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Chapter 1

1-1 Preface

- Welcome to use the 720BF/720BN mainboard. This mainboard is based on Pentium®II, Pentium®III processor PC/AT compatible system with ISA bus and PCI local bus. This board including multifunction designs such as,share memory 3D AGP VGA on-board, 3D PCI Audio on-board(720BF only), 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 720BF/720BN 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)
- **Built-In High performance 3D PCI Audio: (720BF only)**
  - ∗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 :** Provides 66/75/83/95/100MHz Front Side Bus Frequency to supports Intel Pentium®II, Pentium®III processor for slot1.
- **Chipset:** SiS 620/5595 AGPset chip with I/O subsystems, and ESS 1938S 3D PCI Audio chip(720BF only).
- **DRAM Memory Support:** support 3 168-pin DIMMS(3.3V)from a memory size befween 16MB to 1.5GB.
- **ISA and PCI expansion Slots:** Privodes two 16-bit ISA slots, three 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 33/66MB/S.
- **ACPI supporting for OS Directed Power Management**

  Keyboard Power On: When use ATX power supply and JP1 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 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 .

  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.
- **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.
- **Optional 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 :** Allows you frack PC’s CPU temperature, system voltage and fan speed. When current temperature over warning temperature, the system will warning you by analarm.
- **Baby AT Form Factor:** Dimensions 22cm x 22cm.

Chapter 2

Hardware Installation

2-1 Unpacking

This mainboard package should contain the following:

- The 720BF /720BN mainboard
- USER'S MANUAL for mainboard
- Cable set for IDE x1, Floppy x1, COM1 & COM2 x1, LPT x1, VGA x1,Audiox1 (720BF only)
- 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 720BF Motherboard Diagram

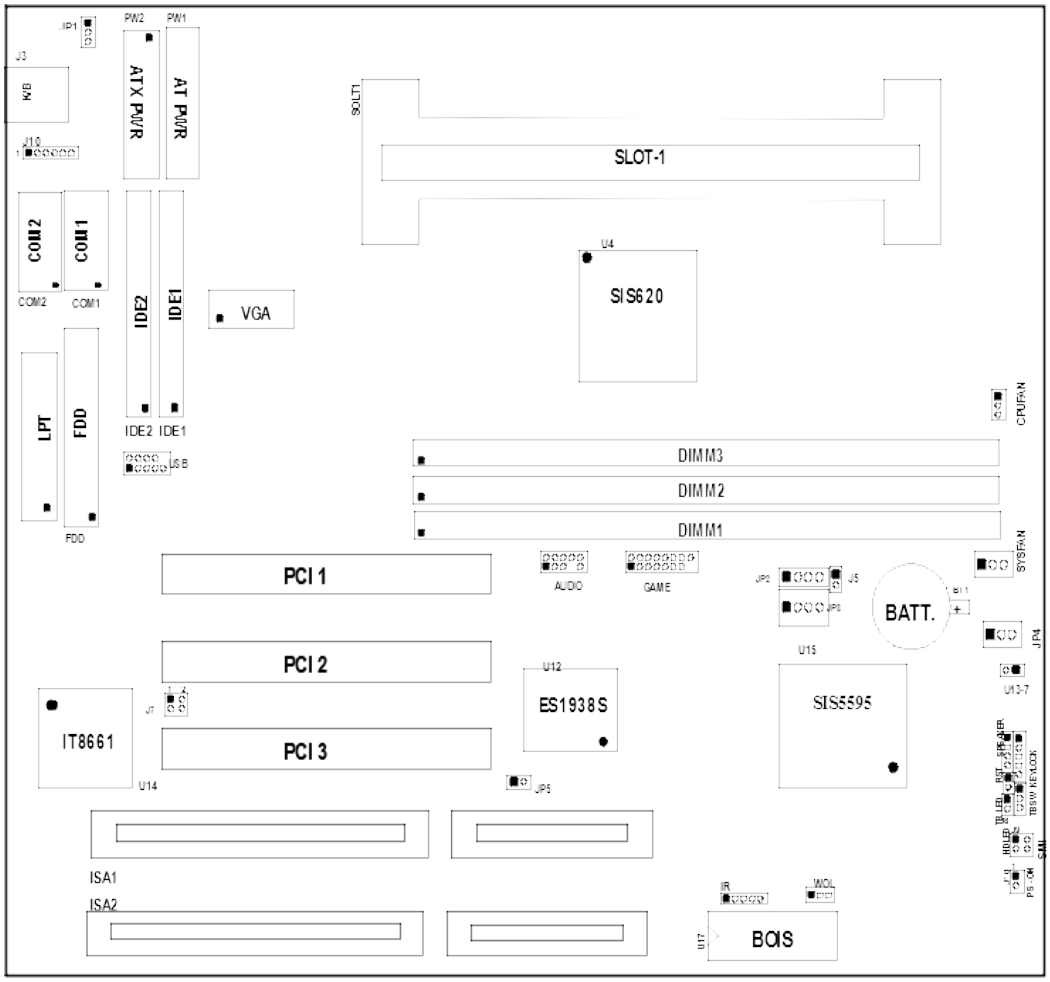


Figure 2-1

2-2-1 720BN Motherboard Diagram

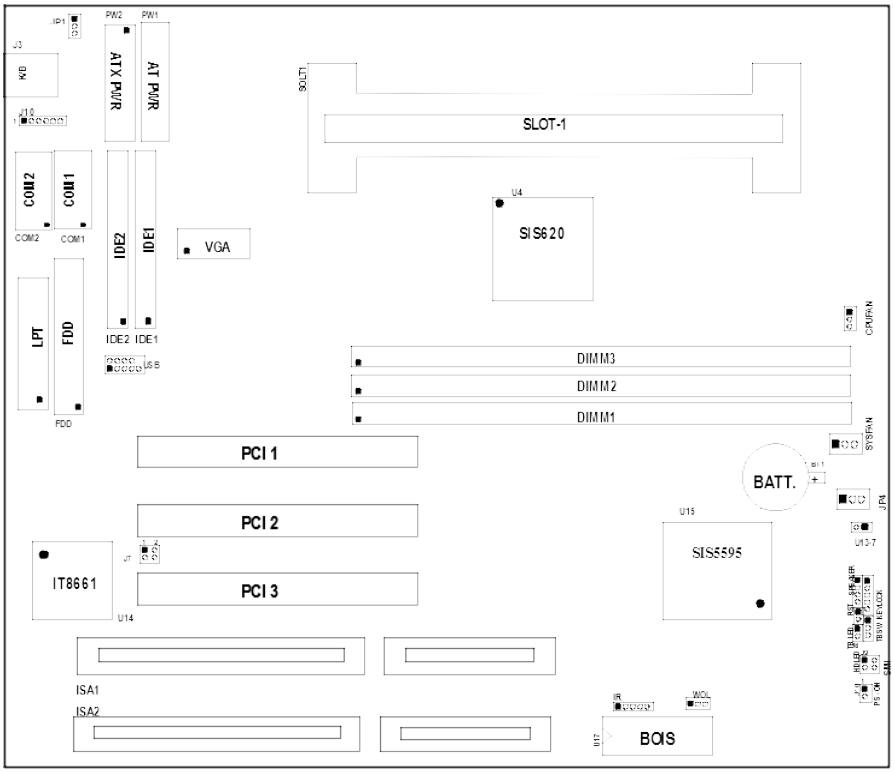


Figure 2-2

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

Jumpers

Jumper	Name	Description	Page
U13-7	CPU Bus Frequency Selection	Open:100MHZ , Closed:66MHz	p.7
JP4	CMOS RAM Clear	2-3 Normal ,1-2 Clear CMOS	p.8
JP5(720BF only)	Audio chip Enabled/Disabled	On:Enabled , Off:Disabled	p.8
J5	On board VGA Enabled/Disabled	open : Enabled,closed : Disabled	p.8
JP1	Keyboard power on function	1-2 : Enabled , 2-3 : Disabled	p.8

Connectors

Connector	Name	Description	Page
PW1	AT Power Connector	12-Pin Block	p. 11
PW2	ATX Power Connector	20-Pin Block	p. 11
J3	Keyboard Connector	5-Pin Female	p.11
J10	PS/2 Mouse Connector	6-Pin Block	p.12
LPT	Parallel Port Connector	26-Pin Block	p.12
COM1,COM2	Serial Port COMA & COMB	10-Pin Block	p.12
FDD	Floppy Driver Connector	34-Pin Block	p.12
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.13
FPC	Front Panel Connector	16-Pin Block	p.14
IR	Infrared Module Connector	5-Pin Block	p.14
USB	USB Port Connector	10-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
VGA	VGA Connector	16-Pin Block	p.15
Audio	Audio Connector(720BF only)	10-pin Connector	p.15
Game	Game port Connector (720BF only)	16-pin Connector	p.16
JP3	CD-Audio/Panasonic(720BF only)	4-pin Block	p.16
JP2	CD-Audio/Sony(720BF only)	4-pin Block	p.16
WOL	Wake On Lan	3-pin Block	p.16

Expansion Sockets

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

2-4 Installation Steps

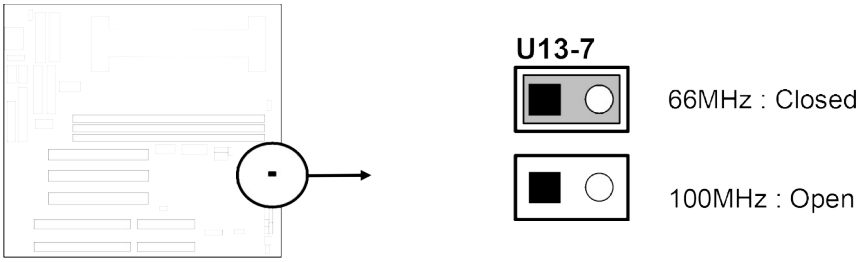
Before using your computer, you must follow the steps as follows:

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 : U13-7



※ **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

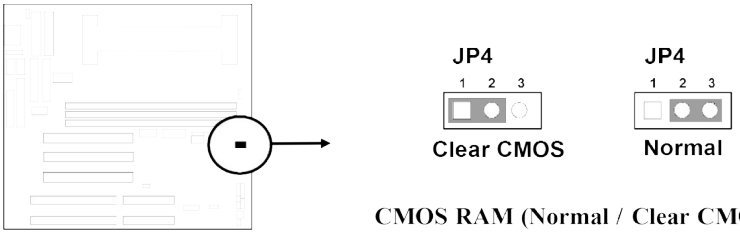
※ **The VGA Share Memory Size can select 2MB/4MB/8MB in the "INTEGRATED PERIPHERALS Setup " of BIOS Setup.**

2. CMOS RAM Clear: JP4 (Yellow color selector)

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

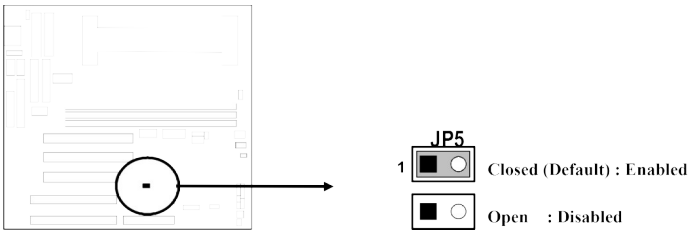
Connect a jumper Cap over this jumper for a few seconds, will clears information stored in the CMOS RAM Chip that input by user, such as hard disk information and passwords. After CLEAR CMOS, you must enter the BIOS setup (by holding down <DEL> during power-up) to re-enter BIOS information (see BIOS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

elections	**JP4**	
Normal	2-3	(Default)
Clear CMOS	1-2	(momentarily)

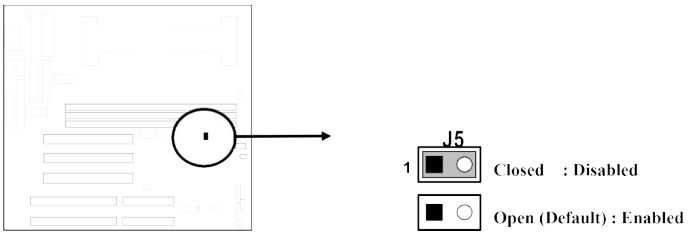


CMOS RAM (Normal / Clear CMOS Data)

3. On Board Audio chip Enabled / Disabled connector: JP5(720BF only)

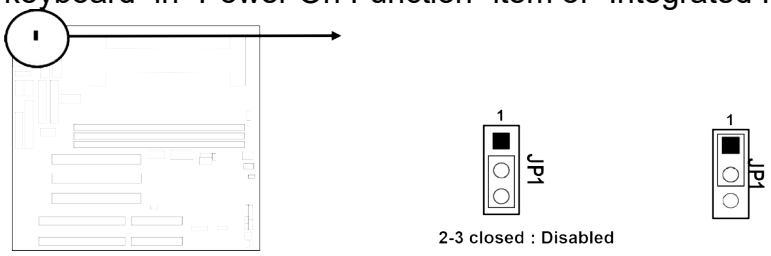


4. On board VGA function: J5



5. Keyboard Power on function: JP1

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”.



2-6 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)

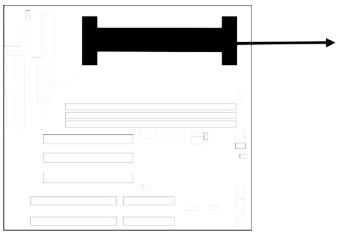
The motherboard provides a Slot-1 for Pentium II processor. The CPU on board must have a fan or heat sink attached to prevent overheating.

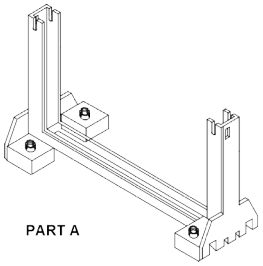
WARNING: Without a fan or heat sink, the CPU will overheat and cause damage to both the CPU and the motherboard.

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 U13-7 for "Bus Frequency Selection" on page7 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 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 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

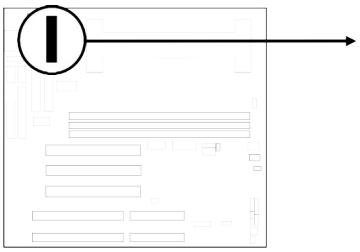
Some ISA cards, both Legacy and PNP may also need to use a DMA (Direct Memory Access) channel. DMA assignments for this motherboard are handled the same way as the IRQ assignment process described above. You can select a DMA channel in the PCI and PNP configuration section of the BIOS Setup utility.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

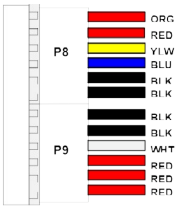
2-9 External Connectors

1. Power connector: AT Power Connector (12-pin block): PW1

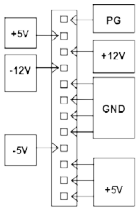
This connector connects to a standard AT power supply. To connect the leads from the power supply, ensure first that the power supply is not plugged. Most power supplies provide two plugs (P8 and P9), each containing six wires, two of which are black. Orient the connectors so that the black wires are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





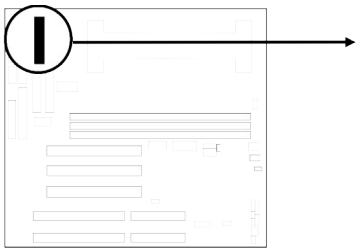
Power Connector on Motherboard



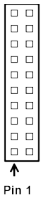
Power Plugs from Power Supply

2. Power Connector: ATX Power Connector (20-pin block): PW2

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.



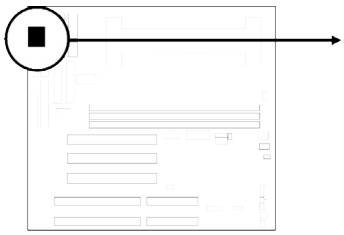
PIN	ROW2	ROW1
1	3.3V	3.3V
2	-12V	3.3V
3	GND	GND
4	Soft Power On	5V
5	GND	GND
6	GND	5V
7	GND	GND



* Please don't turn off / on power supply too quickly ,we recommend at least wait 4sec before turn on the power , to protect the system

3. Keyboard Connector (5-pin female): J3

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

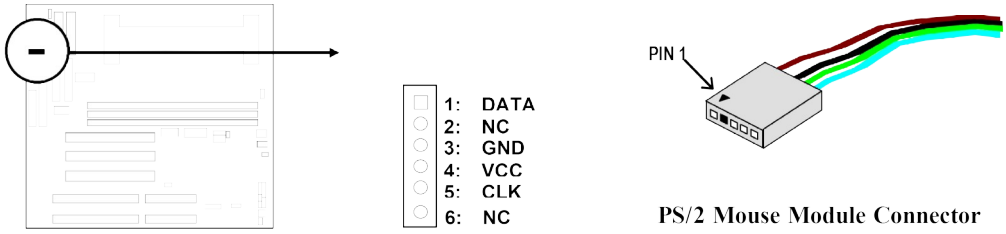


Keyboard Connector (5-pins female)

Connector Plug from Keyboard

4. PS/2 Mouse Connector (5-pin block): J10

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.

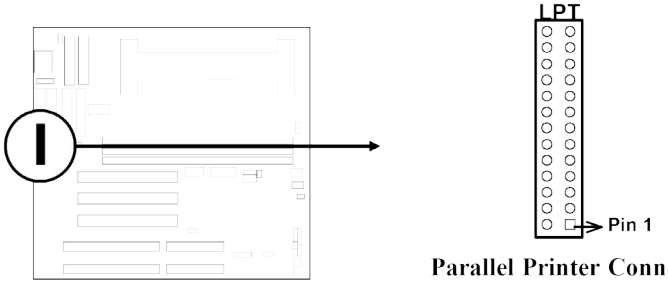


PS/2 Mouse Module Connector

5. Parallel Printer Connector (26-pin Block): LPT

Connection for the enclosed 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.

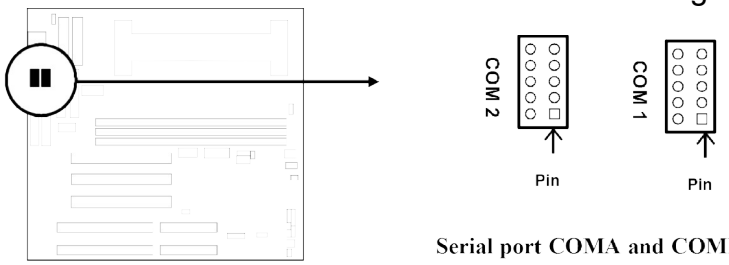
NOTE: Serial printers must be connected to the serial port. You can enable the parallel port and choose the IRQ through BIOS Setup.



Parallel Printer Connector

6. Serial port COMA and COMB Connector (Two 10-pin blocks): COM1, COM2

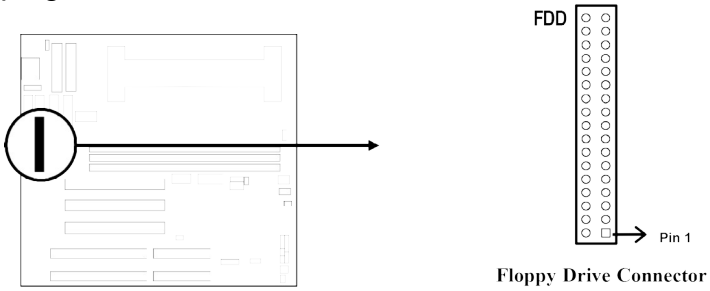
These connectors support the provided serial port ribbon cables with mounting bracket. Connect the ribbon cables to these connectors and mount the bracket to the case on an open slot. The two serial ports on the mounting bracket will then be used for pointing devices or other serial devices. See BIOS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



Serial port COMA and COMB Connector

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

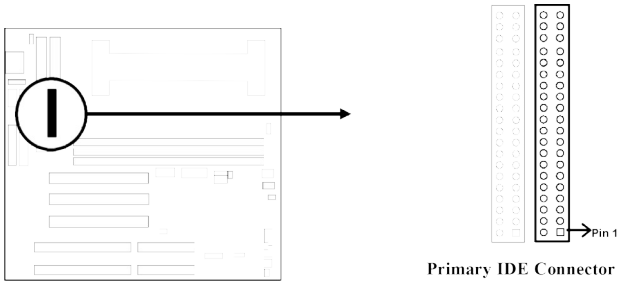
This connector supports the provided floppy drive ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to the floppy drives.



Floppy Drive Connector

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

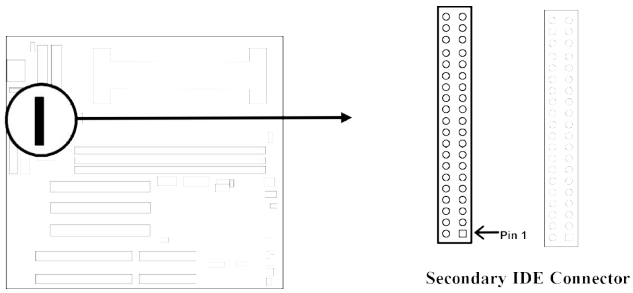
This connector supports the provided IDE hard disk ribbon cable. After connecting the single plug end to motherboard, connect the two plugs at other end to your hard disk(s). If you install two hard disks, you must configure the second drive to Slave mode by setting its jumpers accordingly. Please refer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



Primary IDE Connector

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

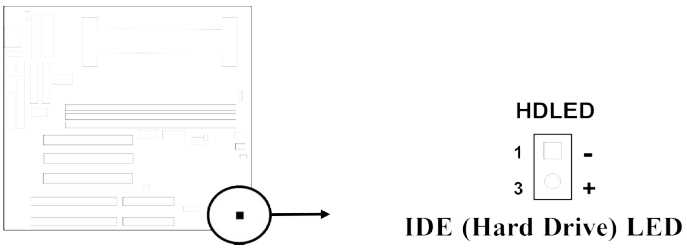
This connector connects to the next set of Master and Slave hard disks. Follow the same procedure described for the primary IDE connector. You may also configure two hard disks to be both Masters using one ribbon cable on the primary IDE connector and another ribbon cable on the secondary IDE connector.



Secondary IDE Connector

10. IDE activity LED: HDLED

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



IDE (Hard Drive) LED

11. Front Panel connector: This 16-pin connector to connect to case front panel switch.

A. 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 also to connect the Power LED from the system case to this lead. See the figure below.

B. Reset switch lead: RST

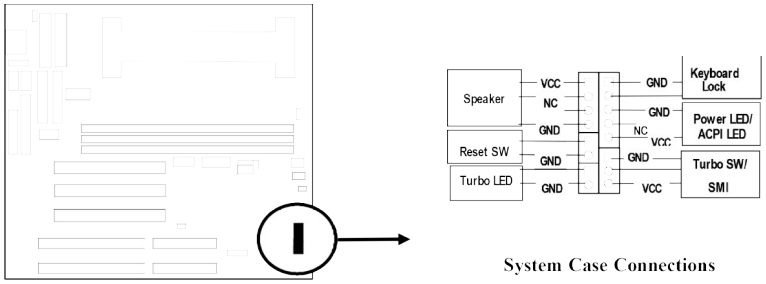
This 2-pin connector connects to the case-mounted reset switch for rebooting your computer without having to turn off your power switch. This is a preferred method of rebooting in order to prolong the life of the system‘s power supply. See the figure below.

C. Keyboard lock switch lead & Power LED: KEYLOCK & PW

This 5-pin connector connects to the case-mounted key switch for locking the keyboard for security purposes and Power LED together.

D. Speaker connector: SPEAKER

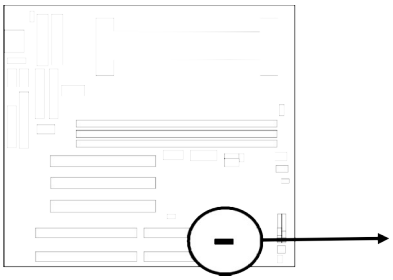
This 4-pin connector connects to the case-mounted speaker. See the figure below.

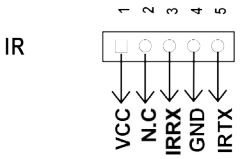


System Case Connections

12. IR infrared module connector: IR

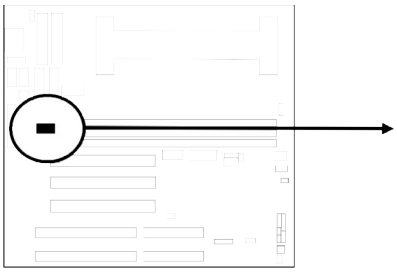
This connector supports the optional wireless transmitting and receiving infrared module. This module mounts to small opening on system cases that support this feature you must also configure the setting through BIOS setup. Use the five pins as shown on the Back View and connect a ribbon cable from the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

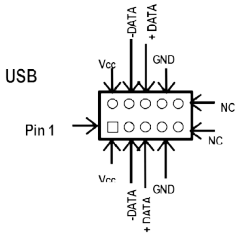




Infrared Module Connector

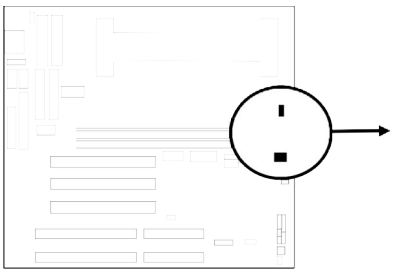
13. USB Port connector: USB

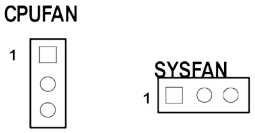




USB Port Connector

14. FAN connector: CPUFAN , SYSFAN



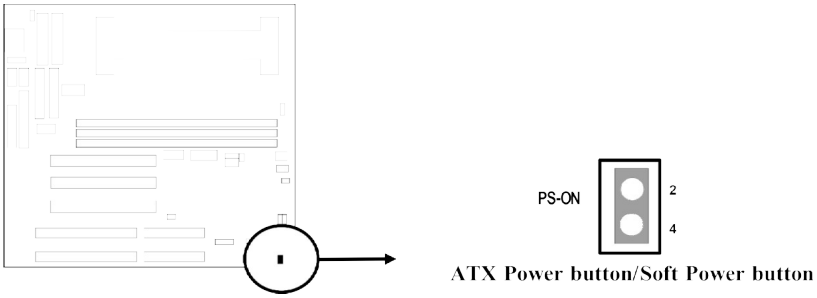


CPU Fan Connector

15. ATX Power button/ Soft Power button: PS-ON

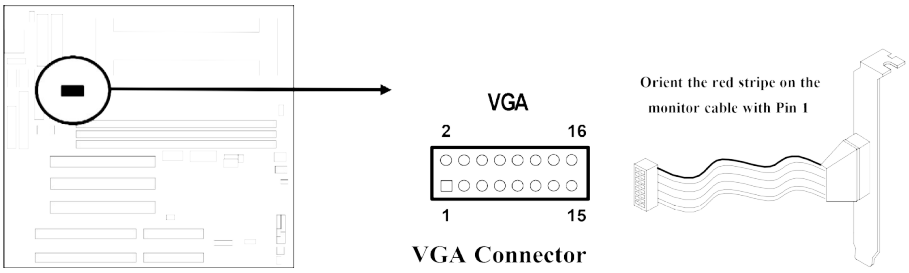
When using ATX power, the system power can be controlled by a momentary switch connected to PS-ON Pushing the button once will switch the system between ON and SLEEP. Pushing the switch while in the ON mode more than 4 seconds will turn the system off. The system Power LED shows the status of the system's power.

Selections	**PS-ON**
One touch Power ON/OFF	2-4

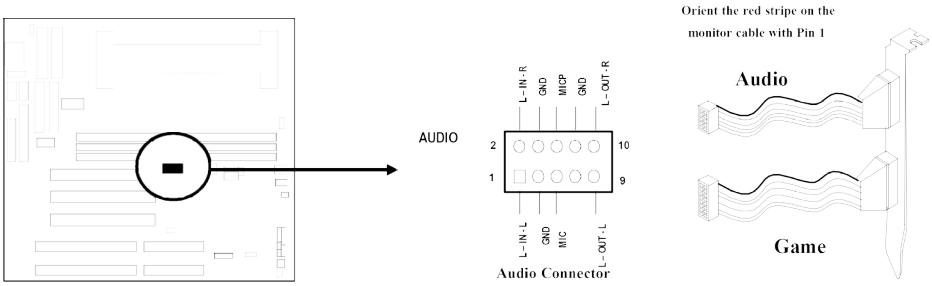


16. VGA connector: VGA

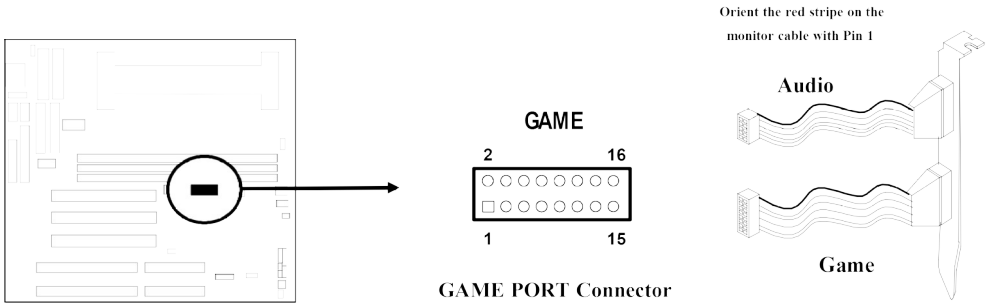
This connector supports the provided VGA cable with mounting bracket. Connect the ribbon cable to connector and mount the bracket to the case on an open slot .



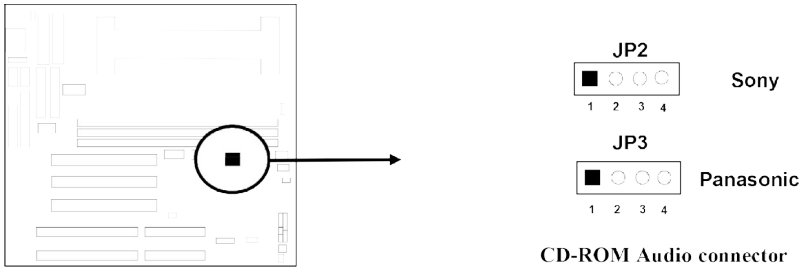
17. Audio connector: Audio(720BF only)



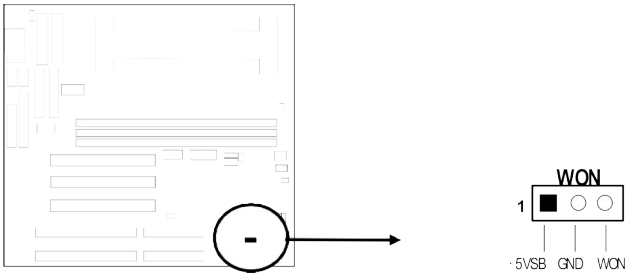
18. Game Port connector: GAME(720BF only)



19. CD-ROM Audio connector: JP3,JP2(720BF only)



20. Wake On Lan connector: WOL



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 (2A6INJ19)

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 (2A6IMJ19)
STANDARD CMOS SETUP
AWARD SOFTWARE, INC.

Date (mm:dd:yy) : Tue, Feb, 23 1999
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

Video : EGA/VGA
Halt On : All Errors

Base Memory : 640K
Extended Memory : 7168K
Other Memory : 384K

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 (2A6INJ19)

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 Pariy 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 (2A6INJ19)

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 **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** **Concurrent function(PCI) : Enabled CPU Pipeline Control : Enabled**	**Processor Core Frequency : x1.5** **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

- **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 Latencyn :** 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 (2A6INJ19)

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 : Disabled**
Hot Key Fumction 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, **I**nterrupt **R**e**Q**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 **P**ersonal **C**omputer **I**nterconnect, 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 (2A6INJ19)

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.

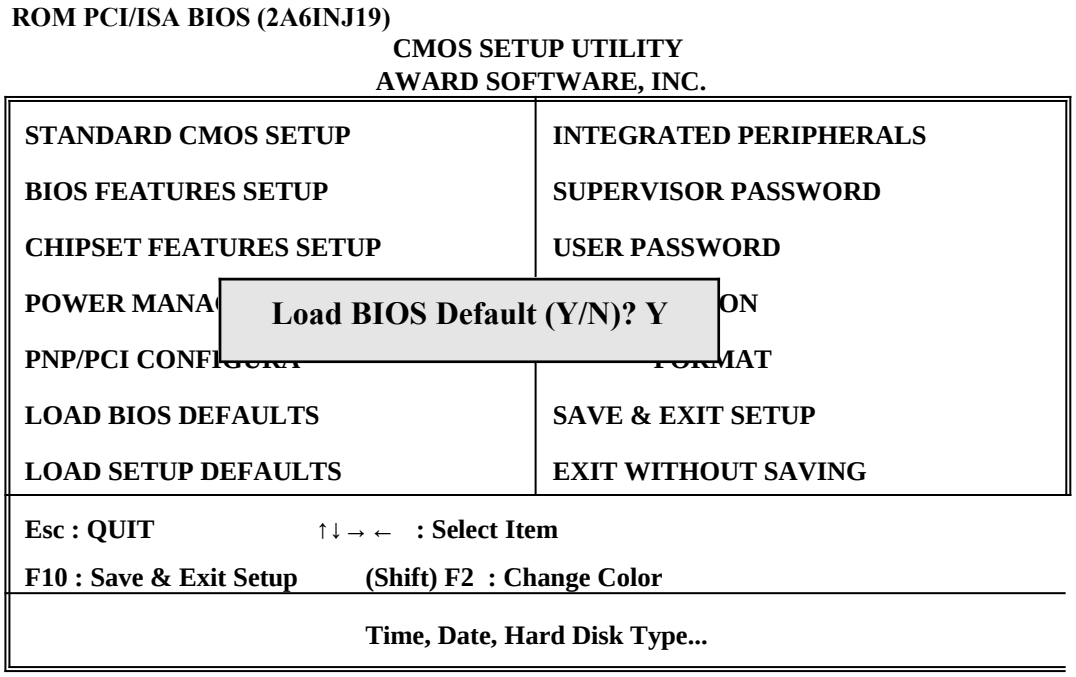


Figure 3-7

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 (2A6INJ19)
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 CONFI	AT
LOAD BIOS DE	
LOAD SETUP DEFAULTS	EXIT WITHOUT SAVING

Load SETUP Default (Y/N)? Y

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 (2A6INJ19)
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	VGA Shared Memory Size : 2MB
Primary Master UltraDMA : Auto	Current CPU Temperature : 40°C
Primary Slave UtraDMA : Auto	Current CPUFAN Speed : 4500
Secondary Master UtraDMA : Auto	Current SYSFAN Speed : 0
Secondary Slave UtraDMA : Auto	VCC(V): 5V Vcc3 : 3.3V
IDE Burst Mode : Enabled	Vcc25 : 2.51V Vcore : 2.01V
IDE HDD Block Mode : Enabled	
Onboard FDC Controller : Enabled	Esc: Quit ↑↓→←: Select Item
Onboard Serial Port 1 : 3F8/IRQ4	F1 : Help Pu/Pd/+/-:Modify
Onboard Serial Port 2 : 2F8/IRQ3	F5 : Old Values (Shift)F2 : Color
IR Address Select : Disabled	F6 : Load BIOS Defaults
Onboard Parallel Port 1 : 378/IRQ7	F7 : Load Setup Defaults
Parallel Port Mode ; SPP	

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.

- **Vcc/Vcc3/Vcc25/Vcore :** These fields display the *current* voltage of up to four voltage input lines, if your computer contains a monitoring system.

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 (2A6INJ19)
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.

no. Cylinder (1024)

x no. Head (16)
x no. Sector (63)
x no. per sector (512)
528 Megabytes

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:

no. Cylinder (1024)
x no. Head (255)
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	

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 ”Browes” 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 excute ”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 chang 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, ”Cailibrate” 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.