TABLE OF CONTENT

Chapter 1

Chapter 2

Chapter 3

Chapter 1

1-1 Preface

Welcome to use the J-542A mainboard. This mainboard is based on Pentium processor PC/AT compatible system with ISA bus, PCI local bus and AGP slot. Also for this board including some special designs like ACPI/APM power management & powerful performance and so on. We think you will enjoying your personal computer because of your right choice.

1-2 Key Feature

The J-542A is designed for the PC user who wants a great many features in a small package. This motherboard:

- **Easy Installation:** Is equipped with BIOS supports auto detection of hard drives and plug and play to make setup of hard drives and expansion cards virtually automatic.
- **Chipset:** Ali M1542/M1543,Aladdin-V chipset.
- **Multi-Speed Support:** Support one of 90~333MHz Intel Pentium® processor/ Intel Pentium® processor with MMX™ technology; AMD-K5™/AMD-K6™/ AMD-K6™-2; Cyrix 6X86™/6X86MX™/PRMII™; IDT C6™ CPU on a ZIF Socket 7.
- Support 66/75/83.3/100MHz CPU Freguency
- **L2 Cache:** Provides on board 512K Pipelined Burst SRAM.
- **DRAM Memory Support:** Supports 2x72-pin SIMMs and 2x168-pin DIMMs (3.3V) of 4MB, 8MB, 16MB, 32MB, or 64MB to from a memory size between 8MB to 384GB. Support both Fast Page Mode and Extended Data Output (EDO) SIMMs. The J-542A also supports Synchronous DRAM module (DIMM).
- **ISA and PCI Expansion Slots:** Provides three 16-bit ISA slots, two 32-bit PCI slots.
- **AGP Slot:** Accelerated Graphic Port, for 533MB/sec data transfer rate and 66MHz/133MHz Bus Clock to improve graphic functions.
- **Super Multi-I/O:** Provides two high-Speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. UART2 can also be directed to the Infrared Module for wireless connections. Two floppy drives of either 5.25" or 3.5" (1.44MB or 2.88MB) are also supported without an external card.
- **PCI Bus Master IDE Controller and ULTRA DMA 33:** On-board PCI Bus Master IDE controller with two connectors that supports four IDE devices in two channels, provides faster data transfer rates, and supports Enhanced IDE devices such as Tape Backup, CD-ROM drives and LS-120. This controller also supports PIO Modes 3 and 4 and Bus Master IDE DMA 33Mbyte/Sec.

- **ACPI supporting for OS Directed Power Management**

  Ring-In Wake up: When Ring-In the system can wake up from SMI Mode.

  Ring-In Power On: When Ring-In the system can power on automatic by this function by use of ATX power supply.

  RTC Power On: When use of ATX power supply and Enabled RTC Power On function, you can setting RTC alarm to power on the system at the time length you setting.

  Power Button: Press the button will place the system power on/off when use ATX power supply.

  CPU fan auto-stopping when in suspend mode.

  Software off when use ATX power supply.

- **Power Support:** Efficient PWM switching power instead of traditional Linear Voltage Regulator to prevent power component from being burned-out.

- **PC 97 ready**

- **Optional IrDA and PS/2:** This motherboard supports an optional infrared port module for wireless interface and PS/2 mouse cable set.

- **Optional USB Port Connector:** This motherboard supports two USB port connectors for USB devices.

- **Baby AT Form Factor:** Dimensions 22cm x 21cm.

Chapter 2

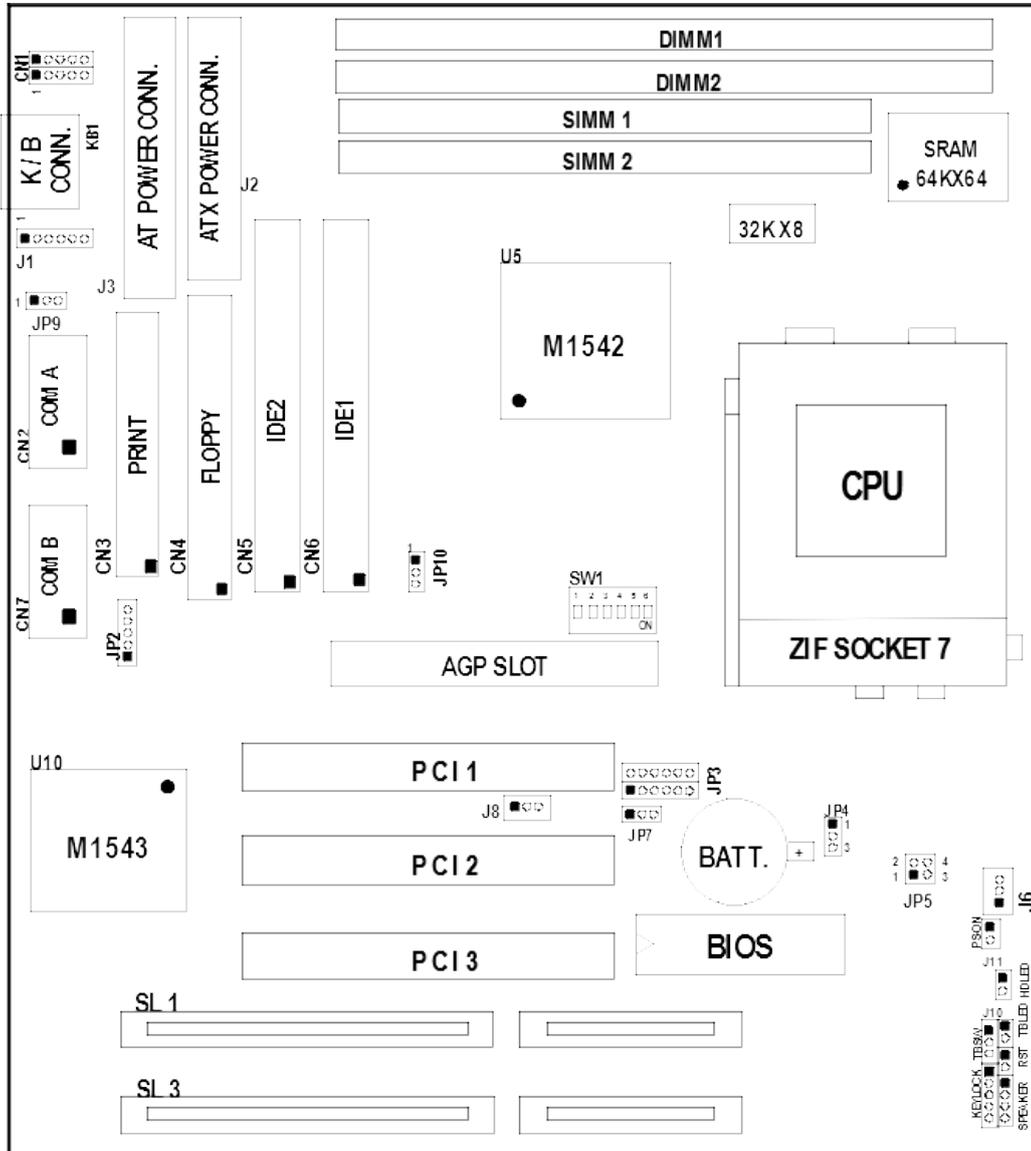# Installation

2-1 Motherboard Layout

Figure 2-1

2-2 Quick Reference for Jumpers, Connectors & Expansion Socket

Jumpers

Jumper	Name	Description	Page
JP3	CPU Voltage selector	for detail page 5	page 5
SW1	DIP switch for CPU type selection	for detail page 6	page 5
JP4	CMOS RAM Clear	1-2 Normal 2-3 Clear CMOS	page 7

Connectors

Connector	Name	Description	Page
KB1 (J2)	Keyboard Connector	5-Pins Female	page 11
CN1	USB Port Connector	10-Pins Block	page 15
J1	PS/2 Mouse Connector	6-Pins Block	page 11
COMA (CN2), COMB (CN7)	Serial Port COMA & COMB	10-Pins Block	page 12
PRIN1 (CN3)	Parallel Port Connector	26-Pins Block	page 11
FLOPPY (CN4)	Floppy Driver Connector	34-Pins Block	page 12
IDE1 (CN6)	Primary IDE Connector	40-Pins Block	page 13
IDE2 (CN5)	Secondary IDE Connector	40-Pins Block	page 13
CPUFAN1 (J6), SYSFAN1 (J8)	FAN Connector	1-2 12V Power Connector 2-3 ACPI FAN power control Connector	page 15
JP2	Infrared Module Connector	5-Pins Block	page 14
J3	AT Power Connector	12-Pins Block	page 10
J2	ATX Power Connector	20-Pins Block	page 10
J9	Front Panel Connector	16-Pins Block	page 14
HDLED (J10 1&3)	IDE activity LED	2-Pins Connector	page 14
PS-ON (J11)	ATX power button/soft power button	2-Pins connector	page 15

Expansion Sockets

Socket/Slot	Name	Description	Page
SL1~SL3	ISA Slot	16-bits ISA Bus Expansion slots	page 8
PCI1~PCI3	PCI Slot	32-bits PCI Local Bus Expansion slots	page 8
SIMM1~SIMM2	SIMM Module Socket	72-Pins SIMM D-RAM Module Expansion Socket	page 7
DIMM1~DIMM2	DIMM Module Socket	168-Pins DIMM SDRAM Module Expansion Socket	page 7
ZIF SOCKET 7	CPU Socket	CPU Socket	page 8

2-3 Installation Steps

Before using your computer, you must follow the steps as follows:

1.   Set Jumpers on the Motherboard

2. Install the CPU
3. Install DRAM Modules
4. Install Expansion card
5. Connect Cables, Wires, and Power Supply
6. Setup the BIOS Software

2-4 Jumper Settings

1. CPU Voltage Selection: JP3 (12-Pins connector)

<u>Selections</u>	<u>JP10</u>
2.2V	1-2 closed
2.8V	3-4 closed
2.9V	5-6 closed
3.2V	7-8 closed
3.45V	9-10 closed
3.52V	11-12 closed
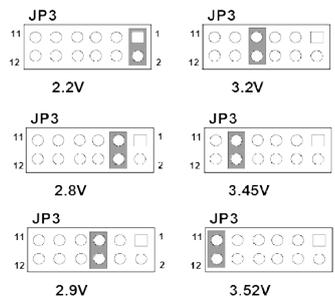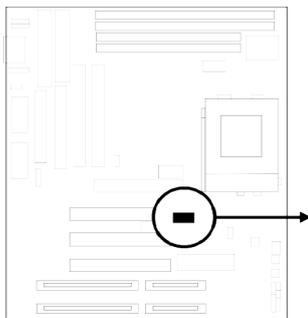
CPU Voltage Selection

2.   CPU Type selection: SW1 (6-Pins DIP Switch)

DIP Switch 1	DIP Switch 2	DIP Switch 3	BUS Clock	DIP Switch 4	DIP Switch 5	DIP Switch 6	Ratio
ON	ON	ON	60MHz	OFF	OFF	OFF	1.5/3.5
OFF	ON	ON	66MHz	ON	OFF	OFF	2.0
ON	ON	OFF	75MHz	ON	ON	OFF	2.5
OFF	ON	OFF	83MHz	OFF	ON	OFF	3.0
ON	OFF	OFF	90MHz	ON	OFF	ON	4.0
OFF	OFF	OFF	100MHz	ON	ON	ON	4.5
				OFF	ON	ON	5.0
				OFF	OFF	ON	5.5

SW1
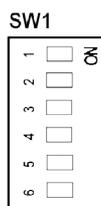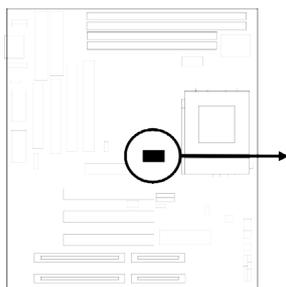
DIP Switch for CPU Type Selection

CPU Type	SW1						Bus Frequency	Clock Ratio
	1	2	3	4	5	6		
90MHz Pentium processor AMD K5-PR90	ON	ON	ON	OFF	OFF	OFF	60MHz	1.5x
AMD K5-PR100 / PR133 AMD K6-233 Cyrix 6X86MX-PR300 100MHz Pentium processor 233MHz Pentium processor with MMX technology	OFF	ON	ON	OFF	OFF	OFF	66MHz	1.5x / 3.5x
120MHz Pentium processor	ON	ON	ON	ON	OFF	OFF	60MHz	2.0x
133MHz Pentium processor	OFF	ON	ON	ON	OFF	OFF	66MHz	2.0x
150MHz Pentium processor Cyrix 6x86MX-PR166	ON	ON	ON	ON	ON	OFF	60MHz	2.5x
IDT-C6 180MHz	ON	ON	ON	OFF	ON	OFF	60MHz	3x
166MHz Pentium processor 166MHz Pentium processor with MMX technology AMD-K5 / 166 AMD-K6 / 166 Cyrix 6X86MX-PR200	OFF	ON	ON	ON	ON	OFF	66MHz	2.5x
IDT-C6 200MHz	ON	ON	ON	OFF	ON	OFF	60MHz	3.0x
200MHz Pentium processor Cyrix 6x86MX-PR233 200MHz Pentium processor with MMX technology AMD K6 / 200 IDT-C6 200MHz	OFF	ON	ON	OFF	ON	OFF	66MHz	3.0x
AMD K6 / 266 AMD K6 –2 / 266	OFF	ON	ON	ON	OFF	ON	66MHz	4.0x
AMD K6 / 300	OFF	ON	ON	ON	ON	ON	66MHz	4.5x
AMD K6 -2 / 300 (3D)	OFF	OFF	OFF	OFF	ON	OFF	100MHz	3.0x
Cyrix / IBM 6x86-200[+] Cyrix 6x86MX-PR200 IDT-C6 150MHz	ON	ON	OFF	ON	OFF	OFF	75MHz	2.0x
Cyrix 6x86MX –PR233	ON	ON	OFF	ON	ON	OFF	75MHz	2.5x
Cyrix 6x86MX -PR266	OFF	ON	OFF	ON	ON	OFF	83MHz	2.5x
Cyrix 6x86MX-PR333	OFF	OFF	OFF	ON	ON	OFF	100MHz	2.5x

NOTE: ① *Before installing the CPU, Please check the CPU Frequency and Clock Ratio from your supplier.*

② *For Cyrix/IBM 6X86MX series, please double check the CPU's Frequency and Clock Ratio.*

③ *75MHz/83MHz CPU's Bus Frequency is not in the reqular specification, therefore, we do not recommend to use it.*

3. **CMOS RAM: JP4 (Yellow color selector)**

This clears the user-entered information stored in the CMOS RAM chip such as hard disk information and passwords. Simply connect a jumper cap over this jumper for a few seconds then remove. But make sure that your computer is power off. You must enter the BIOS setup (by holding down <DEL> during power-up) after this is done to re-enter BIOS information (see BIOS SETUP)

<u>Selections</u>   <u>JP4</u>
Normal   1-2   (Default)
Clear CMOS   2-3   (momentarily)

CMOS RAM (Normal / Clear CMOS Data)
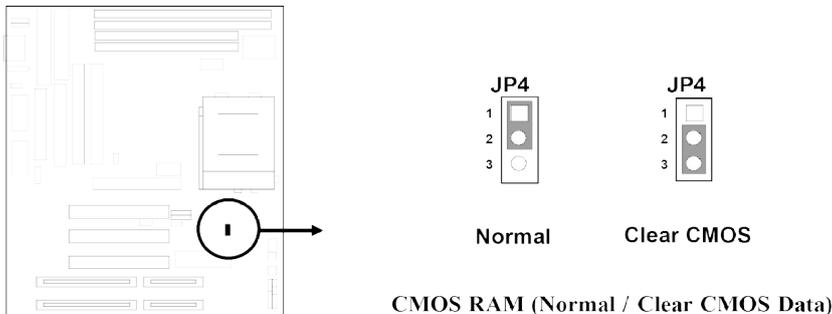
2-5 System Memory (DRAM)

This motherboard supports two 72-pin SIMMs of 4MB, 8MB, 16MB, 32MB, or 64MB to from a memory size between 8MB to 128MB. The DRAM can be either 60ns or 70ns Fast Page Mode or EDO RAM. This motherboard also support two 168-pin DIMM Module, it can use only +3V unbuffer synchronous DRAM. The Max. memory size is 384MB when use DIMM Module and SIMM together right now.

Install two memory modules each time as shown in the chart below.

BANK0		BANK1	Total Memory
SIMM1 & SIMM 2	**SDRAM1**	**SDRAM2**	
8MB 16MB 32MB X2	8MB 16MB 32MB 64MB 128MB X1	8MB 16MB 32MB 64MB 128MB X1	MAX. = 384MB

* *We don't recommend use SIMM Module with DIMM combination.*
* *When over 75NHz don't recommand use SIMM Module because the 7ons/6ons EDO/FPDRAM can't work fregaency over 75NHz.*

2-6 Central Processing Unit (CPU)

The motherboard provides a 321-pins ZIF Socket 7. The CPU on mother board must have a fan attached to prevent overheating.

> WARNING: **Without a fan, the CPU will overheat and cause damage to both the CPU and the motherboard.**

To install a CPU, first turn off your system and remove its cover. Locate the ZIF socket and open it by first pulling the lever sideways away from the socket then upwards to a 90-degree right angle. Insert the CPU with the white dot as your guide. The white dot should point towards the end of the level. The CPU has a corner pin for three of the four corners, the CPU will only fit in the one orientation as shown as follow. With the added weight of the CPU fan, no force is required to insert the CPU. Once completely inserted, hold down on the fan and close the socket's lever.

> IMPORTANT: *You must set jumper SW1 "DIP Switch for CPU Type Selection" and jumper JP10 "CPU Voltage Selection" on* page 5 *depending on the CPU that you install.*

CPU ZIF Socket 7
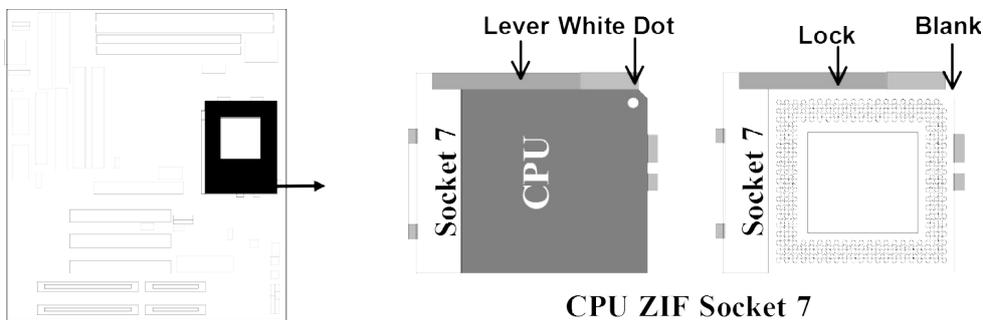
2-7 Expansion Cards

First read your expansion card documentation on any hardware and software settings that may be required to setup your specific card.

Installation Procedure:

1. Read the documentation for your expansion card.
2. Set any necessary jumpers on your expansion card.
3. Remove your computer's cover.
4. Remove the bracket on the slot you intend to use.
5. Carefully align the card's connectors and press firmly.
6. Secure the card on the slot with the screw you remove in step 4.
7. Replace the computer's cover.
8. Setup the BIOS if necessary.
9. Install the necessary software drivers for your expansion card.

Assigning IRQs for Expansion Cards

Some expansion cards may require an IRQ to operate. Generally an IRQ must be exclusively assigned to only one device. In an standard design there are 16 IRQs available but most of them are occupied by the system and leaves 6 free for expansion cards.

Either ISA or PCI expansion cards may require an IRQs. System IRQs are available to cards installed in the ISA expansion first, and any remaining IRQs can be used by PCI cards. Currently, there are two types of ISA cards. An original ISA expansion card design, know as "Legacy" ISA cards, they request configure the card's jumpers manually and then install it in any available slot on the ISA bus, and other know as Plug and Play. You may use Microsoft's Diagnostic (MSD.EXE) utility included in the DOS directory to see a map of your used and any free IRQs. For Windows 95 users, the "Control Panel" icon in "My Computer", contains a "System" icon which gives you "Device Manager" tab. Double clicking on a specific device give you "Resources" tab which shows the Interrupt number and address. Make sure that no any two of devices use the same IRQs, or your computer will experience problems when those two devices are in use at the same time.

To simplify this process the motherboard has complied with the Plug and Play (PNP) specification which was developed to allow automatic system configuration whenever a PNP-compliant card is added to the system. For PNP cards, IRQs are assigned automatically from those available.

If the system has both Legacy and PNP ISA cards installed, IRQs are assigned to PNP cards from those not used by Legacy cards. The PCI and PNP configuration of the BIOS setup utility can be used to indicate which IRQs are being used by Legacy cards. For older Legacy cards that does not work with the BIOS, you can contact your vendor for an ISA Configuration Utility.

An IRQ number is automatically assigned to PCI expansion cards after those used by Legacy and PNP ISA cards. In the PCI bus design, the BIOS automatically assigns an IRQ to a PCI. To install a PCI card, you need to set something called the INT (interrupt) assignment. Since all the PCI slots on this motherboard use an INTA #, be sure that the jumpers on your PCI cards are set to INT A.

Assigning DMA Channels for ISA Cards

Some ISA cards, both Legacy and PNP may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PCI and PNP configuration section of the BIOS Setup utility. In the BIOS setup, you should choose "Yes" for those IRQ's and DMA's you wish to reserve for Legacy cards.

2-8 External Connectors

1.   Power connector: AT Power Connector (12-pins block): J3

This connector connects to a standard 5 Volt power supply. To connect the leads from the power supply, ensure first that the power supply is not plugged. Most power supplies provide two plugs (P8 and P9), each containing six wires, two of which are black. Orient the connectors so that the black wires are located in the middle.

Using a slight angle, align the plastic guide pins on the lead to their receptacles on the connector. Once aligned, press the lead onto the connector until the lead locks into place.

Power Plugs from Power Supply   **Power Connector on Motherboard**
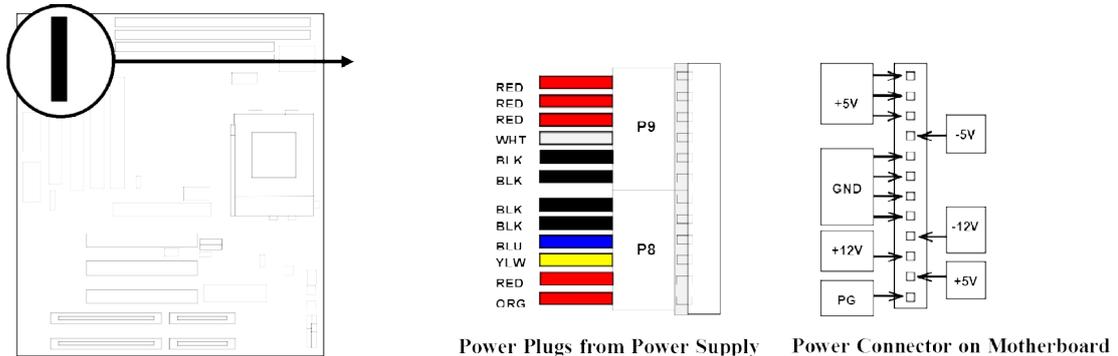
2. Power Connector: ATX Power Connector (20-pins block): J2

ATX Power Supply connector. This is a new defined 20-pins connector that usually comes with ATX case. The ATX Power Supply allows to use soft power on momentary switch that connect from the front panel switch to 2-pins Power On jumper pole on the motherboard. When the power switch on the back of the ATX power supply turned on, the full power will not come into the system board until the front panel switch is momentarily pressed. Press this switch again will turn off the power to the system board.

PIN	ROW2	ROW1
1	3.3V	3.3V
2	-12V	3.3V
3	GND	GND
4	Soft Power On	5V
5	GND	GND
6	GND	5V
7	GND	GND
8	-5V	Power OK
9	+5V	+5V (for Soft Logic)
10	+5V	+12V

Pin 1   **ATX Power Connector**

3. Keyboard Connector (5-pins female): KB1

This connection is for a standard IBM-compatible keyboard. May also be known as a 101 enhanced keyboard.

Keyboard Connector (5-pins female)

Connector Plug from Keyboard

4. PS/2 Mouse Connector (6-pins block): J1

If you are using a PS/2 mouse, you must purchase an optional PS/2 mouse set which connects to the 6-pins block and mounts to an open slot on your computer's case.

1:	DATA
2:	NC
3:	GND
4:	VCC
5:	CLK
6:	NC

PIN 1

PS/2 Mouse Module Connector

5. Parallel Printer Connector (26-pins block): CN3

Connection for the included parallel port ribbon cable with mounting bracket. Connect the ribbon cable to this connection and mount the bracket to the case on an open slot. It will then be available for a parallel printer cable.

NOTE: Serial printers must be connected to the serial port. You can enable the parallel port and choose the IRQ through BIOS Setup on *"Onboard Parallel Port".*

CN3

Pin 1

Parallel Printer Connector

6. Serial port COMA and COMB Connector (Two 10-pins blocks): COMA, COMB
(CN2 , CN7)

These connectors support the provided serial port ribbon cables with mounting bracket. Connect the ribbon cables to these connectors and mount the bracket to the case on an open slot. The two serial ports on the mounting bracket will then be used for pointing devices or other serial devices. See page 32 for BIOS configuration of "Onboard Serial Port"

Serial port COMA and COMB Connector
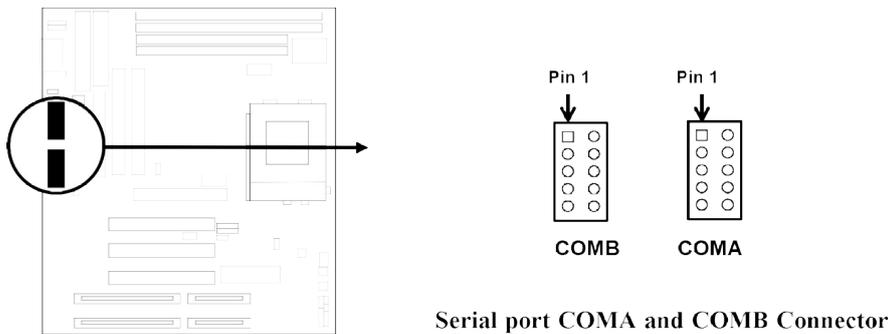
7. Floppy drive Connector (34-pins block): FLOPPY (CN4)

This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.

Floppy Drive Connector
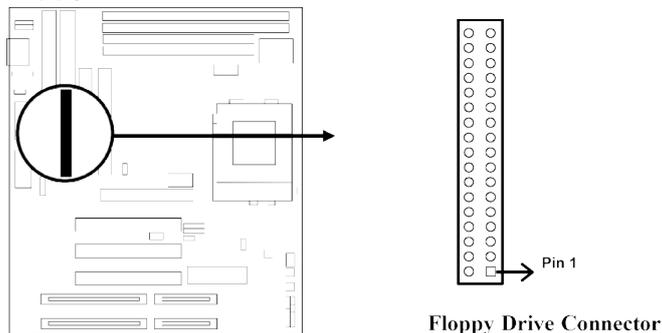
8. Primary IDE Connector (40-pins block): IDE1 (CN6)

This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer to the documentation of your hard disk for the jumper settings.
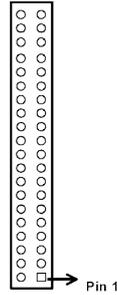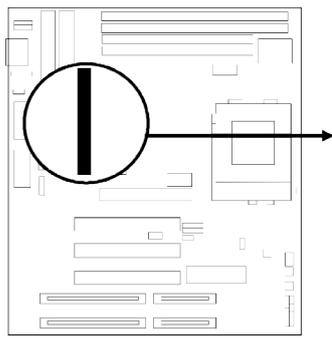
Primary IDE Connector

9. Secondary IDE Connector (40-pin block): IDE2 (CN5)

This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.
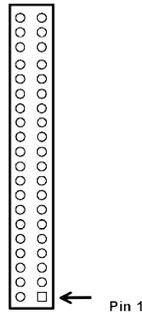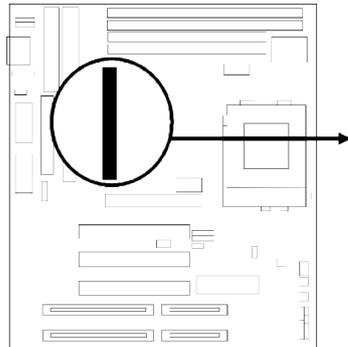
Secondary IDE Connector

10. Turbo LED switch: TBLED

The motherboard's turbo function is always on. The turbo LED will remain constantly lit while the system power is on. You may wish to connect the Power LED from the system case to this lead. See the figure on .

11. Reset switch lead: RST

This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

12. Keyboard lock switch lead: KEYLOCK

This 5-pin connector connects to the case-mounted key switch for locking the keyboard for security purposes. See the figure below.

13. Speaker connector: SPEAKER

This 4-pin connector connects to the case-mounted speaker. See the figure below.
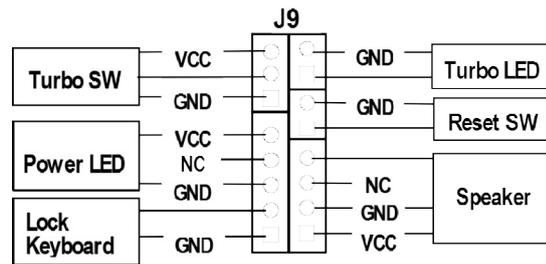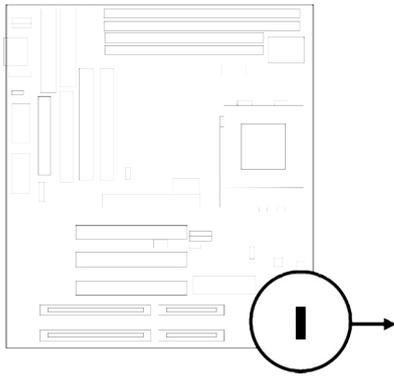
System Case Connections

J9

Turbo SW	VCC			GND	Turbo LED
	GND			GND	Reset SW
Power LED	VCC				
	NC			NC	Speaker
	GND			GND	
Lock Keyboard	GND			VCC	

14. IDE activity LED: HDLED (J10 1&3)

This connector connects to the hard disk activity indicator light on the case.

HDLED

```
2  ■ □  1 +
4  ■ ○  3 -
```
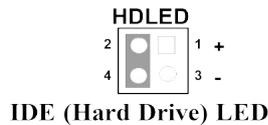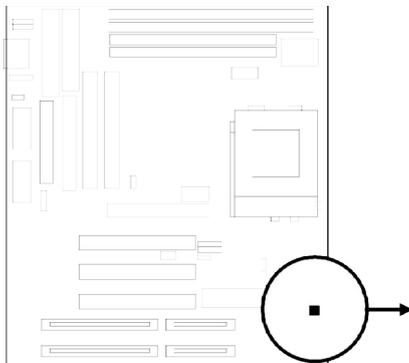
IDE (Hard Drive) LED

15. IR infrared module connector: JP2

This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to small opening on system cases that support this feature you must also configure the setting through BIOS setup. Use the four pins as shown on the Back View and connect a ribbon cable from the module to the motherboard according to the pin definitions.

JP2

→ VCC
→ N.C
→ IRRX
→ GND
→ IRTX
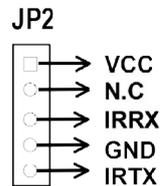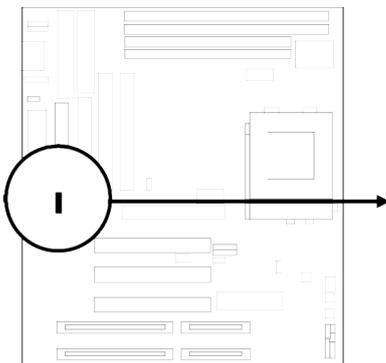
Infrared Module Connector

16. USB Port connector: CN1

```
            CN1
        1          2
VCC ──┐□  ○┌── VCC
USB.D0 ┤○  ○├ USB.D0
USB.D1 ┤○  ○├ USB.D1
GND ──┤○  ○├── GND
GND ──┤○  ○├── GND
        9          10
```

USB Port connector

17. FAN connector:J8, J6

CPUFAN1, SYSFAN1

```
    3       1
   ○   ○   □
        │
      +12V
R.P.M. SENCE    GND
```
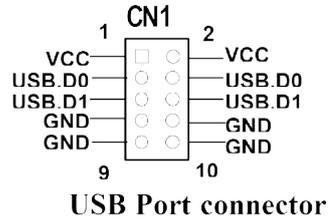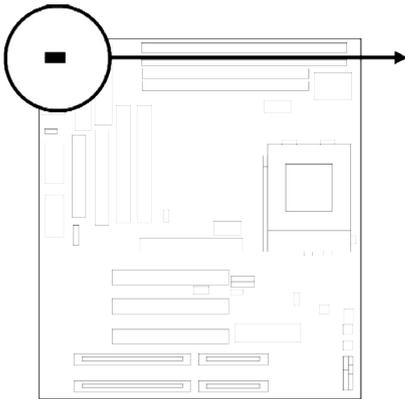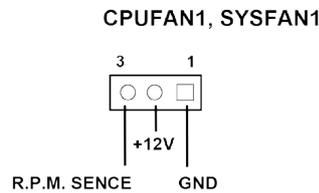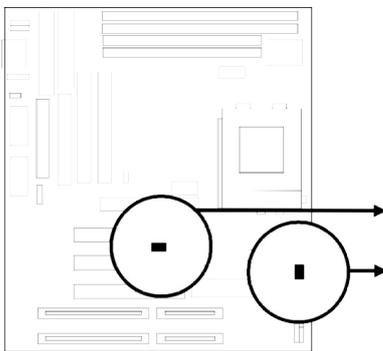
Fan Connector

18. Power-On button connector: PS-ON (J11)


```
    PS-ON
 2 ┌──┬──┐ 1 ───── GND
   │■ │□ │
 4 │○ │○ │ 3 ───── Push Button
   └──┴──┘
```
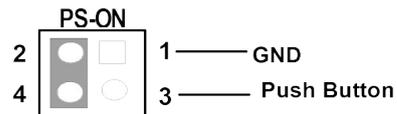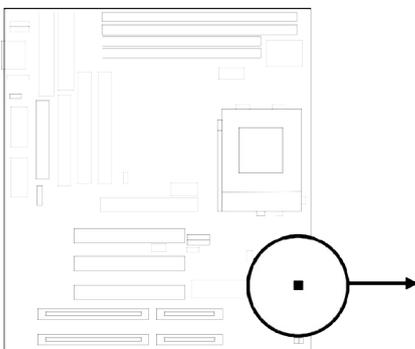
Power-On button connector

Chapter 3

AWARD BIOS SETUP

Award's ROM BIOS provides a built-in Setup program which allows user modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS RAM so data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM stay unchanged unless here is configuration change in the system, such as hard drive replacement or new equipment is installed.

It is possible that CMOS had a battery failure which cause data lose in CMOS_RAM. If so, re_enter system configuration parameters become necessary.

To enter Setup Program

Power on the computer and press **<Del>** key immediately will bring you into BIOS **CMOS SETUP UTILITY**.

ROM PCI/ISA BIOS (2A5KKJ1E)

CMOS SETUP UTILITY

AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGURATION	SAVE & EXIT SETUP
LOAD BIOS DEFAULTS	EXIT WITHOUT SAVING
LOAD SETUP DEFAULTS	

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

Figure 3-1

The menu displays all the major selection items and allow user to select any one of shown item. The selection is made by moving cursor (press any direction key) to the item and press <Enter> key. An on_line help message is displayed at the bottom of the screen as cursor is moving to various items which provides user better understanding of each function. When a selection is made, the menu of selected item will appear so the user can modify associated configuration parameters.

3-1 STANDARD CMOS SETUP

Choose "**STANDARD CMOS SETUP**" in the CMOS SETUP UTILITY Menu (Figure 3-1). The STANDARD CMOS SETUP allows user to configure system setting such as current date and time, type of hard disk drive installed in the system, floppy drive type, and the type of display monitor. Memory size is auto-detected by the BIOS and displayed for your reference. When a field is highlighted (direction keys to move cursor and <Enter> key to select), the entries in the field will be changed by pressing <PgDn> or <PgUp> keys or user can enter new data directly from the keyboard.

```
ROM PCI/ISA BIOS (2A5IKJ19)
                         STANDARD CMOS SETUP
                         AWARD SOFTWARE, INC.
┌─────────────────────────────────────────────────────────────────┐
│ Date (mm:dd:yy) : Thu, Mar, 12 1998                               │
│ Time (hh:mm:ss) : 13 : 43 : 56                                    │
│                                                                   │
│ HARD DISKS      TYPE SIZE CYLS HEAD PRECOMP LANDZ SECTOR  MODE     │
│ Primary Master  : Auto   0   0    0     0      0     0  Auto       │
│ Primary Slave   : Auto   0   0    0     0      0     0  Auto       │
│ Secondary Master : Auto  0   0    0     0      0     0  Auto       │
│ Secondary Slave  : Auto  0   0    0     0      0     0  Auto       │
│                                                                   │
│ Drive A : 1.44M , 3.5 in.      ┌──────────────────────────────┐   │
│ Drive B : None                 │   Base  Memory :  640K        │   │
│                                │ Extended  Memory :  7168K     │   │
│ Video  : EGA/VGA               │   Other  Memory :  384K       │   │
│ Halt On : All Errors           │ ──────────────────────────    │   │
│                                │   Total Memory :  8192K       │   │
│                                └──────────────────────────────┘   │
├───────────────────────────────────────────────────────────────────┤
│ Esc : Quit        ↑↓→← : Select Item     Pu/Pd/+/- : Modify       │
│                                                                   │
│ F1  : Help        (Shift)F2: Change Color                         │
└───────────────────────────────────────────────────────────────────┘
```

Figure 3-2

NOTE: If hard disk Primary Master/Slave and Secondary Master/Slave were   used Auto, than the hard disk size and model will be auto-detect on display during POST.

NOTE: The "Halt On:" field is to determine when to halt the system by the BIOS is error occurred during POST.

3-2 BIOS FEATURES SETUP

Select the "**BIOS FEATURES SETUP**" option in the CMOS SETUP UTILITY menu allows user to change system related parameters in the displayed menu. This menu shows all of the manufacturer's default values of this motherboard. Again, user can move the cursor by pressing direction keys and <PgDn> of <PgUp> keys to modify the parameters. Pressing [F1] key to display help message of the selected item.

This setup program also provide 2 convinent ways to load the default parameter data from BIOS [F6] or CMOS [F7] area if shown data is corrupted. This provides the system a capability to recover from any possible error.

ROM PCI/ISA BIOS (2A5KKJ1E)

BIOS FEATURES SETUP

```
Virus Warning          : Disabled      Video  BIOS Shadow    : Enabled
CPU Internal Cache      : Enabled       C8000-CBFFF Shadow    : Disabled
External Cache          : Enabled       CC000-CFFFF Shadow    : Disabled
Quick Power On Self Test : Disabled     D0000-D3FFF Shadow    : Disabled
Boot Sequence           : A,C,SCSI      D4000-D7FFF Shadow    : Disabled
Swap Floppy Drive        : Disabled     D8000-DBFFF Shadow    : Disabled
Boot Up Floppy Seek      : Enabled      DC000-DFFFF Shadow    : Disabled
Boot Up NumLock Status    : On
Boot Up System Speed      : High
Gate A20 Option          : Disabled
Typematic Rate Setting    : Disabled
Typematic Rate (Chars/Sec) : 6
Typematic Delay (Msec)    : 250
Security Option          : Setup
PCI/VGA Palette Snoop     : Disabled    Esc: Quit    ↑↓ → ← : Select Item
Assign IRQ For VGA       : Enabled      F1 : Help       Pu/Pd/+/-:Modify
OS Select For DRAM > 64MB  : Non-OS2    F5 : Old Values  (Shift)F2 : Color
HDD S.M.A.R.T capability  : Disabled    F6 : Load BIOS Defaults
Report No FDD For WIN 95   : No
                                        F7 : Load Setup Defaults
```

Figure 3-3

Note: The Security Option contains "setup" and "system". The "setup" indicates that the password setting is for CMOS only while the "system" indicates the password setting is for both CMOS and system boot up procedure.

- **Virus Warning:** This category flashes on the screen. During and after the system boots up, any attempt to write to the boot sector or partition table of the hard disk drive will halt the system and the following error message will appear, in the mean time, you can run an anti-virus program to locate the problem. Default value is Disabled

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

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

- **CPU Internal Cache / External Cache:** These two categories speed up memory access. However, it depends on CPU/chipset design. The default value is Enable. If your CPU without Internal Cache then this item "CPU Internal Cache" will not be show.

  Enabled: Enable cachehis category speeds up Power On Self Test.
          (POST) after you power on the computer.

  Disabled: Disable cache

- **Quick Power On Self Test:** If it is set to Enable, BIOS will shorten or skip some check items during POST.

  Enabled: Enable quick POST

  Disabled: Normal POST

- **Boot Sequence:** This category determines which drive computer searches first for the DOS (Disk Operating System). Default value is A,C,SCSI. System will first search for floppy disk drive, then hard disk drive and then SCSI device. The options are: C, A, SCSI; C, CDROM, A; CDROM, C, A; D, A, SCSI; E, A, SCSI; F, A, SCSI; SCSI, A, C; SCSI, C, A; C only; LS/ZIP, C.

- **Swap Floppy Drive:** The swap floppy drive. Default value is Disabled.
  Enabled: Floppy A & B will be swapped under the DOS
  Disabled: Floppy A & B will be not swap

- **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 760K, 1.2M and 1.44M are all 80 tracks. The default value is Enabled.
  Enabled: BIOS searches for floppy disk drive to determine if it is 40 or 80 tracks.
  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.
  Note that there will not be any warning message if the drive installed is 360K.

- **Boot Up NumLock Status:** The default value is On.
  On: Keypad is number keys.
  Off: Keypad is arrow keys.

- **Boot UP System Speed:** It selects the default system speed-the speed that the system will run at immediately after power up.
  High: Set the speed to high.
  Low: Set the speed to low.

NOTE: The board default value is LOW in the field. Boot the system to controller turbo or De-turbo by Onboard (Turbo Switch).

- **Typematic Rate Setting:** This determines the typematic rate.
  Enabled: Enable typematic rate and typematic delay programming.
  Disabled: Disable typematic rate and typematic delay programming. The system BIOS will use default value of this 2 items and the default is controlled by keyboard.

- **Typematic Rate (Chars/Sec):**

6 : 6 characters per second	8 : 8 characters per second
10 : 10 characters per second	12 : 12 characters per second
15 : 15 characters per second	20 : 20 characters per second
24 : 24 characters per second	30 : 30 characters per second

- **Typematic Delay (Msec):** When holding a key, the time between the first and second character displayed.

  250 : 250 msec

500 : 500 msec
750 : 750 msec
1000 : 1000 msec

- **Security Option:** This category allows you to limit access to the system and Setup, or just to Setup. The default value is 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: The system will boot, but access to Setup will be denied if the incorrect password is entered at the prompt.

> *NOTE:* **To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.**

- **Video BIOS Shadow:** It determines whether video BIOS will be copied to RAM, however, it is optional from chipset design. Video Shadow will increase the video speed.

  Enabled: Video shadow is enabled

  Disabled: Video shadow is disabled

- C8000 - CBFFF   Shadow:
  CC000 - CFFFF Shadow:
  D0000 - D3FFF Shadow:
  D4000 - D7FFF Shadow:
  D8000 - DBFFF Shadow:
  DC000 - DFFFF Shadow:

  These categories determine whether optional ROM will be copied to RAM by 16K byte or 32K byte per/unit and the size depends on chipset.

  Enabled: Optional shadow is enabled.

  Disabled: Optional shadow is disabled.

3-3 CHIPSET FEATURES SETUP

Choose the "CHIPSET FEATURES SETUP" in the CMOS SETUP UTILITY menu to display following menu.

ROM PCI/ISA BIOS (2A5KKJ1E)
CHIPSET FEATURES SETUP
AWARD SOFTWARE ,INC

Auto Configuration : Enabled	**Auto Detect DIMM/PCI** : Enabled
L2 TAC RAM Size : 8	**Spread Spectrum** : Disabled
AT Bus Ciock : CLK2/3	
DRAM Timing : Normal	
SDRAM CAS Latency : 3	
Pipelined Function : Enabled	
Graphics Aperture Size : 64MB	
SDRAM Burst X-1-1-1-1-1-1-1 : Enabled	
DRAM Data Integrity Mode : Disabled	

Memiry Hole At 15-16M : Disabled **Host Read DRAM Command Mode : Bypass** **AGP Read Burst : Enabled** **ISA Line Buffer : Enabled** **Passive Release : Enabled** **Delay Transaction : Disabled**	
Primary Frame Buffer : All **VGA Frame Buffer : Enabled** **Dara Nerge : Disabled** **IO Recovery Period : 1us**	**Esc: Quit ↑↓→←: Select Item** **F1 : Help Pu/Pd/+/-:Modify** **F5 : Old Values (Shift)F2 : Color** **F6 : Load BIOS Defaults** **F7 : Load Setup Defaults**

Figure 3-4

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache. It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings

have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

- **DRAM Settings:**

The first chipset settings deal with CPU access to dynamic random access memory (DRAM). The default timings have been carefully chosen and should only be altered if data is being lost. Such a scenario might well occur if your system had mixed speed DRAM chips installed so that greater delays may be required to preserve the integrity of the data held in the slower memory chips.

Auto Configuration:

This item allows you select pre-determined optimal values for DRAM, cache, timing according to CPU type & system clock.
The Choice: Enabled, Disabled.
Note: When this item is enabled, the pre-defined items will become SHOW-ONLY.

L2 TAG RAM Size:

The system uses tag bits to determine the status of data in the L2 cache. Set this field to match the specifications (8 or 10 bits) of the installed tag RAM chip.
The Choice: 8,10.

AT Bus Clock:

You can set the speed of the AT bus in terms of a fraction of the CPU clock speed (PCLK2), or at the fixed speed of 7.16 MHz.
The Choice: 7.16 MHz, CLK2/2, CLK2/3, CLK2/4, CLK2/5, and CLK2/6

DRAM Timing:

The value in this field depends on performance parameters of the installed memory chips (DRAM). Do not change the value from the factory setting unless you install new memory that has a different performance rating than the original DRAMs.

The Choice: Normal, Fast, Slow.

SDRAM CAS Latency:

When synchronous DRAM is installed, the number of clock cycles of CAS latency depends on the DRAM timing. Do not reset this field from the default value specified by the system designer.
The Choice: 2, 3.

Pipelined Function:

When *Enabled,* the controller signals the CPU for a new memory address before all data transfers for the current cycles are complete, resulting in faster performance.

The Choice: Enabled, Disabled.

DRAM Data Integrity Mode:

 Select *Parity* or *ECC* (error-correcting code), according to the type of installed DRAM.
 The Choice: Disabled, ECC, Parity.

Memory Hole At 15-16M:

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The choice : Enabled, Disabled.

Host Read DRAM Command Mode:

This item allows you to select the type of Host Read DRAM Command Mode.
The choice : Syn., Bypass.

Gated Clock:

Set the Gated clock is enable. When the Circuit is in idle state, the CLK sent to the circuit will STOP to reduce the power consumption. When any event come to the circuit, the CLK will recover and keep on running. This is to reduce the power consumption of the chip.

The choice : Enabled, Disabled.

G2H Buff Prefetch Threshold:

This setting will limit the Prefetch. If set to (1) No limitation : prefetch will keep on preftech if the prefetch has any empty line (2) Prefetch one line at most : The prefetch will only have one line prefetch in the buffer. If the buffer has one line in the buffer already, then no more prefetch will going until the buffer is empty. (3) Prefetch two line at most : The prefetch will only have two line prefetch in the buffer. If the buffer has two line in the buffer already, then no more prefetch will going until the buffer only have one line or empty.

The choice: Disabled, X-3 line, 1-2 line, 1-3 line, 2-2 line.

ISA Line Buffer:

The PCI to ISA Bridge has an 8-byte bi-directional line buffer for ISA or DMA bus master memory reads from or writes to the PCI bus. When *Enabled,* an ISA or DMA bus master can prefetch two doublewords to the line buffer for a read cycle.

The choice : Enabled, Disabled

Passive Release:

When *Enabled,* CPU to PCI bus accesses is allowed during passive release. Otherwise, the arbiter only accepts another PCI master access to local DRAM.

The choice : Enabled , Disabled.

Delay 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 choice: Enabled, Disabled.

Primary Frame Buffer:

Select a size for the PCI frame buffer. The size of the buffer should not impinge on local memory.

The choice : Disabled, 2MB 4MB, 8MB, 16MB.

VGA Frame Buffer:

When *Enabled*, a fixed VGA frame buffer from A000h to BFFFh and a CPU-to-PCI write buffer are implemented.

The choice: Enabled , Disabled.

Primary Frame Buffer:

Select a size for the PCI frame buffer. The size of the buffer should not impinge on local memory.

The choice: 1M, 2M, 4M, 8M, 16M, Disabled.

VGA Frame Buffer:

When Enabled, a fixed VGA frame buffer from A000h to BFFFh and a CPU-to-PCI write buffer are implemented.

The choice: Enabled , Disabled.

Data Merge:

This field controls the word-merge feature for frame buffer cycles. When Enabled, this controller checks the eight CPU Byte Enable signals to determine if data words read from the PCI bus by the CPU can be merged.

The choice: Enabled , Disabled.

3-4 POWER MANAGEMENT SETUP

Choose the **"POWER MANAGEMENT SETUP"** in the CMOS SETUP UTILITY to display the following screen. This menu allows user to modify the power management parameters and IRQ signals. In general, these parameters should not be changed unless it's absolutely necessary.

ROM PCI/ISA BIOS (2A5KKJ1E)

POWER MANAGEMENT SETUP

AWARD SOFTWARE, INC.

```
┌────────────────────────────────────────┬────────────────────────────────────┐
│ Power Management    : User Define       │        ** External Switch**        │
│ PM Control by APM   : Yes               │ Power Button        : Power Off     │
│ MODEM Use IRQ       : 3                 │ DOCK I/O SMI        : Disabled      │
│ Video Off Option    : Susp Stby-> Off   │ AC Power SMI        : Disabled      │
│ Video Off Mothod    : DPMS Support      │ Thermal  SMI        : Disabled      │
│                                         │                                    │
│    ** PM Monitor **                     │                                    │
│ HDD Power Down      : Disabled          │                                    │
│ Doze Mode         : Disabled            │                                    │
│ Standby Mode        : Disabled          │                                    │
│ Suspend Mode        : Disabled          ├────────────────────────────────────┤
│                                         │ Esc: Quit     ↑↓→←: Select Item    │
│    ** PM Events **                      │ F1 : Help        Pu/Pd/+/-: Modify  │
│ Promary HDD       : Disabled            │ F5 : Old Values   (Shift)F2 : Color │
│ Floppy          : Disabled              │ F6 : Load BIOS Defaults             │
│ COM Ports         : Enable              │ F7 : Load Setup Defaults            │
│ Keyboard          : Enable              │                                    │
│ LPT Ports         : Disabled            │                                    │
└────────────────────────────────────────┴────────────────────────────────────┘
```

Figure 3-5

Again, user can move the cursor by pressing direction keys to the field need to be modified and press <PgDn> or <PgUp> to alter item selection. You can only change the content of Doze Mode, Standby Mode, and Suspend Mode when the Power Management is set to 'User Define'.

3-4-1 The Description of the Power Management

- **Power Management mode selection:**

   User Define: This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

   1. HDD Power Down

   2. Doze Mode

   3. Standby Mode

   4. Suspend Mode

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU'S**. Doze Mode = 1

	min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control APM:

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to *No*.

MODEM Use IRQ:
This determines the IRQ in which the MODEM can use.

The choices: 3, 4, 5, 7, 9, 10, 11, NA.

Video Off Option:
When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
Susp,Stby --> Off	Monitor blanked when the system enters either Suspend or Standby modes.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

Video Off Method:
This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the

	Video Electronics Standards to select video power management values.

- **PM Monitors:**

The following four modes are Green PC power saving functions which are only user configurable when *User Defined* Power Management has been selected. See above for available selections.

HDD Power Down:

When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.

Doze Mode:

When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.

Standby Mode:

When enabled and after the set time of system inactivity, the fixed disk drive and the video would be shut off while all other devices still operate at full speed.

Suspend Mode:

When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

- ## Standby Events:

When Enabled, an event occurring on each device listed below restarts the global time for Standby mode.
Primary HDD

Floppy Disk

Serial Port

Keyboard

Parallel Port

- ## External Switch:

This wake-up optional is special for M/B manufacturers' design.

Power Button:

This item allows you to select the function of power button.
The choice: Disabled, Green Mode, Power Off.

DOCK I/O SMI:

This item allows you to enable or disable the function of DOCK I/O SMI.

The choice: Enabled, Disabled.

3-4-2 Description of the Green Functions

This motherboard supports HDD Power Down, Doze and standby power saving functions when Intel Pentium processor CPU is installed. The detail description of these functions are provided as following:

HDD Standby Mode
When system stop reading or writing HDD, the timer starts to count. The system will cut off the HDD power when timer ran out of time. The system will not resume operation until either a read from or a write to HDD command is executed again.

Doze Mode
The system hardware will drop down CPU clock from normal working speed when Doze mode timeout occurred.

Standby Mode
When the system standby mode timer ran out, it will enter the standby mode and retain CPU at slow working speed. The screen will be blanked out.

Suspend Mode
When the system suspend timer time out, the system will enter the suspend mode and the chipset will stop CPU clock immediately. The power consunption in Suspend Mode is lower than in standby mode. The screen is also blanked out.

PM Events:

AWARD BIOS defines 15 PM Events in the power management mode (Doze, standby & suspend). The user can initial 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" isn't "Disabled". Once the system Doze timer timed out, it will process doze power saving procedure by starting the system standby timer. When the standby timer ran out and all of the "Enabled" events remains silent, the system will enter the standby mode. By now, the system will not only process the standby power saving procedures but also start the system suspend timer. When the suspend timer time out, all of the CPU clock will be stopped by dropping system clock down to zero and remains this way until any one of the "Enabled" event occurred.

- **Power Button Over Ride:** User can choice power off mothod, by instant off or 4 sec off.

- **Ring Power Up Control:** When setting this item Enabled, and press the power button to power off. After Ring in the system will auto power on.

- **Power Up by Alarm:** Default value is Disabled , when choice enabled you can setting Date of Month, Time Alarm to setup the time and the date to power on the computer.

3-5 PNP/PCI CONFIGURATION SETUP

This "PNP and PCI configuration Setup" option configures the PCI bus slots. All PCI bus slots on the system use INTA#, thus all installed PCI cards must be set to this value.

ROM PCI/ISA BIOS (2A5KKJ1E)
PNP/PCI CONFIGURATION SETUP
AWARD SOFTWARE, INC.

PNP OS Onstalled : Yes	**PCI IDE 2nd Channel ; Disabled**
Resources Controlled By : Manual	**PCI IRQ Actived By : Level**
Reset Configuration Data: Disabled	**PCI IDE IRQ Map To : ISA**
IRQ-3 assigned to : PCI/ISA PnP	
IRQ-4 assigned to : PCI/ISA PnP	
IRQ-5 assigned to : PCI/ISA PnP	
IRQ-7 assigned to : Legacy ISA	
IRQ-9 assigned to : PCI/ISA PnP	
IRQ-10 assigned to : PCI/ISA PnP	
IRQ-11 assigned to : PCI/ISA PnP	
IRQ-12 assigned to : PCI/ISA PnP	
IRQ-14 assigned to : Legacy ISA	
IRQ-15 assigned to : Legacy ISA	
DMA-0 assigned to : PCI/ISA PnP	

DMA-1 assigned to : PCI/ISA PnP	
DMA-3 assigned to : PCI/ISA PnP	Esc: Quit ↑↓→←: Select Item
DMA-5 assigned to : PCI/ISA PnP	F1 : Help Pu/Pd/+/-:Modify
DMA-6 assigned to : PCI/ISA PnP	F5 : Old Values (Shift)F2 : Color
DMA-7 assigned to : PCI/ISA PnP	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 3-6

- ## PCI Slot Configuration:

PNP OS Installed :

This item allows you to determine install PnP OS or not.
The choice: Yes, No.

Resource controlled by:

The Award Plug and Play BIOS has the capacity to automatically configure all of the boot and Plug and Play compatible devices. However, this capability means absolutely nothing unless you are using a Plug and Play operating system such as Windows®95.
The choice: Auto, Manual.

Reset Configuration Data:

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.
The choice: Enabled, Disabled .

IRQ3/4/5/9/10/11/12/13/15:

When resources are controlled manually, assign each system interrupt as one of the following types, depending on the type of device using the interrupt:

Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The choice: Legacy ISA, PCI/ISA PnP.

DMA0/1/3/5/6/7 assigned to:

When resources are controlled manually, assign each system DMA channel as one of the following types, depending on the type of device using the interrupt:
Legacy ISA Devices compliant with the original PC AT bus specification, requiring a specific interrupt (such as IRQ4 for serial port 1). PCI/ISA PnP Devices compliant with the Plug and Play standard, whether designed for PCI or ISA bus architecture.
The choice: Legacy ISA, PCI/ISA PnP.

PCI IDE 2nd Channel:

Select Disabled to deactivate the onboard PCI IDE second channel interface, if you install a secondary add-in IDE interface.

The choice: Enabled, Disabled.

PCI IRQ Activated by 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 choice: Level, Edge.

PCI IDE IRQ Map to:

This allows you to configure your system to the type of IDE disk controller in use. By default, Setup assumes that your controller is an ISA (Industry Standard Architecture) device rather than a PCI controller. The more apparent difference is the type of slot being used.

If you have equipped your system with a PCI controller, changing this allows you to specify which slot has the controller and which PCI interrupt (A, B,C or D) is associated with the connected hard drives.

Remember that this setting refers to the hard disk drive itself, rather than individual partitions. Since each IDE controller supports two separate hard drives, you can select the INT# for each. Again, you will note that the primary has a lower interrupt than the secondary as described in "*Slot x Using INT#*" above.

Selecting "*PCI Auto*" allows the system to automatically determine how your IDE disk system is configured.

3-6 LOAD BIOS DEFAULTS

The "**LOAD BIOS DEFAULTS**" function loads the system default data directly from ROM and initialize associated hardware properly. This function will be necessary only when the system CMOS data is corrupted.

ROM PCI/ISA BIOS (2A5IKJ19)
CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGE	Load BIOS Default (Y/N)? Y
PNP/PCI CONFIGU	T
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

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

Figure 3-7

3-7 LOAD SETUP DEFAULTS

The "**LOAD SETUP DEFAULTS**" function loads the system default data directly from ROM and initialize associated hardware properly.   This function will be necessary only when the system CMOS data is corrupted.

ROM PCI/ISA BIOS (2A5IKJ19)

CMOS SETUP UTILITY

AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT SETUP	IDE HDD AUTO DETECTION
PNP/PCI CONFIGU	
LOAD BIOS DEFAU	Load SETUP Default (Y/N)? Y
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

Esc : QUIT   ↑↓ → ←   : Select Item

F10 : Save & Exit Setup   (Shift) F2 : Change Color

Time, Date, Hard Disk Type...

Figure 3-8

3-8 INTEGRATED PERIPHERALS SETUP

ROM PCI/ISA BIOS (2A5KKJ1E)

INTEGRATED PERIPHERALS

AWARD SOFTWARE, INC.

On-Chip Primary IDE : Enabled	Power ON Function : by Button
Master PIO : Auto	KB Power ON Password : Enter
Salve PIO : Auto	KBC clock source : 8MHz
Master Ultra DMA : Auto	Onboard FDC Controller : Enabled
Slave Ultra DMA : Auto	Onboard UART Port 1 : Auto
On-Chip Secondary IDE : Enabled	Onboard UART Port 2 : Auto
Master PIO : Auto	UART2 Mode : IrDA
Salve PIO : Auto	Half Duplex time-out : Disabled
Master Ultra DMA : Auto	Onboard Parallel Port : 3BC/IRQ
Slave Ultra DMA : Auto	Parallel Port Mode : ECP
IDE HDD Block Mode : Enabled	ECP Mode Use DMA : 3
On-Chip USB Controller : Disabled	
Init Display First : PCI Slot	
Ring/Wake On LAN Control : Disabled	
RTC Alarm Controller : Disabled	

Figure 3-9

NOTE:If you don't use the Onboard IDE connector, than use On-card (PCI orISA card) IDE connector. You will set Onboard Primary IDE: Disabled an nboard Secondary IDE: Disabled from CHIPSET FEATURES SETUP UTILITY.
The Onboard PCI IDE cable should be equal to or less than 18 inches (45 cm).

- ***Integrated Peripherals***

On-Chip Primary IDE:
The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary IDE interface. Select Disabled to deactivate this interface

The choice: Enabled, Disabled.

On-Chip Secondary IDE:
The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the secondary IDE interface. Select Disabled to deactivate this interface

The choice: Enabled, Disabled.

On-Chip Primary/Secondary Master/Slave PIO:
The four IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.
The choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

On-Chip Primary/Secondary Master/Slave UDMA:

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.
The Choice: Auto, Mode 0, Mode 1, Mode 2.

IDE HDD Block Mode:

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The Choice: Enabled, Disable.

On-Chip USB Controller:

Select Enabled if your system contains a Universal Serial Bus (USB) controller.
The choice: Enabled, Disabled.

USB Keyboard Support:
Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The choice: Enabled, Disabled.

Ring In Controller:

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from a soft off state.

The choice: Enabled, Disabled.

RTC Alarm Controller:

When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The choice: Enabled, Disabled.

Date Alarm:

Select a date in the month. Select 0 (zero) if you prefer to set a weekly alarm (below).

Hour / Minute/ Second Alarm:

Select a specific timing of Alarm Controller.

Onboard FDC Controller:

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

The choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2:

This item allows you to determine access onboard serial port 1/port 2 controller with which I/O address.

The choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UR 1/2 Mode:

This item allows you to determine which Infra Red (IR) function of onboard I/O chip.

The choice: Normal, AS KIR, IrDA

UR1/2 Duplex Mode:

This item allows you to select the IR function when you're select the UR 1/2 Mode is ASKIR

The Choice: Half, Full.

Onboard Parallel Port:

This item allows you to determine access onboard parallel port controller with which I/O address.

The choice: 378H/IRQ7, 278H/IRQ5, 3BC/IRQ7, Disabled.

Parallel Port Mode:

Select an operating mode for the onboard parallel (printer) port. Select Normal unless your hardware and software require one of the other modes offered in this field.

The choice: PS/2, EPP1.9, ECP, ECPEPP1.9, SPP, EPP1.7.

ECP Mode Use DMA:

Select a DMA channel for the parallel port for use during ECP mode.

The choice: 3, 1.

3-9 SUPERVISOR/USER PASSWORD

This 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 (Refer to Figure 3-3 for the details). 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 either Supervisor Password or User Password in the Main Menu and press <Enter>. The following message appears:
   "**Enter Password:**"

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:
   "**Confirm Password:**"

4. Enter exact the same password you just typed again 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 bad 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.

3-10 IDE HDD AUTO DETECTION

The "IDE HDD AUTO DETECTION" utility is a very useful tool especially when you do not know which kind of hard disk type you are using. You can use this utility to detect the correct disk type and install in the system automatically. Also you can set HARD DISK TYPE to "Auto" in the STANDARD CMOS SETUP to have same result. The BIOS will Auto-detect the hard disk size and model on display during POST.

ROM PCI/ISA BIOS (2A5IKJ19)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

```
Date (mm:dd:yy) : Thu, Mar, 12  1998
Time (hh:mm:ss) : 13 : 43 : 56

HARD DISKS      TYPE  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE
Primary Master   :
Primary Slave    :
Secondary Master :
Sec
         ┌─────────────────────────────────────────────────────────┐
         │        Select Secondary Slave Option (N=Skip):N         │
         │                                                         │
         │  OPTIONS  SIZE  CYLS  HEAD  PRECOMP  LANDZ  SECTOR  MODE │
         │                                                         │
         │  1 (Y)   0    0    0      0     0      0  NORMAL         │
         │                                                         │
         │                                                         │
         └─────────────────────────────────────────────────────────┘

Esc : Quit        ↑↓→← : Select Item        Pu/Pd/+/- : Modify
F1  : Help        (Shift)F2: Change Color
```

Figure 3-10

NOTE: HDD Modes

The Award BIOS supports 3 HDD modes : NORMAL, LBA & LARGE

NORMAL mode

Generic access mode in which neither the BIOS nor the IDE controller will make any transformations during accessing.

The maximum number of cylinders, head & sectors for NORMAL mode are 1024, 16 & 63.

$$
\begin{array}{lll}
 & \text{no.} \quad \text{Cylinder} & (1024) \\
\times & \text{no.} \quad \text{Head} & (\ 16) \\
\times & \text{no.} \quad \text{Sector} & (\ 63) \\
\times & \text{no.} \quad \text{per sector} & (\ 512) \\
\hline
 & 528 \text{ Megabytes} &
\end{array}
$$

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

LBA (Logical Block Addressing) mode

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

During HDD accessing, the IDE controller will transform the logical address described by sector, head & cylinder into its own physical address inside the HDD.

The maximum HDD size supported by LBA mode is 8.4 Gigabytes which is obtained by the following formula:

$$
\begin{array}{lll}
 & \text{no.} \quad \text{Cylinder} & (1024) \\
\times & \text{no.} \quad \text{Head} & (\ 255)
\end{array}
$$

```
          x   no.   Sector        (  63)
         x   bytes per sector  (  512)
                    8.4 Gigabytes
```

LARGE mode

Extended HDD access mode supported by Award Software.

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

```
        CYLS.     HEAD     SECTOR     MODE
        1120        16        59        NORMAL
         560        32        59        LARGE
```

BIOS tricks DOS (or other OS) that the number of cylinders is less than 1024 by dividing it by 2. At the same time, the number of heads is nultiplied by 2. Reverse transformation process will be made inside INT 12h in order to access the right HDD address the right HDD address!

Maximum HDD size:

```
             no.   Cylinder     (1024)
        x   no.   Head   (  32)
        x   no.   Sector        (  63)
         x   bytes per sector   (  512)
                     1 Gigabytes
```

NOTE:

To support LBA or LARGE mode of HDDs, there must be some softwares involved. All these softwares are located in the Award HDD Service Routine (1NT 13h). It may be failed to access a HDD with LBA (LARGE) mode selected if you are running under a Operating System which replaces the whole INT 13h.

UNIX operating systems do not support either LBA or LARGE and must set to the Standard mode. UNIX can support drives larger than 528MB.

3-11   SAVE & EXIT SETUP

The "SAVE & EXIT SETUP" option will bring you back to boot up procedure with all the changes you just made which are recorded in the CMOS RAM.

3-12   EXIT WITHOUT SAVING

The "EXIT WITHOUT SAVING" option will bring you back to normal boot up procedure without saving any data into CMOS RAM. All of the old data in the CMOS will not be destroyed.

3-13   I/O & MEMORY MAP

MEMORY MAP

Address Range	Size	Description
00000-7FFFF	512K	Conventional memory
80000-9FBFF	127K	Extended Conventional memory
9FC00-9FFFF	1K	Extended BIOS data area if PS/2 mouse is installed
A0000-C7FFF	160K	Available for Hi DOS memory
C8000-DFFFF	96K	Available for Hi DOS memory and adapter ROMs
E0000-EEFFF	60K	Available for UMB
EF000-EFFFF	4K	Video service routine for Monochrome & CGA adapter
F0000-F7FFF	32K	BIOS CMOS setup utility
F8000-FCFFF	20K	BIOS runtime service routine (2)
FD000-FDFFF	4K	Plug and Play ESCD data area
FE000-FFFFF	8K	BIOS runtime service routine (1)

I/O MAP

000-01F	DMA controller (Master)
020-021	INTERRUPT CONTROLLER (Master)
022-023	CHIPSET control registers. I/O ports
040-05F	TIMER control registers
060-06F	KEYBOARD interface controller (8042)
070-07F	RTC ports & CMOS I/O ports
080-09F	DMA register
0A0-0BF	INTERRUPT controller (Slave)
0C0-0DF	DMA controller (Slave)
0F0-0FF	MATH COPROCESSOR
1F0-1F8	HARD DISK controller
278-27F	PARALLEL port 2
2B0-2DF	GRAPHICS adapter controller
2F8-2FF	SERIAL port 2

360-36F	NETWORK ports
378-37F	PARALLEL port 1
3B0-3BF	MONOCHROME & PARALLEL port adapter
3C0-3CF	EGA adapter
3D0-CDF	CGA adapter
3F0-3F7	FLOPPY DISK controller
3F8-3FF	SERIAL port-1

3-14 TIME & DMA CHANNELS MAP

TIME MAP: TIMER Channel 0 System timer interrupt
TIMER Channel 1 DRAM REFRESH request
TIMER Channel 2 SPEAKER tone generator

DMA CHANNELS: DMA Channel 0 Available
DMA Channel 1 Onboard ECP (Option)
DMA Channel 2 FLOPPY DISK (SMC CHIP)
DMA Channel 3 Onboard ECP (Default)
DMA Channel 4 Cascade for DMA controller 1
DMA Channel 5 Available
DMA Channel 6 Available
DMA Channel 7 Available

3-15 INTERRUPT MAP

NMI: Parity check error

IRQ (H/W):

  0 System TIMER interrupt from TIMER 0
  1 KEYBOARD output buffer full
  2 Cascade for IRQ 8-15
  3 SERIAL port 2
  4 SERIAL port 1
  5 PARALLEL port 2
  6 FLOPPY DISK (SMC CHIP)
  7 PARALLEL port 1
  8 RTC clock
  9 Available
10 Available
11 Available
12 PS/2 Mouse
13 MATH coprocessor
14 Onboard HARD DISK (IDE1) channel
15 Onboard HARD DISK (IDE2) channel

3-16 RTC & CMOS RAM MAP

RTC & CMOS:

00	Seconds
01	Second alarm
02	Minutes
03	Minutes alarm
04	Hours
05	Hours alarm
06	Day of week
07	Day of month
08	Month
09	Year
0A	Status register A
0B	Status register B
0C	Status register C
0D	Status register D
0E	Diagnostic status byte
0F	Shutdown byte
10	FLOPPY DISK drive type byte
11	Reserve

12	HARD DISK type byte	
13	Reserve	
14	Equipment type	
15	Base memory low byte	
16	Base memory high byte	
17	Extension memory low byte	
18	Extension memory high byte	
19-2d		
2E-2F		
30	Reserved for extension memory low byte	
31	Reserved for extension memory high byte	
32	DATE CENTURY byte	
33	INFORMATION FLAG	
34-3F	Reserve	
40-7F	Reserved for CHIPSET SETTING DATA	

3-17 BIOS REFERENCE-POST CODES

ISA PORT codes are typically output to port address 80h.

Post	Name	Description
CO	Turn Off Chipset Cache	OEM Specific-Cache controller.
1	Processor Test 1	Processor Status (1 FLAGS) Verification. Tests the following processor status flags carry, zero, sign, overflow. The BIOS will set each of these flags, verify the are set, then turn each flag off and verify it is off.
2	Processor Test 2	Read/ Write/ Verify all CPU registers except SS, SP, and BP with data pattern FF and OO.
3	Initialize Chips	Disable NMI, PIE, AIE, UEI, SOWV. Disable video, parity checking, DMA. Reset math coprocessor. Clear all page registers, CMOS shutdown byte. Initialize timer 0, 1, and 2, including set EISA timer to a known state.

		Initialize DMA Controllers 0 and 1. Initialize interrupt controllers 0 and 1. Initialize EISA extended registers.
4	Test Memory Refresh Toggle	RAM must be periodically refreshed inorder to keep the memory from decaying. This function assures that the memory refresh function is working properly.
5	Blank video, Initialize keyboard	Keyboard controller initialization.
6	Reserved	
7	Test CMOS Interface and Battery Status	Verifies CMOS is working correctly, detects bad battery.
BE	Chipset Default Initialization	Program chipset registers with power on BIOS defaults.
C1	Memory presence test	OEM Specific-Test to size on-board memory.
C5	Early Shadow	OEM Specific-Early Shadow enable for fast boot.
C6	Cache presence test	External cache size detection.

8	Setup low memory	Early chip set initialization. Memory presence test. OEM chip set routines. Clear low 64K of memory. Test first 64K memory.
9	Early Cache Initialization	Cyrix CPU initialization. Cache initialization.
A	Setup Interrupt Vector Table	Initialization first 120 interrupt vectors with SPURIOUS_INT_HDLR and initialize INT 00h-1Fh according to INT_TBL
B	Test CMOS RAM Checksum	Test CMOS RAM Checksum, if bad, or insert key pressed, load defaults.
C	Initialize keyboard	Detect type of keyboard controller (optional) Set NUM_LOCK status.
D	Initialize Video Interface	Detect CPU clock. Read CMOS location 14h to find out type of video in use. Detect and Initialize Video Adapter.

E	Test Video Memory	Test video memory, write sign-on message to screen. Setup shadow RAM.Enable shadow according to Setup.
F	Test DMA Controller 0	BIOS checksum test. Keyboard detect and initialization.
10	Test DMA Controller 1	
11	Test DMA Page Registers	Test DMA Page Registers.
12-13	Reserved	
14	Test Timer Counter 2	Test 8254 Timer 0 Counter 2.
15	Test 8259-1 Mask Bits	Verify 8259 Channel 1 masked interrupts by alternately turning off and on the interrupt lines.
16	Test 8259-2 Mask Bits	Verify 8259 Channel 2 masked interrupts by alternately turning off and on the interrupt lines.
17	Test Stuck 8259's Interrupt Bits	Turn off interrupts then verify no interrupt mask register is on.
18	Test 8259 Interrupt Functionality	Force an interrupt and verify the interrupt occurred.
19	Test Stuck NMI Bits (Parity I/O Check)	Verity NMI can be cleared.
1A		Display CPU clock.
1B-1E	Reserved	
1F	Set EISA Mode	If EISA non-volatile memory checksum is good, execute EISA initialization. If not, execute ISA tests an clear EISA mode flag. Test EISA Configuration Memory Integrity (checksum & communication interface).
20	Enable Slot 0	Initialization slot 0 (System Board).
21-2F	Enable Slot 1-15	Initialize slot 1 through 15.
30	Size Base and Extended Memory	Size base memory from 256K to 640K and extended memory above 1MB.
31	Test Base and Extended Memory	Test base memory from 256K to 640K and extended memory above 1MB using various patterns. NOTE: This will be skipped in EISA mode and can be "skipped" with ESC key in ISA mode.
32	Test EISA Extended Memory	If EISA Mode flag is set then test EISA memory found in slots initialization. NOTE: This will be skipped in ISA mode and can be

		"skipped" with ESC key in EISA mode.
33-3B	Reserved	
3C	Setup Enabled	
3D	Initialize & install Mouse	Detect if mouse is present, initialize mouse, install interrupt vectors.
3E	Setup Cache Controller	Initialize cache controller.
3F	Reserved	
BF	Chipset Initialization	Program chipset registers with Setup values
40		Display virus protest disable or enable.
41	Initialize Floppy Drive & Controller	Initialize floppy disk drive controller and drives.
42	Initialize Hard Drive & controller	Initialize hard drive controller and any drives.

43	Detect & Initialize Serial/Parallel Ports	Initialize any serial and parallel ports (also game port).
44	Reserved	
45	Detect & Initialize Math Coprocessor	Initialize math coprocessor.
46	Reserved	
47	Reserved	
48-4D	Reserved	
4E	Manufacturing POST Loop or Display Messages	Reboot if Manufacturing POST Loop pin is set. Otherwise display any messages (i.e., any non-fatal errors that were detected during POST) and enter Setup.
4F	Security Check	Ask password security (optional).
50	Write CMOS	Write all CMOS values back to RAM and clear screen.
51	Pre-boot Enable	Enable parity checker. Enable NMI, Enable cache before boot.
52	Initialize Option ROMs	Initialize any option ROMs present from C8OOOh to EFFFFh. NOTE: When FSCAN option is enabled, will initialize

		from C8OOOh to F7FFFh.
53	Initialize Time Value	Initialize time value in 40h:BIOS area.
60	Setup Virus Protect	Setup virus protect according to Setup.
61	Set Boot Speed	Set system speed for boot.
62	Setup Num Lock	Setup Num Lock status according to Setup.
63	Boot Attempt	Set low stack. Boot via INT 19h.
B0	Spurious	If interrupt occurs in protected mode.
B1	Unclaimed NMI	If unmasked NMI occurs, display. Press F1 to disable NMI, F2 reboot.
E1-EF	Setup Pages	E1-Page 1, E2-Page 2, etc.
FF	Boot	