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Chapter 1

1-1 Preface

Welcome to use the [720AF/720AH/720AN](#) mainboard. This mainboard is based on Pentium®II, PentiumIII processor PC/AT compatible system with ISA bus and PCI local bus. Also for this board including some special designs like,TV-out (only for 720AH) ,share memory 3D AGP VGA on-board, 3D PCI Audio on-board(only for 720AF/720AN), ACPI/AMP 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 [720AF/7620AH/720AN](#) is design for the PC user who wants a great many features in a small package . This motherboard :

- **Support Jumpless solution,can setting Front Side Bus Frequency (CPU Host Clock),and CPU ratio in BIOS SETUP “CHIPSET FEATURES SETUP“.**
- **Support CPU/SDRAM clock Asynchronous mode(66/100) to increase system performance in the BIOS SETUP.**
- **Built-In High performance 3D AGP VGA:**
 - * Support share memory 2MB to 8MB selectable in BIOS SETUP.
 - * 64 bits memory data interface.
 - * Integrated programmable 24-bit true-color RAMDAC up to 230MHz pixel clock.
 - * Integrated two 96x64 video line buffers for MPEG video playback.
 - * Support 64 bit memory data bus interface.
 - * Integrated a high performance and high quality 3D engine.
 - * Support DIC, Direct Draw Driver.
 - * Support AGP Spec.1.0 compliant, 1xmode(66MHz), 2xmode(133MHz)
- **Composite or S-Video output allow direct connection to NSTL/PAL TV monitors. (Only for 720AH)**
- **Built-In High performance 3D PCI Audio: (only for 720AF/720AH)**
 - * Support PCI Bus Spec 2.1 compliant.
 - * Full native DOS games compatibility via three technologies:
TDMA(Transparent DMA), DDMA(Distributed DMA), PC/PCI.
 - * High-Quality ESFM music synthesizer.
 - * Integrated 3D audio effect processor.
 - * Full-duplex operation for simultaneous record and playback.
 - * Meets PC 97/98 and WHQL Specifications.
- **Multi-Speed Support :** supports 66/75/83/95/100MHz Front Side Bus Frequency supports the Intel Pentium®II, PentiumIII processor from on a Slot1.
- **Chipset:** SiS 620/5595 AGPset chip with I/O subsystems, and ESS 1938S 3D PCI Audio chip.

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- **DRAM Memory Support:** support 3 168-pin DIMMS(3.3V)from a memory size between 16MB to 1.5GB.
 - **ISA and PCI expansion Slots:** Provides two 16-bit ISA slots, four PCI slots.
 - **Super Multi-I/O:** Provides two high-Speed UART compatible serial ports and one parallel port with EPP and ECP capabilities. 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 33/66:** 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 33/66 MB/S.
 - **ACPI supporting for OS Directed Power Management**
 - Keyboard Power On:** When use ATX power supply and JP2 1-2 closed,choose power on function by password in BIOS , can control power supply on by keyboard instead of power button .
 - 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.
 - RTC Power On:** 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.
 - Support Software Power OFF Function.**
 - **Power Support:** Efficient PWM switching power instead of traditional Linear Voltage Regulator to prevent power component from being burned-out.
 - **Meets PC99 Requirements.**
 - **Optional IRDA and PS/2:** This motherboard supports an dedicated 16C550 standard UART,supporting infrared communication module for wireless interface and PS/2 mouse cable set.
 - **USB Port Connector:** This motherboard supports two USB port connectors for USB devices.
 - **Bundle with "Xstore Pro" High Performance ULTRA DMA 33 Driver to improve IDE transfer rate up to 33Mbyte/sec. Increase System Performance 10% more, Hard Drive performance 60% more.**
 - **PC Health Monitoring :** To track PC CPU temperature, system voltage and fan speed. When current temperature over warning temperature system will have alarm to warning.
 - **ATX Form Factor:** Dimensions 30.5cm x 19cm.

Chapter 2

Hardware Installation

2-1 Unpacking

This mainboard package should contain the following:

- The 720AF / 720AH / 720AN mainboard
- USER'S MANUAL for mainboard
- Cable set for IDE x1, Floppy x1
- CD for Drivers PACK

The mainboard contains sensitive electronic components which can be easily damaged by electron-static, so the mainboard should be left in its original packing until it is installed.

Unpacking and installation should be done on a grounded anti-static mat.

The operator should be wearing an anti static wristband, grounded at the same point as the anti-static mat.

Inspect the mainboard carton for obvious damage. Shipping and handling may cause damage to your board. Be sure there are no shipping and handling damages on the board before proceeding.

After opening the mainboard carton, extract the system board and place it only on a grounded anti-static surface component side up. Again inspect the board for damage.

Press down on all of the socket IC's to make sure that they are properly inserted. Do this only on with the board placed on a firm flat surface.

Warning: Do not apply power to the board if it has been damaged.

You are now ready to install your mainboard. The mounting hole pattern on the mainboard matches the IBM-AT system board.

It is assumed that the chassis is designed for a standard IBM™ XT/AT™ main board mounting. Place the chassis on the anti-static mat and remove the cover.

Take the plastic clips, Nylon stand-off and screws for mounting the system board, and keep them separate.

2-2 720AF/720AH Motherboard Diagram

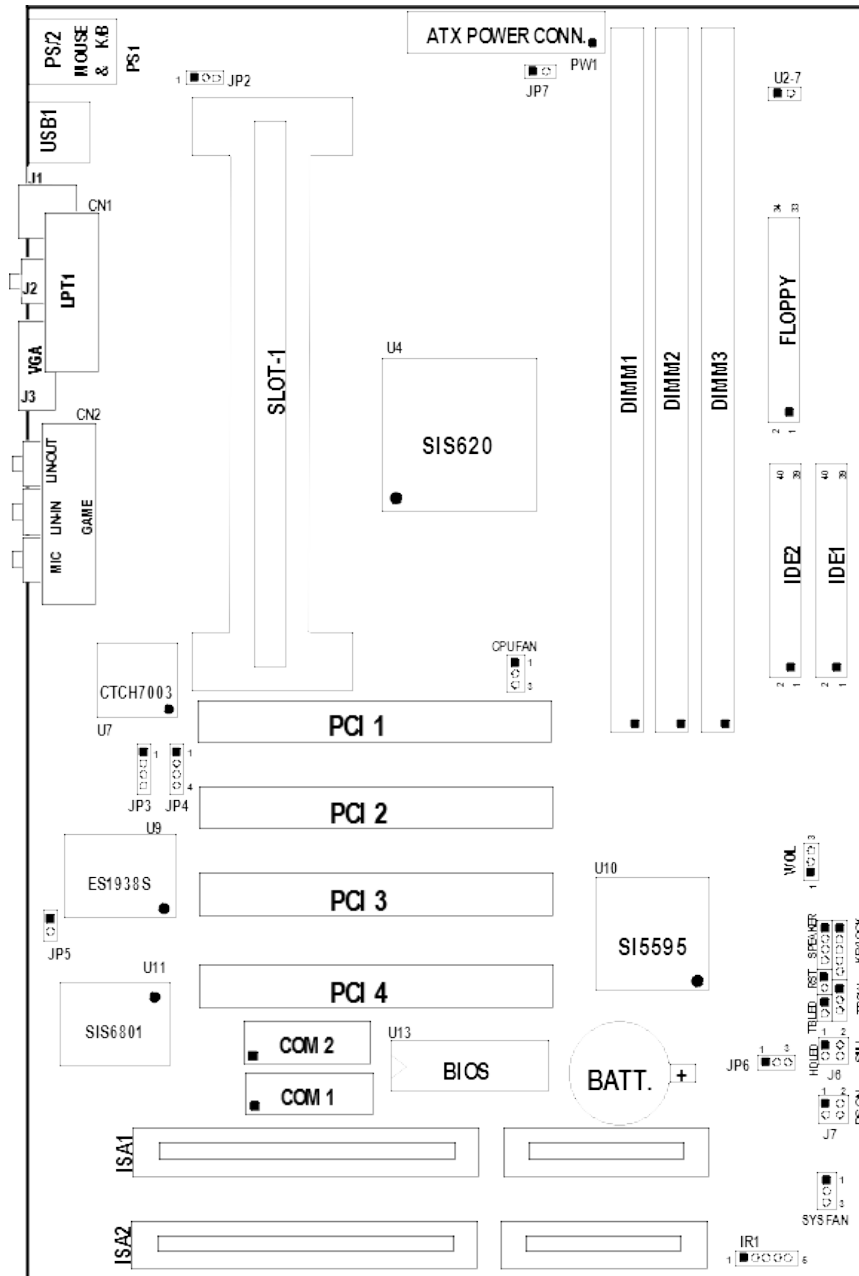


Figure 2-1

2.2 720AN Motherboard Diagram

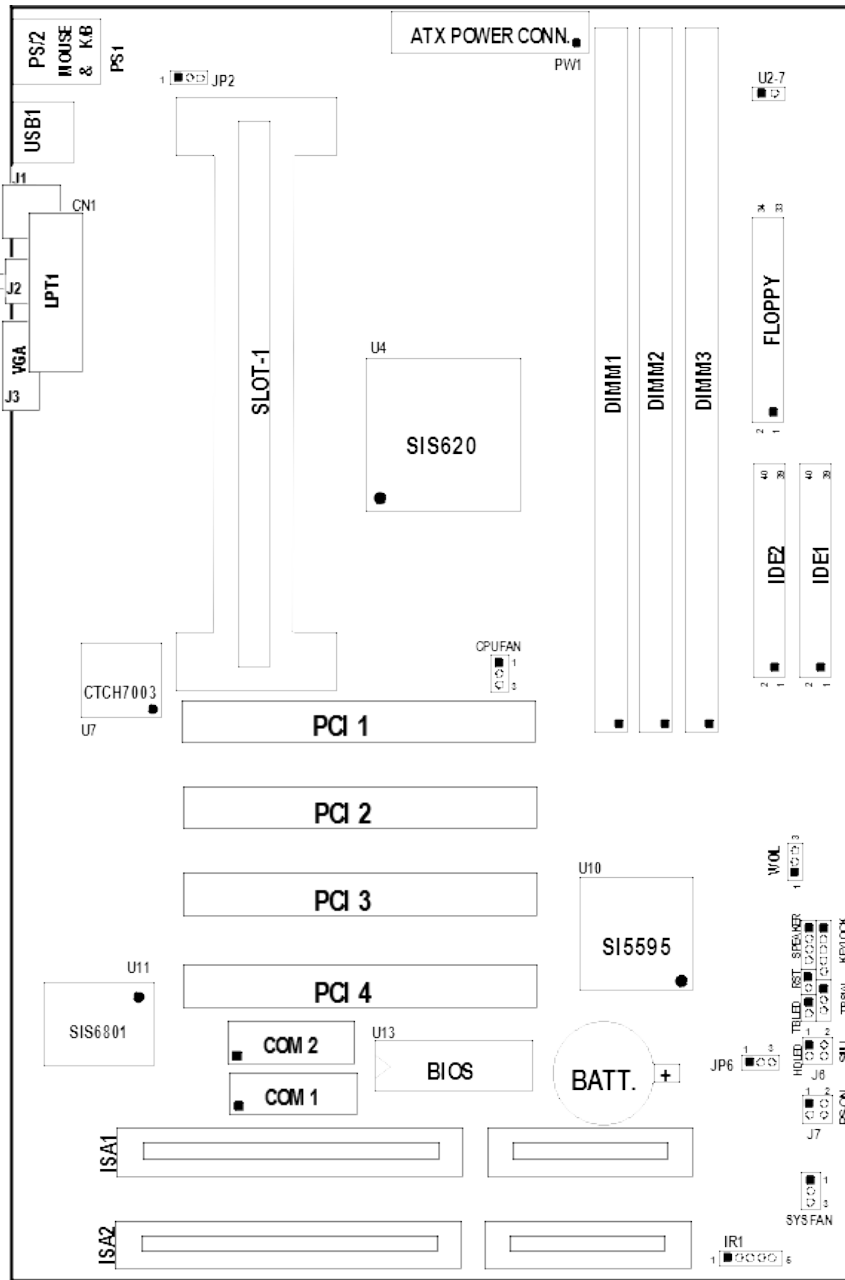


Figure 2-1

2-3 Quick Reference for Jumpers, Connectors & Expansion Socket

Jumpers

Jumper	Name	Description	Page
U2-7	CPU Bus Frequency Selection	Open:100MHZ , Closed:66MHz	p. 7
JP6	CMOS RAM Clear	2-3 Normal ,1-2 Clear CMOS	p. 8
JP5	Audio chip Enabled/Disabled	On:Enabled , Off:Disabled	p. 8
JP7	On board VGA Enabled/Disabled	open : Enabled,closed : Disabled	p. 8
JP2	Keyboard power on function	1-2 : Enabled , 2-3 : Disabled	p. 8

Connectors

Connector	Name	Description	Page
PW1	ATX Power Connector	20-Pin Block	p.11
PS1	PS/2 Keyboard/PS/2 Mouse	6-Pin Female	p.11
USB	USB Port Connector	5-Pin Connector	p.11
CN1	Parallel Port Connector	26-Pin Female	p.11
J1,J2	TV-out Connector (Only for J-720AH)	RCA+MINI DIM	p.12
VGA	VGA Connector	15-Pin Female	p.12
CN2	Audio/Game Connector	15-pin Connector+ 3phone jack	p.12
COM1,COM2	Serial Port COMA & COMB	10-Pin Block	p.13
FDD	Floppy Driver Connector	34-Pin Block	p.13
IDE1	Primary IDE Connector	40-Pin Block	p.13
IDE2	Secondary IDE Connector	40-Pin Block	p.13
HDLED	IDE activity LED	2-Pin Connector	p.14
J5	Front Panel Connector	16-Pin Block	p.14
IR1	Infrared Module Connector	5-Pin Block	p.14
CPUFAN SYSFAN	FAN Connector	1-2 12V Power Connector 2-3 ACPI FAN power control Connector	p.15
PS-ON	ATX power button/soft power button	2-Pin Connector	p.15
JP3	CD-Audio/Panasonic	4-pin Block	p.15
JP4	CD-Audio/Sony	4-pin Block	p.15

Expansion Sockets

Socket/Slot	Name	Description	Page
DIMM1,DIMM2, DIMM3	DIMM Module Socket	168-Pins DIMM SDRAM Module Expansion Socket	p.9
Slot1	CPU Slot	PentiumII/III CPU Slot	p.9
ISA1, ISA2	ISA Slot	16-bits ISA Bus Expansion slots	p.10
PCI1, PCI2,PCI3 ,PCI4	PCI Slot	32-bits PCI Local Bus Expansion slots	p.10

2-4 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

2-5 Jumper Settings

1. CPU Bus Frequency Selection : U2-7

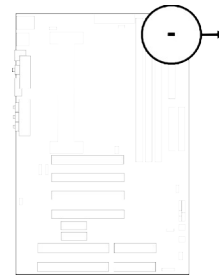
U2-7



66MHz : Closed



100MHz : Open



※ Users also can setting the CPU Bus frequency and CPU ratio in the “CHIPSET FEATURES SETUP “ in BIOS SETUP.

Table for the Pentium II/III And Celeron CPU

CPU Type	CPU HOST/ SDRAM Clock	Ratio	CPU Frequency
Pentium II 266 Celeron-266	66 MHz	4.0X	266 MHz
Pentium II 300 Celeron-300/300A	66 MHz	4.5X	300 MHz
Pentium II 333 Celeron-333	66 MHz	5.0X	333 MHz
Celeron-366	66 MHz	5.5X	366 MHz
Celeron-400	66 MHz	6.0X	400 MHz
Celeron-433	66 MHz	6.5X	433 MHz
Pentium II 350	100 MHz	3.5X	350 MHz
Pentium II 400	100 MHz	4.0X	400 MHz
Pentium II 450 Pentium III 450	100 MHz	4.5X	450 MHz
Pentium III 500	100 MHz	5.0X	500 MHz

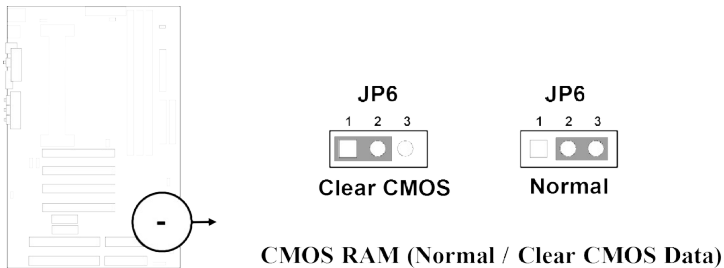
※ The VGA Share Memory Size can select 2MB/4MB/8MB in the “INTEGRATED PERIPHERALS Setup “ of BIOS Setup.

2. CMOS RAM Clear: JP6 (Yellow color selector)

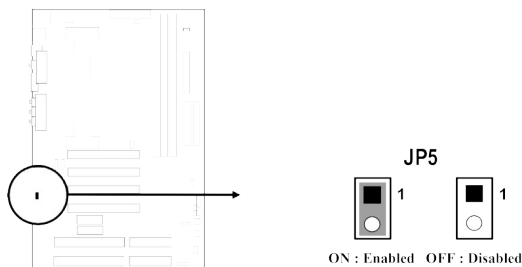
WARNING: Make sure your computer is POWER OFF when you CLEAR CMOS.

Connect a jumper Cap over this jumper for a few seconds, will clear information stored in the CMOS RAM Chip that input by user, such as hard disk information and passwords. After CLEAR CMOS, you must enter the BIOS setup (by holding down during power-up) to re-enter BIOS information (see BIOS SETUP).

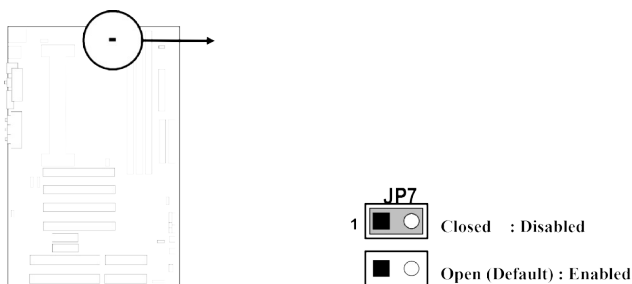
Selections	JP6
Normal	2-3 (Default)
Clear CMOS	1-2 (momentarily)



3. On Board Audio chip Enabled / Disabled connector: JP5

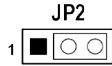
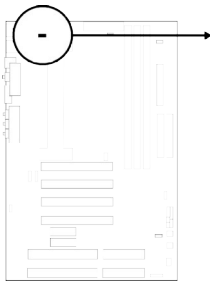


4. On board VGA function: JP7



5. Keyboard Power on function: JP2

This function only support when use ATX power supply . When choose 1-2 closed and use ATX power supply , you can choice power on system by power button or keyboard in "Power On Function" item of "Integrated Peripherals Setup".



2-3 closed : Disabled

2-6 System Memory (DRAM)

This main board supports three 168-pins DIMM modules, the Max Memory Size is 1.5GB. Because of the VGA share memory function, the system must always occupy BANK0 (DIMM1) to booting.

DIMM 1	DIMM 2	DIMM 3	System can be Accept or Not
168-pin DIMM	×	×	Accept
168-pin DIMM	168-pin DIMM	×	Accept
168-pin DIMM	×	168-Pin DIMM	Accept
168-pin DIMM	168-pin DIMM	168-pin DIMM	Accept
×	168-pin DIMM	×	Not Accept
×	×	168-pin DIMM	Not Accept
×	168-pin DIMM	168-pin DIMM	Not Accept

* *Because of share memory function, the system must always occupy DIMM1 first to booting.*

2-7 Central Processing Unit (CPU)

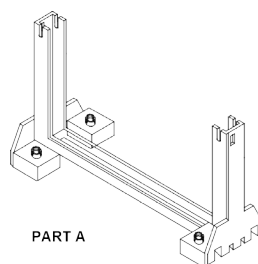
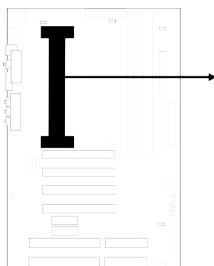
The motherboard provides a Slot-1 for Pentium II processor. The CPU on board must have a fan or heat sink attached to prevent overheating.

WARNING: *Without a fan or heat sink, 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 Slot- 1 and place RETENTION MODULE as following:

IMPORTANT: *You must set jumper U2-7 for "Bus Frequency Selection" on [page 7](#) depending on the CPU that you install.*

1. Attach heat sink to the CPU.
2. Place Part A on slot-1 and gently screw four corners on top of the mother- board.



2-8 Expansion Cards

You must read the documentation come with expansion card for any hardware or software settings that may be required to setup your specific card.

Installation Procedure:

1. Read the documentation from 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 a standard design there are 16 IRQs available but most of them are occupied by the system and leaves 6 free for expansion cards.

Either AGP, 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.

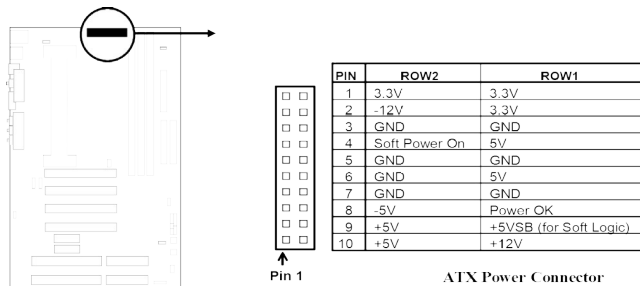
Assigning DMA Channels for ISA Cards

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.

2-9 External Connectors

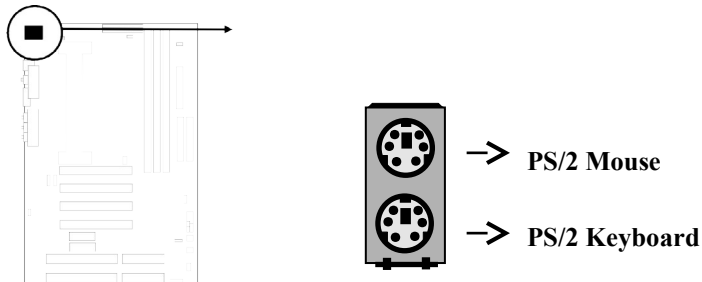
1. Power Connector: ATX Power Connector (20-pin block): PW1

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.



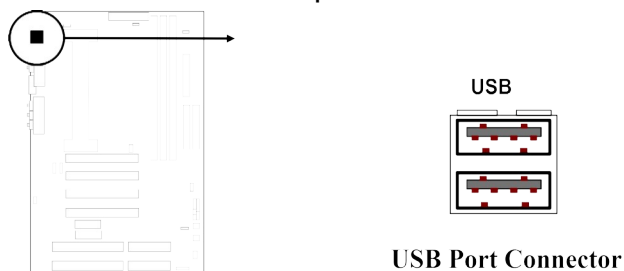
2. PS/2 Mouse & PS/2 Keyboard Connector: PS1

If you are using a PS/2 mouse, you must purchase an optional PS/2 mouse set which connects to the 5-pins block and mounts to an open slot on your computer's case.



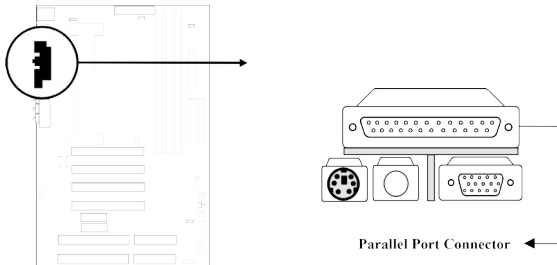
3. USB Port connector: USB

The connectors are 4-pins connector that connect USB devices to the system board.



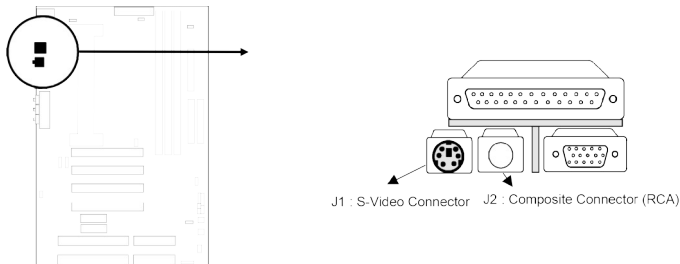
4. Parallel Port Connector (25-pin female): CN1

Parallel Port connector is a 25-pin D-Subminiature Receptacle connector. The On-board Parallel Port can be disabled through the BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.

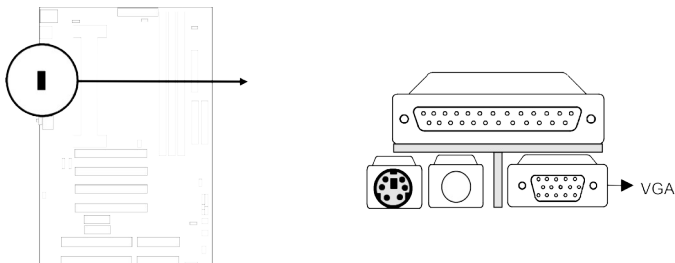


5. TV-out Connector: J1,J2(only for 720AH)

J1 : S-Video Connector
J2 : Composite Connector



6. VGA Connector: VGA



7. Audio and Game Connector : CN2

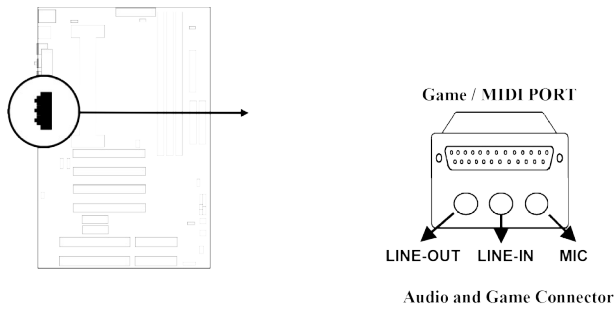
This Connector are 3 phone Jack for LINE-OUT,LINE-IN,MIC and a 15-pin D-Subminiature Receptacle Connector for joystick/MIDI Device.

Line-out : audio output to speaker

Line-in : audio input to sound chip

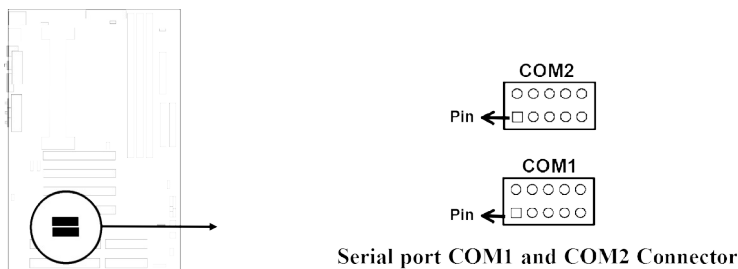
MIC : Microphone Connector

Game/MIDI : for joystick or MIDI Device



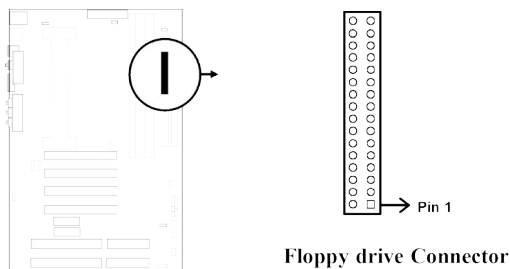
8. Serial Port COMA and COMB Connector: COM1, COM2

COMA and COMB are the 9-pin D-Subminiature mail connector. The On-board serial port can be disabled through BIOS SETUP. Please refer to Chapter 3 “INTEGRATED PERIPHERALS SETUP” section for more detail information.



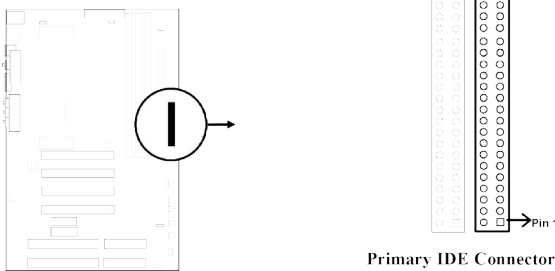
9. Floppy drive Connector (34-pin block): FDD

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.



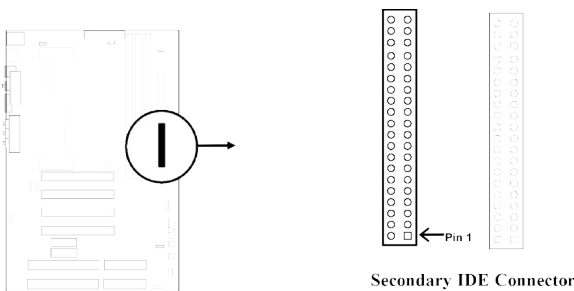
10. Primary IDE Connector (40-pin block): IDE1

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.



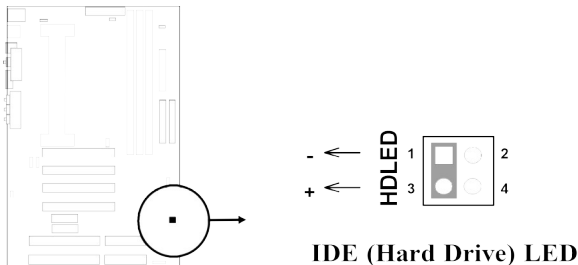
11. Secondary IDE Connector (40-pin block): IDE2

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.



12. IDE activity LED: HDLED (J6 1&3)

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



13. 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 below.

14. Reset switch lead: RST

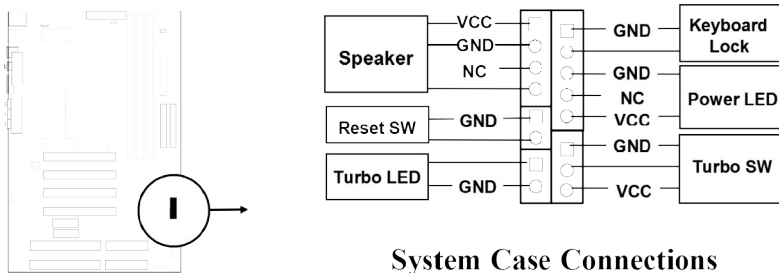
This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system's power supply. See the figure below.

15. 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.

16. Speaker connector: SPEAKER

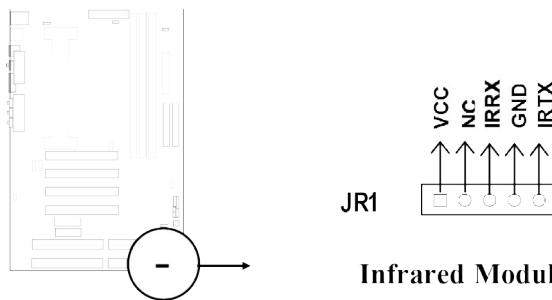
This 4-pins connector connects to the case-mounted speaker. See the figure below.



System Case Connections

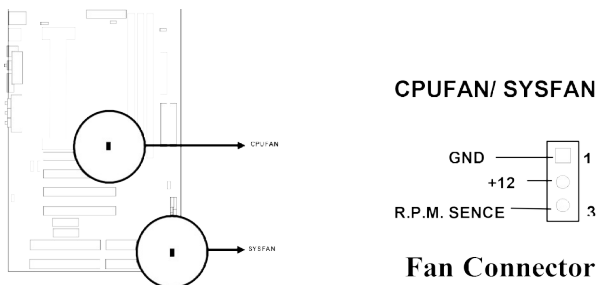
17. IR infrared module connector: IR1

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.



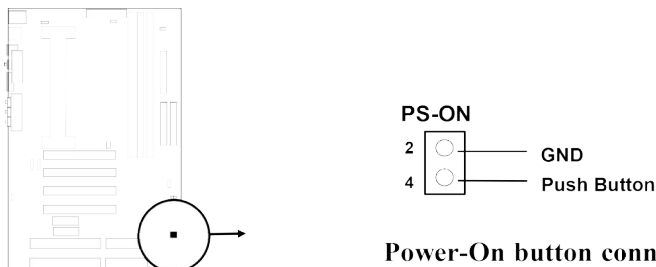
Infrared Module Connector

18. FAN connector: CPUFAN/SYSFAN



Fan Connector

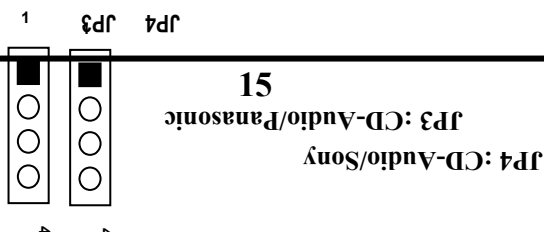
19. Power-On button connector: PS-ON (J7 2&4)

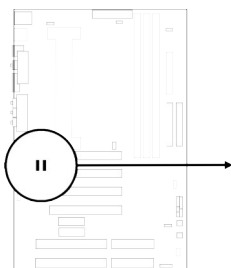


Power-On button connector

20. CD Audio in connector : JP3,JP4

JP3 and JP4 are the connectors for CD-Audio Input signal, Please connect it to CD-ROM CD-Audio output 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 **** key immediately will bring you into BIOS **CMOS SETUP UTILITY**.

ROM PCI/ISA BIOS (2A6INJ1C)

CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
BIOS FEATURES SETUP	PASSWORD SETTING
CHIPSET FEATURES SETUP	IDE HDD AUTO DETECTION
POWER MANAGEMENT SETUP	SAVE & EXIT SETUP
PNP/PCI CONFIGURATION	EXIT WITHOUT SAVING
LOAD BIOS DEFAULTS	
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 (2A6INJ1C)

STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Feb, 23 1999	
Time (hh:mm:ss) : 13 : 43 : 56	
<u>HARD DISKS</u> <u>TYPE</u> <u>SIZE</u> <u>CYLS</u> <u>HEAD</u> <u>PRECOMP</u> <u>LANDZ</u> <u>SECTOR</u> <u>MODE</u>	
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.	Base Memory : 640K Extended Memory : 7168K Other Memory : 384K <hr/> Total Memory : 8192K
Drive B : None	
Video : EGA/VGA	
Halt On : All Errors	
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 convenient 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 (2A6INJ1C)

BIOS FEATURES SETUP
AWARD SOFTWARE, INC.

Virus Warning : Disabled CPU Internal Cache : Enabled External Cache : Enabled CPU L2 Cache ECC Checking : Enabled Processor Number Feature : Enabled Quick Power On Self Test : Enabled Boot Sequence : A,C,SCSI Swap Floppy Drive : Disabled Boot Up Floppy Seek : Enabled Boot Up NumLock Status : On Memory Parity Check : Enabled Typematic Rate Setting : Disabled Typematic Rate (Chars/Sec) : 6 Typematic Delay (Msec) : 250 Security Option : Setup PCI/VGA Palette Snoop : Disabled OS Select For DRAM > 64MB : Non-OS2 HDD S.M.A.R.T capability : Disabled Report No FDD For WIN 95 : Yes	Video BIOS Shadow : Enabled C8000-CBFFF Shadow : Disabled CC000-CFFFF Shadow : Disabled D0000-D3FFF Shadow : Disabled D4000-D7FFF Shadow : Disabled D8000-DBFFF Shadow : Disabled DC000-DFFFF Shadow : Disabled Esc: Quit ↑↓→← : Select Item F1 : Help Pu/Pd/+/-:Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
--	---

Figure 3-3

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

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.

ROM PCI/ISA BIOS (2A6INJ1C)

CHIPSET FEATURES SETUP
AWARD SOFTWARE ,INC

Auto Configuration : Disabled	PCI Delay Transation : Disabled
RAS Pulse Width Refresh : 5T	Auto Detedt DIMM/PCI Clk : Enabled
RAS Precharge Time : 3T	Spread Spectrum : Disabled
RAS to CAS Delay : 3T	CPU Host/SDRAM Clock : Default
ISA Bus Clock Frequency : PCICLK/4	CPU Clock Ratio Jumpless : Disabled
Starting Point of Paging : 2T	Processor Core Frequency : x1.5
SDRAM CAS Latency ; 3T	
SDRAM WR Retite Rate : X-2-2-2	
CPU to PCI Burst Mem. WR : Disabled	
System BIOS Cacheable : Enabled	
Video RAM Cacheable : Enabled	
Memory Hole at 15M-16M : Disabled	
AGP Aperture Size : 64MB	
Concurrent function(MEM) : Disabled	Esc: Quit ↑↓→←: Select Item
Concurrent function(PCI) : Enabled CPU	F1 : Help Pu/Pd/+/-:Modify
Pipeline Control : Enabled	F5 : Old Values (Shift)F2 : Color
	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 3-4

- **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.
- **RAS Pulse Width Refresh:** The system designer must select the number of CPU clock cycles allotted for the RAS pulse refresh, according to DRAM specifications. The choice: 4T, 5T, 6T, 7T.
- **RAS Precharge Time:** The precharge time is the number of cycles it takes for the RAS to accumulate its charge before DRAM refreshes. If insufficient time is allowed, refresh may be incomplete and the DRAM may fail to retain data.
The Choice: 2T, 3T, 4T, 5T.

-
-
- **RAS to CAS Delay:** When DRAM is refreshed, both rows and columns are addressed separately. This setup item allows you to determine the timing of the transition from RAS (row address strobe) to CAS (column address strobe).
The choice: 2T, 3T, 4T, 5T.
 - **ISA Bus Clock Frequency:** You can set the speed of the AT bus at one-third or one-fourth of the CPU clock speed.
The choice: 7.159MHz, PCICLK/3, PCICLK/4.
 - **Starting Point of Paging:** This value controls the start timing of memory paging operations.
The choice: 1T, 2T, 4T, 8T.
 - **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: 2T, 3T.
 - **SDRAM WR Retire Rate:** The system designer must select the correct timing for data transfers from the write buffer to memory, according to DRAM specifications.
The choice: X-1-1-1, X-2-2-2.
 - **CPU to PCI Burst Mem. WR:** Select enabled permits PCI burst memory write cycles, for faster performance. When disabled, performance is slightly slower, but more reliable.
Choices are Enabled, Disabled.
 - **System BIOS Cacheable:** Selecting *Enabled* allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
The choice: Enabled, Disabled.
 - **Video BIOS Cacheable:** Selecting *Enabled* allows caching of the system BIOS ROM at C0000h-F7FFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.
The choice: Enabled, Disabled.
 - **Memory Hole at 15M-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.
 - **AGP Aperture Size :** Select the size of the Accelerated Graphics Port (AGP) aperture. The aperture is a portion of the PCI memory address range dedicated for graphics memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation. See www.agpforum.org for APG information.
The choice: 4 MB, 8MB, 16 MB, 32 MB, 64 MB, 128 MB, 256MB.
 - **Concurrent Function [MEM]:** When enabled, CPU access memory cycles and PCI masters access memory cycles can be concurrently issued onto host bus and PCI bus, respectively, and then the memory access cycles will be rearranged by SiS620 to memory sequentially. When disabled, either CPU or PCI masters starts memory access cycle will block the other one's cycle until the current cycle is finished.
The choice: Enabled, Disabled.
-

- **Concurrent Function [PCI]:** When this bit is enabled, CPU access PCI bus cycle and PCI masters access memory cycles can be concurrently issued onto host bus and PCI bus, respectively. By doing this, these cycles will be forwarded to PCI bus and memory bus at the same time. When disabled, either one of these two kinds of cycles will block the other until the current cycle is finished.
The choice: Enabled, Disabled.
- **CPU Pipeline Control:** Enable/disable the CPU pipeline control.
The choice: Enabled, Disabled.
- **PCI 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.
- **CPU Host/SDRAM Clock :** Choose CPU Front side Bus clock (Host Clock)/SDRAM Clock
The choice: 66/66,66/100,75/75,83/83,95/95,100/100.
* **When choose 66/100 the system can increase performance,but the SDRAM must use PC-100 SDRAM.**
- **CPU Clock Ration Jumpless :** Enable/disable the CPU Clock ration control.
The choice: Enabled, Disabled.
- **Processor Core Frequency :** Select Ratio.

3.4 POWER MANAGEMENT SETUP

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ROM PCI/ISA BIOS (2A6INJ1C)

POWER MANAGEMENT SETUP

AWARD SOFTWARE, INC.

ACPI function : Enabled	** PM Events **
Power Management : User Define	HDD Ports Activity : Enabled
PM Control by APM : Yes	COM Ports Activity : Enabled
Video Off Option : Susp Stby-> Off	LPT Ports Activity : Enabled
Video Off Method : V/H SYNC+Blank	VGA Activity : Enabled
Switch Function : Break/Wake	IRQ [3-7 , 9-15], NMI : Enabled
Doze Speed (div by) : 2/8	IRQ 8 Bredk Suspend : Disabled
Stdby Speed(div by) : 1/8	Power Button Over Ride : Instant OFF
MODEM Use IRQ : 3	Ring Power Up Control : Enabled
Hot Key Function As : Power OFF	KB Power ON Password : Enter
** PM Monitor **	Power Up by Alarm : Disabled
HDD Off After : Disable	Esc: Quit ↑↓ → ← : Select Item
Doze Mode : Disable	F1 : Help Pu/Pd/+/-: Modify
Standby Mode : Disable	F5 : Old Values (Shift)F2 : Color
Suspend Mode : Disable	F6 : Load BIOS Defaults
	F7 : Load Setup Defaults

Figure 3-5

- **ACPI function:** Select *Enabled* if your system has an ACPI function.
The choice: Enabled, Disabled.

-
- **Switch Function:** You can choose whether or not to permit your system to enter complete Suspend mode. Suspend mode offers greater power savings, with a correspondingly longer awakening period..
The choice: Break/Wake, Disabled.
 - **Doze Speed (div by) :** Sets the CPU's speed during Doze mode. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8
The choice: 1~8.
 - **Stdby Speed (div by) :** Select a divisor to reduce the CPU speed during *Standby* mode to a fraction of the full CPU speed. The speed is reduced to a fraction of the CPU's normal speed. The divisors range from 1 to 8-0.
The choice: 1~8
 - **Hot Key Power Off :** Select *Enabled* if your system has a hot key for soft power off.
The choice: Enabled, Disabled.
 - **PM Timers :** 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 Off After :** By default, this item is Disabled, meaning that no matter the mode the rest of the system, the hard drive will remain ready. Otherwise, you have a range of choices from 1 to 15 minutes or Suspend. This means that you can elect to have your hard disk drive be turned off after a selected number of minutes or when the rest of the system goes into a Suspend mode.
 - **HDD Ports Activity :** When set to *On* (default), any event occurring at a HDD (serial) port will awaken a system which has been powered down.
 - **COM Ports Activity :** When set to *On* (default), any event occurring at a hard or floppy drive port will awaken a system which has been powered down.
 - **LPT Ports Activity :** When set to *On* (default), any event occurring at a LPT (printer) port will awaken a system which has been powered down.
 - **VGA Activity :** When set to *On* (default), any event occurring at VGA will awaken a system which has been powered down.

The following is a list of IRQ's, Interrupt **ReQ**uests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

As above, the choices are *On* and *Off*.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **IRQ [3-7, 9-15], NMI**
- **IRQ 8 Break Suspend :** You can *Enable* or *Disable* monitoring of IRQ8 (the Real Time Clock) so it does not awaken the system from Suspend mode.
- **KB Power ON Password :** When you set a password for keyboard, The password you set the keyboard that returns the system to Full On state.

3-4-1 The Description of the Power Management

Power Management : This option allows you to select the type (or degree) of power saving for Doze, Standby, and Suspend modes. See the section *PM Timers* for a brief description of each mode.

This table describes each power management mode:

Disable	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 by 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 : Name the interrupt request (IRQ) line assigned to the modem (if any) on your system. Activity of the selected IRQ always awakens the system.

The choice: 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.

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.

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.

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 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.

PM Events : You may disable activity monitoring of some common I/O events and interrupt requests so they do not wake up the system. The default wake-up event is keyboard activity.

When *On* (or named, in the case of LPT & COM), any activity from one of the listed system peripheral devices or IRQs wakes up the system.

Power Button Over Ride : You could press the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

The choice: Soft-Off, Delay 4 Sec.

Ring Power Up Control : When you select *Enabled*, a signal from ring returns the system to Full On state.

Power Up by Alarm : When you select *Enabled*, the following fields appear. They let you set the alarm that returns the system to Full On state.

The choice: Enabled, Disabled.

3-5 PNP/PCI CONFIGURATION SETUP

This section describes configuring the PCI bus system. PCI, or **Personal Computer Interconnect**, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

ROM PCI/ISA BIOS (2A6INJ1C)
 PNP/PCI CONFIGURATION SETUP
 AWARD SOFTWARE, INC.

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

Figure 3-6

- 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 .
- IRQ3/4/5/7/9/10/11/12/14/15:**
 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 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 (2A6INJ1C)

CMOS SETUP UTILITY
AWARD SOFTWARE, INC.

STANDARD CMOS SETUP	INTEGRATED PERIPHERALS
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BIOS FEATURES SETUP	SUPERVISOR PASSWORD
CHIPSET FEATURES SETUP	USER PASSWORD
POWER MANAGEMENT	ECTION
PNP/PCI CONFIGURA	FORMAT
LOAD BIOS DEFAULTS	SAVE & EXIT SETUP
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING
Esc : QUIT ↑↓ → ← : Select Item	
F10 : Save & Exit Setup (Shift) F2 : Change Color	
Time, Date, Hard Disk Type...	

Figure 3-7

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 (2A6INJ1C)

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 CONFIG	Load SETUP Default (Y/N)? Y
LOAD BIOS DEFA	
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 (2A6INJ1C)

INTEGRATED PERIPHERALS
AWARD SOFTWARE, INC.

Internal PCI : Both	PS/2 mouse function : Enabled
IDE Primary Master PIO : Auto	USB Controller : Enabled
IDE Primary Slave PIO : Auto	USB Keyboard Support : Disabled
IDE Secondary Master PIO : Auto	Init Display Frist : PCI slot

IDE Secondary Slave PIO : Auto Primary Master UltraDMA : Auto Primary Slave UltraDMA : Auto Secondary Master UltraDMA : Auto Secondary Slave UltraDMA : Auto IDE Burst Mode : Enabled IDE HDD Block Mode : Enabled Onboard FDC Controller : Enabled Onboard Serial Port 1 : 3F8/IRQ4 Onboard Serial Port 2 : 2F8/IRQ3 IR Address Select : Disabled Onboard Parallel Port 1 : 378/IRQ7 Parallel Port Mode ; SPP	VGA Shared Memory Size : 2MB Current CPU Temperature : 40°C Current CPUFAN Speed : 4500 Current SYSFAN Speed : 0 VCC(V): 5V Vcc3 : 3.3V Vcc25 : 2.51V Vcore : 2.01V Esc: Quit ↑↓→← : Select Item F1 : Help Pu/Pd/+/-:Modify F5 : Old Values (Shift)F2 : Color F6 : Load BIOS Defaults F7 : Load Setup Defaults
---	--

Figure 3-9

- Internal PCI / IDE:** This chipset contains an internal PCI IDE interface with support for two IDE channels.
 The choice: Primary, Secondary, Both.
- IDE Primary 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, and Mode 4.
- Primary Master/Slave UltraDMA:** UDMA (Ultra DMA) is a DMA data transfer protocol that utilizes ATA commands and the ATA bus to allow DMA commands to transfer data at a maximum burst rate of 33 MB/s. When you select *Auto* in the four IDE UDMA fields (for each of up to four IDE devices that the internal PCI IDE interface supports), the system automatically determines the optimal data transfer rate for each IDE device.
 The choice: Auto, Disabled.
- IDE Burst Mode :** Selecting *Enabled* reduces latency between each drive read/write cycle, but may cause instability in IDE subsystems that cannot support such fast performance. If you are getting disk drive errors, try setting this value to *Disabled*. This field does not appear when the Internal PCI/IDE field, above, is *Disabled*.
 The choice: Enabled, Disabled.
- IDE HDD Block Mode:** The chipset contains a PCI IDE interface with support for two IDE channels. Select Enabled to activate the primary and/or secondary IDE interface. Select Disabled to deactivate this interface, if you install a primary and/or secondary add-in IDE interface IDE interface.

Enabled	Secondary HDD controller used
Disabled	Secondary HDD controller not used.

-
-
- **Onboard FDD Controller:** This should be enabled if your system has a floppy disk drive (FDD) installed on the system board and you wish to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.
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.
 - **IR Address Select :** Select IR Address.
Choices are: Disabled, 2F8H, 3E8H, 2E8H.
 - **IR Mode :** Select IR Mode.
Choices are: HP SIR, ASKIR.
 - **IR IRQ Select :** Select IRQ for IR.
Choices are: IRQ3, IRQ4, IRQ10, IRQ11.
 - **Onboard Parallel Port 1 :** This item allows you to determine access onboard parallel port controller with which I/O address.
The choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.
 - **Parallel Port Mode :** Select an operating mode for the onboard parallel (printer) port. Select *Normal*, *Compatible*, or *SPP* unless you are certain your hardware and software both support one of the other available modes.
The choice: SPP, EPP, ECP, ECP+EPP.
 - **ECP Mode Use DMA :** Select a DMA channel for the parallel port for use during ECP mode.
The choice: 3, 1.
 - **PS/2 mouse function :** If your system has a PS/2 mouse port and you install a serial pointing device, select *Disabled*.
The choice: Enabled, Disabled.
 - **USB Controller :** Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.
The choice: Enabled, Disabled.
 - **Init Display First :** This item allows you to decide to active which bus first (PCI Slot or AGP first).
The choice: PCI Slot, AGP.
 - **Current CPUFAN/SYSFAN Speed :** These fields display the *current* speed of up to two CPU fans, if your computer contains a monitoring system.

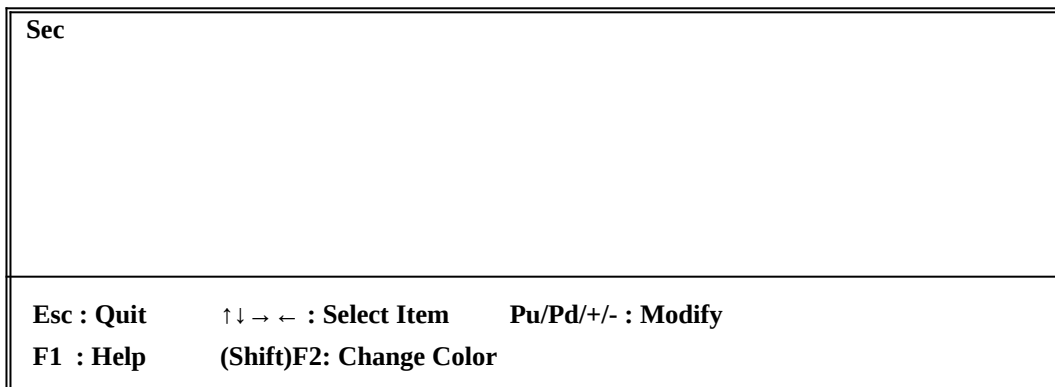


Figure 3-10

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.

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

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:

$$\begin{array}{r}
 \text{no. Cylinder} \quad (1024) \\
 \times \text{ no. Head} \quad (255) \\
 \times \text{ no. Sector} \quad (63) \\
 \underline{\times \text{ bytes per sector} \quad (512)} \\
 8.4 \text{ Gigabytes}
 \end{array}$$

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 multiplied 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:

$$\begin{array}{r}
 \text{no. Cylinder (1024)} \\
 \times \text{ no. Head (32)} \\
 \times \text{ no. Sector (63)} \\
 \hline
 \times \text{ bytes per sector (512)} \\
 \hline
 1 \text{ Gigabytes}
 \end{array}$$

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 (INT 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)	Verify 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 and 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 C8000h to EFFFFh. NOTE: When FSCAN option is enabled, will initialize from C8000h 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	

Chapter 4

Software Installed

4-1 Sound Card Driver Quick Installation: Windows 95 OSR2 Driver Installation

step1: Before install sound driver please double-click "My Computer" icon, "Control Panel" icon, "System" icon, "Device Manager" icon

step2: check "Other device" item, if there have "PCI Multimedia Audio Device", please remove it first.

step3: In "Control Panel" icon choose "Add new hardware" to add hardware in Win95.

step4: Choose "No" don't let Windows to search for new hardware, and select hardware type "Sound, Video and game controllers".

step5: Follow the step choose "Have Disk", "Browse", to change the Folders to X:\ESSOLO-1\95-98DRV.

step6: Select "OK" to finish install procedure.

step7: Restart system.

Windows NT4.0 Installation

step1: Double click "My Computer", "Control Panel", "Multimedia"

step2: Choose "Review" item and "Add" item, double – click "Unlisted or Update Driver" item.

step3: Double- click "Browse" to change the Folders to X:\ESSOLO-1\WNT4.0

step4: Choose "OK" to finish install procedure.

step5: Restart System.

Audio Rack Quick Installation

In Windows95 OSR2, Windows98, WindowsNT4.0 execute "setup" in X:\ESSOLO-1\ESSRACK\SETUP

Windows98 Driver Installation

step1: Before install sound card driver please double-click "My Computer" icon, "Control Panel" icon, "System" icon, and Choose "Device Manager" item.

step2: Check "Other Device" item, if there have "PCI Multimedia Audio Device" please remove it first.

step3: In "Control Panel" icon, choose "Add New Hardware" icon, and choose "Next", the windows will show "PCI Multimedia Audio Device", click "Next" and choose "Display a list of all Drivers", select "Sound, Video and game controllers" item.

step4: Choose "Have Disk", "Browse" and change the Folders to "X:\ESSOLO-1\95-98DRV.

step5: Select "OK" to Finish install.

step6: When Windows98 ask "Are all your drivers installed now" Please select "Yes" and click "Next", "Finish" .

step7: Restart System.

JOYSTICK Installation

In Windows95 OSR2, Windows98, double-click "My Computer", "Game controllers", select "Properties" item, "Calibrate" to adjust your joystick before using it.

4.2 Display Card Driver Quick Installation

WINDOWS 95/98 Display Driver Quick Installation

-
-
- Step 1. Before Install the driver please view the "readme" file.
 - Step 2. Run "X:\SiS620\VGA\WIN9X\SETUP.EXE"
(if your CD-ROM is X drive)
 - Step 3. Follow the setup procedure install your VGA Driver.

WINDOWS NT4.0 Display Driver Quick Installation

- Step 1. Boot form Windows NT4.0, Double-click "My computer" icon, "Control panel" icon, "Display" icon
- Step 2. When the "Display properties" window appear, choose "setting" tab, select "Display type"
- Step 3. When the "Display type" window appear, Select "Change"
- Step 4. When the "Change Display" window appear, select "Have Disk", Change the directory path from "A:\\" to " X:\SiS620\VGA\WinNT40 ", select "OK". (if your CD-ROM is D driver)
- Step 5. When the "Display type" window appear again, select "CLOSE".
- Step 6. When the "Display properties" window appear again, select "CLOSE"
- Step 7. Restart Windows NT40
- Step 8. When the "Display properties" window appear, setup your resolution, select "test", select "OK", you will be finished your installation

SOFTWARE MPEG XING 3.30

(Only use for Windows 95/98)

- step 1. Run Windows 95, Change your directory path to D:\xing\xing330
(if your CD-ROM is D driver)
- step 2. Run "setup" according the process to complete installation,
select talk bar "Start", "Program", "XingMpeg play", play MPEG file or
Video CD

4-3 PC HEALTH MONITOR Driver Quick Installation

§ In Windows 95/ Windows 98/ Windows NT4.0

- step1: Run "X:\SiS620\HEALTH\SETUP.EXE" file .
- step2: Selet "Next" to complete install driver.
- step3: The program will automatic install driver to system if users have
question in system Hardware Monitor Setting, please read "HELP"
Section in program.