up on LAN not supported.

IRQ 8 Break Suspend

You can Enable or Disable monitoring of IRQ 8 so it does not awaken the system from suspend mode.

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

         During Enabled, any event occuring on each device listed above
will restart the global time for Standby Mode.

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.

```
                    CMOS  SETUP  UTILITY
                  CHIPSET  FEATURES  SETUP
               ROM  PCI/ISA BIOS (2A69JM40)
                PNP/PCI  CONFIGURATION  SETUP
                   AWARD  SOFTWARE,  INC.
```

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

PnP OS Installed
When set to YES, BIOS will only initialize the PnP cards used for booting (VGA, IDE, SCSI). The rest of the cards will be initialized by the PnP operating system like Windows®95 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.

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

PCI-Slot 1-2: This setting is used if off-board PCI IDE card is not fully compatible with PCI specifications. You must specify which PCI slot the PCI IDE Card is installed in.

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

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

Assign IRQ for VGA

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

Assign IRQ for USB

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

Used MEM base addr

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

Used MEM Length

        Select a length for the memory area specified in the previous field. The setting are 8K, 16K, 32K, or 64K.

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:

<div align="center">" Load Setup Defaults (Y / N) ? N "</div>

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  (2A69JM49)
                   INTEGRATED  PERIPHERALS
                    AWARD  SOFTWARE,  INC.

┌─────────────────────────────────────┬──────────────────────────────────┐
│ ******** POST SHOWING ********       │ ********* SYSTEM MONITOR ******** │
│ Chassis Fan Detected     :Disabled   │                                  │
│ Power Fan Detected       :Disabled   │                                  │
│ CPU Fan Detected         :Enabled    │ CPU Fan RPM              :6026    │
│                                      │ System Temperature      :34⁰C/93⁰F│
│                                      │ CPU Temperature         :46⁰C/114⁰F│
│ Voltage Detected         :Enabled    │ TOP Tech. II            :Disabled │
│ Vcore Voltage Detected   :Enabled    │                                  │
│ +2.5V 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         │
└─────────────────────────────────────┴──────────────────────────────────┘
```

Chassis Fan Detected/Power Fan Detected/CPU Fan Detected/Voltage Detected/Vcore Voltage Detected/+2.5V 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.

Chassis/Power/CPU Fan RPM

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

System Temperature/CPU Temperature

This will show the System and CPU temperature.

TOP Tech. II

This option is used to disabled or enabled the RT3 connector 20 cm thermistor. The default setting is Disabled (See page 2-32). When choose Enabled, "TOP TECH II Temp" item will appear onscreen.

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 (2A69IM40)
                    INTEGRATED PERIPHERALS
                    AWARD SOFTWARE, INC.
```

```
┌─────────────────────────────────────────────────────────────────────┐
│ IDE HDD Block Mode      :Enabled   UART Mode Select        :Normal    │
│ IDE Primary Master PIO  :Auto                                         │
│ IDE Primary Slave PIO   :Auto      Onboard Parallel Mode   :378/IRQ7  │
│ IDE Secondary Master PIO :Auto     Parallel Port Mode      :SPP       │
│ IDE Secondary Slave PIO  :Auto       ECP Mode Use DMA      :3         │
│ IDE Primary Master UDMA  :Auto       EPP Mode Select       :EPP1.7    │
│ IDE Primary Slave UDMA   :Auto     PWRON After PWR-Fail    :Off       │
│ IDE Secondary Master UDMA:Auto                                        │
│ IDE Secondary Slave UDMA :Auto                                        │
│ On-Chip Primary PCI IDE  :Enabled                                     │
│ On-Chip Secondary PCI IDE:Enabled                                     │
│ USB Keyboard Support     :Disabled                                    │
│ Init Display First       :PCI Slot                                    │
│ Onboard Sound            :Enabled                                     │
│                                                                       │
│ Power ON Function        :Button Only                                 │
│  KB Power ON Password    :Enter    Esc : Quit   ↑↓→←: Select item     │
│ Onboard FDD controller   :Enabled  F1 : Help PU/PD/+/- : modify       │
│ Onboard Serial Port 1    :3F8/IRQ4 F5 : Old Value(Shift) F2 : Color   │
│ Onboard Serial Port 2    :2F8/IRQ3 F7 : Load Setup Defaults           │
│                                                                       │
└─────────────────────────────────────────────────────────────────────┘
```

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

IDE Primary Master PIO
    Auto/Mode0/Mode1-4

IDE Primary Slave PIO
    Auto/Mode0/Mode1-4

IDE Secondary Master PIO
    Auto/Mode0/Mode1-4

IDE Secondary Slave PIO
Auto/Mode0/Mode1-4

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

Note: Some IDE HDD 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).

On-Chip Primary PCI IDE
Enabled/Disabled

On-Chip Secondary PCI IDE
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.

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

Init Display First
    PCI/AGP   Choosing Enabled will allow the system to use USB keyboard without a device driver.

Onboard Sound (Optional)
    Enabled/Disabled   Choosing Enabled will allow the system to use onboard sound. Choose Disabled, when using add-on sound card.

Power ON Function   This item allows you to choose from Button Only, Password, MouseLeft or MouseRight to Power On the system. The default setting is Button Only.

KB Power ON Password   This item allows you to enter the password for Power ON Function.

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 IRQ3

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

UART Mode Select
   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.
   (3BCH/IRQ7)/
   (278H/IRQ5)/
   (378H/IRQ7)

Onboard Parallel Port

Disabled   There is a built-in parallel port on the
                                on-board Super I/O chipset that pro-
                                vides 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

Parallel Port 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 simulta-
neously, 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 select-
ing it, the following message will appear:
"ECP Mode Use DMA" At this time the
user can choose between DMA chan-
nels 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.

PWRON After PWR-Fail

ON (Power will be ON)
OFF (Power will be OFF)
Former-Sts (Power will depend on last state)

The settings are power on , power off or
former status. During ON, after
every AC power loss, the system will be
turned on. During Former Status, after
every AC power loss, whatever the
system status, it will be the same when
the AC power returns. During OFF, after
every AC power loss, the system will be
shutdown.

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:

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

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

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

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

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

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

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

7. Move the cursor to Save & Exit Setup to save the option you did. Otherwise, the old password will still be there 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 PCI/ISA BIOS(2A69JM40)
                         CMOS  SETUP  UTILITY
                      AWARD  SOFTWARE,  INC.

    HARD DISKS       TYPE  SIZE  CYLS HEADS  PRECOMP LANDZONE  SECTOR MODE
  Primary Master    :
  Primary Slave     :
  Secondary Master  :
  Secondary Slave   :


          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


     Note: Some OSes (SCD-UNIX Before v5.0) must use "NORMAL" for installation


                           [ESC: Skip]
```

Chapter 4

CREATIVE® ES1373 AUDIO DRIVER (Optional)

1. Overview

The Creative® 1373 digital controller provides the next generation of audio performance to the PC market.

1.1 Features

- SoundScape WaveTable Synthesizer.
- Full DOS Game Compatibility.
- PCI Bus Master for fast DMA.
- Fully Compliant with PC97 Power Management Specification.

1.2 System Requirements

This section describes system requirements for the Audio Driver installation and Usage.

Computer	Intel® Celeron™ processor or higher
Operating system	DOS 5.0 or higher, Windows®95/98, Windows®NT 3.51 or 4.0, or OS/2®
CD-ROM	Double Speed or Higher
Chipset	Creative®ES1373

2. Audio Driver Setup & Usage Procedures

Insert the CD-title into your CD-ROM drive. This CD will auto-run. This will display installation for VGA driver and sound driver. Also included are Intel®PIIX4 patch for Windows®95, PC-cillin 98, and Bus Master driver. Just click the button for automatic installation for audio driver.

2.1 Windows® 95/98
If you start Windows®95/98, this will automatically detect this hardware onboard "PCI Multimedia Audio Device" and "Gameport Joystick". You need to click "Next", then "Finish". Do not click on the "Cancel". The driver need these ID.

2.1-1 Audio Driver Installation Procedure:
Step 1: Insert the provided CD_ROM disk into the CD-ROM drive.
Step 2: Look for the CD_ROM drive, double click on the CD_ROM icon. This will show the setup screen.
Step 3: Click on "CREATIVE AudioPCI"sound drivers icon.
Step 4: This will copy the audio drivers into the hard drive.
Step 5: A message will appear stating you must restart the Windows®95/98 system, select **yes** to restart.

Note: You must install Audio Driver before installing USB support.

2.2 Windows® NT 4.0

2.2-1 Audio Driver Installation Procedure:
Step 1:   Click **Start** menu and select **Control Panel** from **Settings**
                    group.
Step 2:   Select **Multimedia** icon.
Step 3:   Click on the **Devices** tab.
Step 4:   Click **Add**.
Step 5:   Double click on **Unlisted or Updated Driver** in the list.
Step 6:   Insert the **CD-ROM Disk** into the CD-ROM Drive.
Step 7:   When the Install from Disk dialog box appears, look for your
                    CD-ROM drive :**\Sound\Creative\ AudioPCI\Drivers\ NT40**
                    \English\I386\CD
Step 8:   Click **OK**.
Step 9:   Click **OK**.
Step 10: A message will appear stating that the drivers were
                    succesfully installed. Click OK. You must now restart
                    Windows® NT 4.0.

2.3 Detailed User's Manual

The detailed user's manual can be found on following path of the
CD-ROM provided:

PATH: Sound\Creative\AudioPCI\Docs\Manual.doc